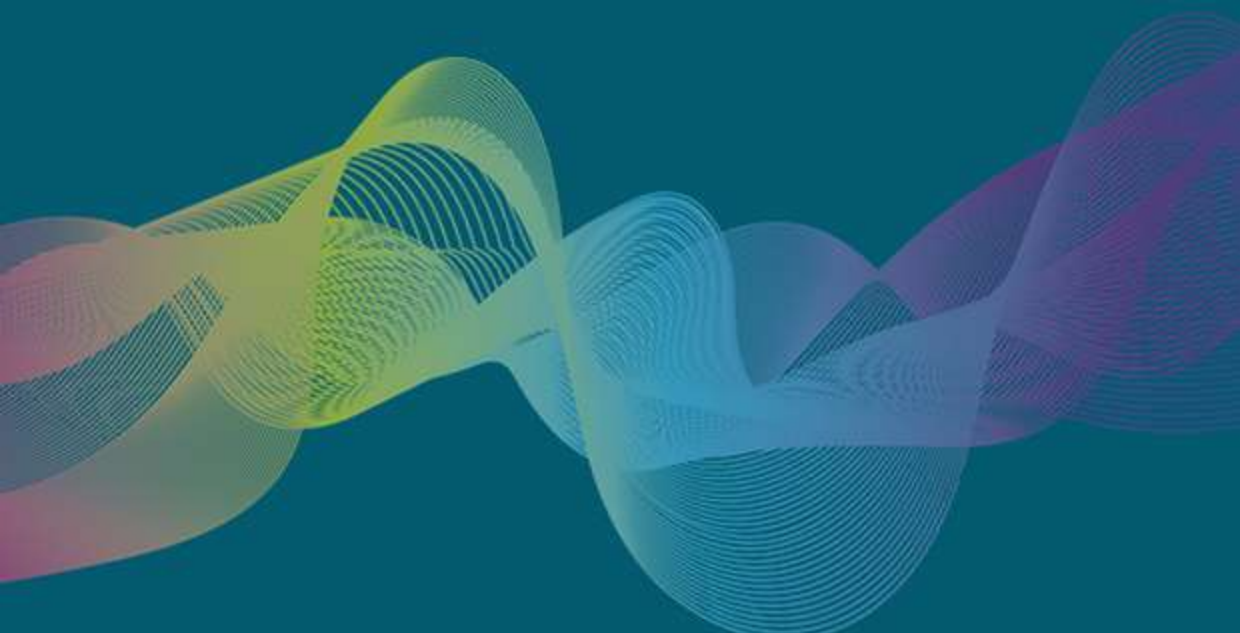




# INDONESIAN JOURNAL *of* HEALTH ADMINISTRATION

JURNAL ADMINISTRASI KESEHATAN INDONESIA



Volume 11, Issue 2, December 2023

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# SEVERAL PILLARS OF HEALTH TRANSFORMATION IN INDONESIA: FROM RESILIENCE PHARMACEUTICAL SUPPLY, HEALTH INSURANCE, PRIMARY HEALTH CARE, TO DIGITAL HEALTH

*Beberapa Pilar Transformasi Kesehatan di Indonesia: dari Ketahanan Obat, Asuransi Kesehatan, Pelayanan Kesehatan Dasar, Hingga Kesehatan Digital*

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Indonesian Government is currently focusing on several efforts to accelerate the achievement of health goals through the implementation of health transformation initiatives. In November 2022, the Indonesian Minister of Health announced six pillars for health transformation, which are: (1) transformation of primary service; (2) transformation of referral service; (3) health resilience system transformation; (4) transformation of health financing system; (5) transformation of health human resources; (6) transformation of health technology (Ditjen P2P, 2022). In this issue, we covered a wide range of topics, from national health insurance, primary health care, pharmaceutical resilience, e-health and telemedicine, vaccination, health workers issues, as well as smoke free area policy and cessation advertisement. There are several studies published in this edition which relates to some of six pillars of health transformation in Indonesia. This editorial highlighted some important aspects and findings from those studies.

In relation to the 3<sup>rd</sup> health transformation pillar, which is a resilience health system including improving the resiliency of drug supply in Indonesia, Hermawan *et al.* (2023) found some policies which can be considered to support Indonesian pharmaceutical raw materials industries. The recommended policies are ranging from price regulation, tax incentives, energy subsidies, technology transfers, and other policies which can provide positive incentives for

local pharmaceutical raw material industry. The study also mentioned that low health expenditure, low budget for R&D, and price competition are amongst several barriers for local pharmaceutical raw materials industries.

Moving to the next pillar, health financing transformation focuses on providing equal and easy access to health care services, particularly for poor people. Participation in the National Health Insurance, so called Jaminan Kesehatan Nasional (JKN), could reduce the risk of unmet need for health services by 7.7% for beneficiary program for poor groups and 10.4% for non-beneficiary program for non-poor groups. JKN participation negatively affects the probability of unmet needs for healthcare services (Firori and Wisana, 2023). Moreover, in a study conducted by Khairunnisa *et al.* (2023) revealed that insurance ownership affects healthcare utilization, in which those who owned health insurance had a 1.892 higher possibility to utilize primary health care (PHC). Other factors which also influence the utilization of PHC in central Java includes age, gender, marital status, education level, working status, and socioeconomic status.

Regarding PHC utilization, another study using Indonesian Basic Health Survey suggested seven policy target characteristics to increase PHC use in disadvantaged areas in Indonesia, namely those who live in rural areas, employed, female, have no education, never married, not the poorest, not participated in JKN,

and need to travel more than 10 minutes. Those people were found to have a lower PHC utilization based on this study. Hence, it's recommended for the Indonesian government to target on the most appropriate demographic characteristics to increase PHC utilization in disadvantaged areas (Wulandari *et al.*, 2023).

Another interesting and popular issue in Indonesia health transformation pillars is about digital health. Since the Covid-19 pandemic, telemedicine usage in Indonesia is growing rapidly. However, a study found that there are several disruption experienced by doctors who use telemedicine. The disruptions are in terms of at least five aspects which are disruptions on clinical practice roles and responsibilities, current delivery modes, work environment, circle of influence, and personal life. The disruption on personal life raises a concern as it potentially causes mental health issue. In the era of technology reliance, work and life balance must still be prioritized since technology cannot work itself without the role of human resources (Nugroho and Pitaloka, 2023).

If the advancement of technology and information system is used wisely and properly in providing health care service, the health service can be more effective and efficient. Runjati and Rahayu (2023) concluded that e-health system is effective in conserving time. The e-health system can be used for early stress recording and reporting among pregnant woman. It could automatically detect stress during pregnancy, with an average time needed for identification of stress is as much as 230.94 seconds. There are 374 pregnant women records analyzed within one day (24 hours), followed by reporting of the results.

Another evidence from Ghana analyzed factors influencing expectant mothers to use digital media in seeking information related to their pregnancy. Social media healthcare information usage, perceived severity, and emotional support are among significant factors which influence expectant mothers to continue utilizing digital media for the purpose of obtaining health information. However, perceived vulnerability does not

significantly influence the continuation of social media usage for health information (Ofori, Kubuga and Louis, 2023).

## References

- Ditjen P2P (2022) *Kemendes Gaungkan Transformasi Kesehatan Pada Peringatan HKN Ke-58 Tahun 2022*. Available at: <https://p2p.kemkes.go.id/kemendes-gaungkan-transformasi-kesehatan-pada-peringatan-hkn-ke-58-tahun-2022/>.
- Firori, F.A. and Wisana, I.D.G.K. (2023) 'The Effect of Participation in JKN on Unmet Needs for Healthcare Services', *Indonesian Journal of Health Administration*, 11(2), pp. 186–195. Available at: <https://doi.org/10.20473/jaki.v11i2.2023.186-195>.
- Hermawan, E. *et al.* (2023) 'Challenges and Policy Supports in Indonesian Pharmaceutical Raw Materials Industry', *Indonesian Journal of Health Administration*, 11(2), pp. 196–211. Available at: <https://doi.org/10.20473/jaki.v11i2.2023.196-211>.
- Khairunnisa, M. *et al.* (2023) 'Factors Associated with the Utilization of Public Health Center in Central Java', *Indonesian Journal of Health Administration*, 11(2), pp. 221–230. Available at: <https://doi.org/10.20473/jaki.v11i2.2023.221-230>.
- Nugroho, A.P. and Pitaloka, A.A. (2023) 'Physicians and Disruption on Telemedicine: A Systematic Literature Review', *Indonesian Journal of Health Administration*, 11(2), pp. 344–353. Available at: <https://doi.org/10.20473/jaki.v11i2.2023.344-353>.
- Ofori, P.P., Kubuga, K.K. and Louis, D.K. (2023) 'Factors Influencing Expectant Mothers' Continued Use of Digital Health Information', *Indonesian Journal of Health Administration*, 11(2), pp. 231–241. Available at:

- <https://doi.org/10.20473/jaki.v11i2.2023.213-241>.
- Runjati, R. and Rahayu, S. (2023) 'Early Stress Detection During Pregnancy Using E-Health in the Pandemic', *Indonesian Journal of Health Administration*, 11(2), pp. 288–298. Available at: <https://doi.org/10.20473/jaki.v11i2.2023.288-298>.
- Wulandari, R.D. *et al.* (2023) 'Determine the Target to Increase Primary Healthcare Utilization in Indonesia's Disadvantaged Areas', *Indonesian Journal of Health Administration*, 11(2), pp. 299–310. Available at: <https://doi.org/10.20473/jaki.v11i2.2023.299-310>.



# THE EFFECT OF PARTICIPATION IN JKN ON UNMET NEEDS FOR HEALTHCARE SERVICES

## *Pengaruh Kepesertaan JKN terhadap Unmet Needs Pelayanan Kesehatan*

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### Abstract

**Background:** The National Health Insurance or *Jaminan Kesehatan Nasional* (JKN) program is one of the steps taken by the Indonesian government in developing Universal Health Coverage (UHC). However, increased participation in the National Health Insurance is not followed by an increase in met needs for healthcare services.

**Aims:** This study aimed to examine the effect of participation in the National Health Insurance on unmet needs for healthcare services in poor and non-poor population groups.

**Methods:** This study was conducted using data from the 2018 National Socio-Economic Survey/ *Survei Sosial Ekonomi Nasional* (SUSENAS) and Village Potential Survey/ *Survei Potensi Desa* (PODES). Data were processed using binary logistic model analysis to identify the effect of participation in the National Health Insurance on the unmet needs for healthcare services.

**Results:** Participation in the National Health Insurance including beneficiary program for poor groups could reduce the risks of unmet needs for healthcare services by 7.7%, while non-beneficiary program could reduce the risks of unmet needs for health services for non-poor groups by 10.4%.

**Conclusion:** Both beneficiaries and non-beneficiaries affect the unmet needs for health services for both poor and non-poor groups. However, the non-beneficiary program is more elastic than beneficiary program to fulfill needs for both sample groups.

**Keywords:** healthcare services, national health insurance, logit, unmet need

### Abstrak

**Latar Belakang:** Program *Jaminan Kesehatan Nasional* (JKN) merupakan salah satu langkah pemerintah dalam membangun Universal Health Coverage (UHC). Namun, kepesertaan JKN yang meningkat tidak diikuti oleh peningkatan kebutuhan pelayanan kesehatan masyarakat yang terpenuhi.

**Tujuan:** Penelitian ini bertujuan untuk menguji pengaruh kepesertaan JKN terhadap pemenuhan kebutuhan pelayanan kesehatan di kalangan masyarakat miskin dan tidak miskin.

**Metode:** Penelitian ini diselenggarakan dengan menggunakan data dari *Survei Sosial Ekonomi Nasional* (SUSENAS) and *Survei Potensi Desa* (PODES) Tahun 2018. Data diolah menggunakan analisis model logistik biner untuk mengidentifikasi pengaruh kepesertaan JKN terhadap kebutuhan pelayanan kesehatan masyarakat.

**Hasil:** Kepesertaan JKN, yakni program penerima bantuan iuran (PBI) di kalangan masyarakat miskin mampu menurunkan risiko kebutuhan pelayanan kesehatan yang tidak terpenuhi sebesar 7,7%, sedangkan kepesertaan yang bukan PBI mampu menurunkan risiko kebutuhan pelayanan kesehatan yang tak terpenuhi di kalangan masyarakat tidak miskin sebesar 10,4%.

**Kesimpulan:** Kedua program PBI maupun bukan PBI berpengaruh negatif terhadap kebutuhan layanan yang tak terpenuhi di kalangan masyarakat miskin maupun tidak miskin. Namun, program bukan PBI lebih elastis dari pada program PBI untuk memenuhi kebutuhan layanan bagi dua kelompok sampel tersebut.

**Kata kunci:** jaminan kesehatan nasional, layanan kesehatan, logit, unmet need



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## Introduction

Public health development has a crucial influence on human resource quality, economic growth, and poverty reduction (Grossman, 2017). Awareness of health promptly encourages governments worldwide to focus on improving public health. As evidenced by the declaration of the Sustainable Development Goals (SDGs), Universal Health Care (UHC) has become one of the joint targets of countries around the world by 2030 (United Nations, 2022).

Successful UHC in Indonesia relies on government budgetary support. Following Law no. 36/2009 on Health, Indonesian governments have allocated a minimum health budget of 5% of the state budget and 10% of the regional budget since 2016. The government allocates nearly 30% of the health budget annually to finance the National Health Insurance program/*program Jaminan Kesehatan Nasional (JKN)*. The annual increase in the health budget is in line with the annual increase in the number of insurance participants. Data from Social Security Agency for Health/ BPJS Kesehatan show that as of December 31, 2020, the number of JKN participants was 222.5 million, equivalent to 81.3% of the population in Indonesia (Figure 1). An annual increase in insurance membership is expected to encourage prosperity. However, this increase is not proportional to the increase in met healthcare service needs. An unmet need is an assessment method for measuring the equality of access to health services (Fjaer *et al.*, 2017; OECD, 2019).

An unmet need for health services occurs when an individual experiences health complaints that disrupt their daily activities, without seeking outpatient treatment (Kementerian PPN/ Bappenas, 2020). Based on Indonesian Statistics data in 2020, the level of unmet needs for healthcare services has increased over the last 3 (three) years (from 2018 to 2020) (Figure 1). The increase in unmet needs for health services indicates potential economic disruption due to public health problems, considering that delaying or

discontinuing treatment can harm the health status (Kim *et al.*, 2019; Lindström, Rosvall, and Lindström, 2020). In addition, neglecting primary health care can be detrimental in the long term or even lead to poorer health (WHO, 2017). Based on these problems, it is necessary to ascertain whether JKN, as a form of JKN program developed by the government, can reduce the unmet need for public health services.

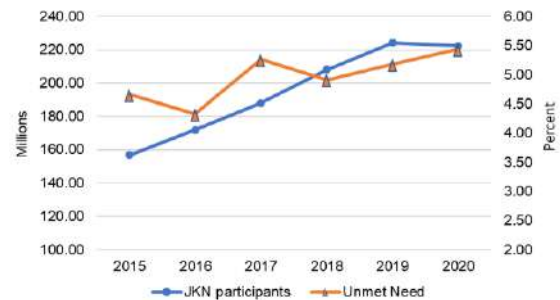


Figure 1. The trends of participation in the National Health Insurance and unmet needs for healthcare services from 2015 to 2020

Many challenges still occur in improving health conditions in Indonesia. As unmet needs for healthcare services are considered an essential indicator in the healthcare system, it is critical to identify barriers that may prevent people from accessing healthcare services. This study focused on unmet needs for health care services aimed at ensuring that society has access to health care facilities, regardless of differences in socioeconomic status. Therefore, it is important to identify the effect of National Health Insurance on unmet healthcare service needs in Indonesia.

This study adopted the utility function approach of Wella to show one's behavior towards the utilization of health services (Wella *et al.*, 2018). This approach argues that utility depends on health conditions and consumption of goods other than medical care. If a person has a health disorder, he/she will decide to seek medical treatment. Medical care is expected to improve health conditions with minimal treatment costs. Individuals can choose alternative health facilities such as modern health facilities, traditional health facilities,

and self-medication. Each healthcare provider offers a specific cost for a certain healthcare service. The costs charged for these alternatives included medical expenses and other costs. Considering income, one might choose facilities that produce the highest utility at lower costs. Suppose we assume that an individual in illness "i" will maximize his utility ( $U$ ) through medical care from health care provider "j" subject to budget constraints and the health production function. The utility function can be expressed as follows:

$$\text{Max } U_{ij} = U(H_{ij}, C_{ij}) + e_{ij} \quad (1)$$

subject to:

$$m_i = P_{ij} + P_c C_{ij} \text{ (budget constraint)} \quad (2)$$

$$H_{ij} = H_o + Q_{ij}(X, Z) \text{ (health production function)} \quad (3)$$

where  $H_{ij}$  is the individual's health status after medical treatment from a healthcare service provider  $j$ ;  $C_{ij}$  is the level of consumption of other goods and services after choosing provider  $j$ ;  $e_{ij}$  is a random error term;  $m_i$  is total household income;  $P_{ij}$  is the price of treatment from the healthcare service provider  $j$  (including travel costs to the medical service and time);  $P_c$  is the price of consumer goods;  $H_o$  is the individual's initial health status; and the last element is  $Q_{ij}$ , the increase in the individual's health status after medical treatment from the healthcare service provider  $j$ .

The increase in individual health status  $Q_{ij}$  varies according to the characteristics of the medical service provider. In addition, individual characteristics such as disease severity, education level, age, and gender can influence individual health status. Therefore, an increase in an individual's health status is a function of individual characteristics ( $Z$ ) and the characteristics of medical service providers ( $X$ ). Therefore, individual  $i$  maximizes the unconditional utility function ( $U^*$ ) as follows:

$$U_j^* = \max(U_{i1}, U_{i2}, \dots, U_{ij+1}) \quad (4)$$

where  $U_{ij}$  is the utility function of service provider  $j=1, 2, \dots, j+1$ . Meanwhile,  $U_j^*$  is the maximum utility that an individual deserves from the choice of medical service  $j$ . The

solution to equation (4) provides the healthcare alternative that yields the highest utility and is chosen by an individual. The probability of the chosen healthcare service can be interpreted as a demand function in the discrete-choice model. By normalizing  $P_c$  to be equal to one and substituting equations (2) and (3) into equation (1), the equation yields the conditional utility function of medical service provider  $j$  which can be written as

$$U_{ij} = U(H_o + Q_{ij}(X, Z), m_i - P_{ij}) + e_{ij} \quad (5)$$

When the above utility function is quasi-linear on  $H_{ij}$  and  $C_{ij}$  with a component value greater than 0, the indirect utility function can be written as

$$V = V(P, H, Q(X, Z), m) + e \quad (6)$$

Equation (6) is the reduced form of the indirect utility function of the selected healthcare service. Most studies use the above function to estimate the basic demand for healthcare functions. This implies that the demand for healthcare services depends on the cost of healthcare services, individual health status, improvement in health status after medical treatment, individual characteristics and characteristics of health/ medical service providers, and individual income.

## Method

This study used a binary logistic model analysis approach and the Stata 15 application to analyze the data. The binary logistic model analysis is feasible for examining the effect of participation in the National Health Insurance on the rates of unmet needs for healthcare services, considering that the dependent variable was logistically distributed and the independent variables consisted of discrete and continuous variables (Boateng and Abaye, 2019). The specifications of the dependent variable for unmet needs were determined by examining certain conditions. For example, if an individual experienced an unmet need for health services, he/she was given a code of 1, while a code of 0 was given to individuals who did not experience an unmet need. Therefore, the empirical model to test people's experiences, whether they

experienced unmet needs or not, was used in combination with a binary logit approach as follows:

$$n \left( \frac{P_i^{UN=1}}{P_i^{UN=0}} \right) = \beta_0 + \beta_1 X_i + \varepsilon_0 \quad (10)$$

where  $\left( \frac{P_i^{UN=1}}{P_i^{UN=0}} \right)$  represents the probability of

an individual experiencing an unmet need for health services and of an individual not experiencing an unmet need, with several independent variables ( $X_i$ ) as control variables. The types of participation in the National Health Insurance were arranged as dummy variables and functioned as variables of interest. The interpretation of the binary logit regression model was not based on the model coefficient values, but was viewed from the marginal effect.

The analysis was carried out by separately estimating poor and non-poor samples, considering that the beneficiary program (*Penerima Bantuan Iuran*) was designed for poor and underprivileged groups. By contrast, the non-beneficiary program was intended for people who could pay healthcare costs on their own. The classification of the programs was also aligned with the Poverty Line by regency or city (in rupiah per capita per month) from the Indonesian Statistics.

This study used three representative national data sources: the 2018 National Socio-Economic Survey/ *Survei Sosial Ekonomi Nasional (SUSENAS)*, the 2018 Village Potential Survey/ *Survei Potensi Desa (PODES)*, and Publication Data from the Indonesian Statistics. Cross-sectional data from SUSENAS in March 2018 were used as the primary data source because they contained complete information regarding population social information, which was relatively universal. The 2018 PODES measured the supply side conditions of health services, such as the number of health facilities and independent clinics of doctors.

Two data sets were taken from the population per district/ city and Poverty Line data by district/ city (Rupiah per capita per month) published by the Indonesian Statistics on [www.bps.go.id](http://www.bps.go.id). The data were used to calculate the total ratio of the supply side of health services, and the Poverty

Line data by district/ city (Rupiah per capita per month) were used to separate sample classifications: poor and non-poor groups.

The dependent variable in this study was unmet need for healthcare services. It was arranged with a dichotomous variable coded 1 when the person reported that he/she required examination or treatment but did not consult a doctor or did not seek treatment in the last month. Code 0 was assigned for the opposite response. The types of participation in the National Health Insurance (Beneficiaries/ *Penerima Bantuan Iuran (PBI)* and non-beneficiary programs/ *Non PBI*) used as a treatment were arranged with a dichotomous variable coded 1 when one participated in beneficiary programs. Finally, code 0 was assigned when the participant did not participate in the program.

The analysis used several individual characteristics and the characteristics of health service providers as independent and control variables. The independent variables in question consisted of several sociodemographic characteristics such as age, marital status, gender, area of residence, employment status, ownership of the Citizen Identification Number/ *Nomor Induk Kependudukan (NIK)*, education level, average expenditure per capita per month, average out-of-pocket limit per capita per month for outpatients, possession of additional health insurance, and functional impairment. In addition, the analysis used several independent variables related to aspects of housing and one's asset ownership, as well as the supply side characteristics of health service providers as control variables. The supply side characteristics of health service providers included the ratio of hospitals, health centers/ *Pusat Kesehatan Masyarakat (Puskesmas)*, polyclinics, and doctors' independent clinics by district or city.

## Result and Discussion

From the SUSENAS data in March 2018, the number of individuals who experienced illness that disrupted their activities was 160,732, of whom 59,223

experienced unmet needs. Data were divided into two sample categories: poor and non-poor. The number of poor individuals who experienced illness and disrupted activities was 14,795 people, of whom 6,061 individuals (40.97%) faced unmet needs. The number of sick individuals in non-poor groups getting impacted by their disease was 145,937 people, and 53,162 individuals of them (36.43%) experienced unmet needs.

Table 1 shows the distribution of participation in the National Health Insurance based on the poor and non-poor groups and their experience in developing illnesses that interrupt their daily activities. The number of poor samples was 14,795 people, of which 6,920 individuals (46.77%) in the beneficiary program and 575 individuals (3.89%) in non-beneficiary program. The remaining as many as 7,300 people (49.34%) did not participate in the National Health Insurance. In addition, 2,707 individuals in the poor sample (18.3%) have additional insurance other than national health insurance. The data also show exclusion errors in participation

in non-beneficiary programs, where poor individuals were misclassified as non-beneficiary participants.

Table 1 also provides information on the characteristics of insurance participation in the non-poor samples. The total number of non-poor samples was 145,937 individuals, with 53,011 individuals (36.32%) having the beneficiary membership for their National Health Insurance, while 26,110 individuals (17.89%) had non-beneficiary membership. The rest or 39,957 (43.07%) did not have the National Health Insurance. In addition, 24,606 individuals (16.86%) had additional insurance outside the national health insurance. Further results also indicate misclassifications in non-beneficiary programs. For instance, non-poor individuals were categorized as non-beneficiary program participants instead of beneficiary participants.

The logit analysis model was used to determine the effect of participation in National Health Insurance on unmet healthcare service needs in poor samples. As the initial step, the regression estimation

Table 1. Characteristics of National Health Insurance Participation

Char	Poor Category				Non-poor Category			
	Unmet Needs		Total		Unmet Needs		Total	
	Yes	No			Yes	No		
	Freq	Freq	Freq	%	Freq	Freq	Freq	%
Beneficiary program								
0: No	3,419	4,456	7,875	53.23%	34,370	58,556	92,926	63.68%
1: Yes	2,642	4,278	6,920	46.77%	18,792	34,219	53,011	36.32%
	6,061	8,734	14,795	100.00%	53,162	92,775	145,937	100.00%
Non-beneficiary program								
0: No	5,895	8,325	14,220	96.11%	45,651	74,176	119,827	82.11%
1: Yes	166	409	575	3.89%	7,511	18,599	26,110	17.89%
	6,061	8,734	14,795	100.00%	53,162	92,775	145,937	100.00%
Additional Insurance								
0: No	5,079	7,009	12,088	81.70%	44,657	76,674	121,331	83.14%
1: Yes	982	1,725	2,707	18.30%	8,505	16,101	24,606	16.86%
	6,061	8,734	14,795	100.00%	53,162	92,775	145,937	100.00%

Source: SUSENAS 2018 has been reprocessed

method, that is, ordinary least squares (OLS), was performed. The results of the OLS estimation were compared with the logit estimated results.

Table 2 presents the estimation results for the poor groups. The results show that the coefficient between the OLS method and the marginal effect of the logit method produces values that are relatively similar or not significantly different. The results of the F test on the OLS method show an F value of 0.000 ( $F < 0.005$ ) or significance at 5% alpha. This implies that the independent variables simultaneously affect the dependent variable.

Partial tests were performed to interpret the logit estimation results for each coefficient. The results show that the health insurance ownership coefficient is negative. The coefficient of the marginal effect of beneficiary ownership was -0.0768, indicating 7.68% lower probability of unmet needs for poor individuals with beneficiary membership than for those

without health insurance. The marginal effect coefficient of non-beneficiary program was -0.1449, indicating 14.49% lower probability of unmet needs for poor non-beneficiary participants than poor individuals who did not have health insurance. The coefficient resulting from the OLS method was not significantly different from that of the logit model; the coefficient of the beneficiary program variable was -0.0754, while the coefficient of the non-beneficiary variable was -0.1461.

Logit estimation on the supply-side variables of healthcare services demonstrates negative marginal effect coefficient values with significant directions at the 1%, 5%, and 10%. At a significance level of 1%, the effect of polyclinic availability on reducing unmet healthcare needs was higher than the availability of Puskesmas. This is indicated by the coefficient value of the polyclinic ratio,

Table 2. The Estimation Results for Poor Samples

Variables	OLS		Logit			
	Coef	Std Err	Coef	Std Err	MFx	Std Err
Beneficiary program	-0.0754***	0.0088	-0.3197***	0.0373	-0.0768***	0.0089
Non-beneficiary program	-0.1461***	0.0214	-0.6529***	0.0977	-0.1449***	0.0193
Additional Insurance	-0.1089	0.0811	-0.4864	0.3675	-0.1102	0.0767
Log of Capita	-0.0279	0.0183	-0.1199	0.0779	-0.0289	0.0188
Log of Out-Of-Pocket (OOP) Capita	-0.0015	0.0021	-0.0065	0.0089	-0.0016	0.0022
Ratio of Hospitals	-0.0991**	0.0456	-0.4480**	0.2011	-0.1081**	0.0485
Puskesmas Ratio	-0.0102***	0.0016	-0.0444***	0.0072	-0.0107***	0.0017
Ratio of Polyclinics	-0.0924***	0.0142	-0.4086***	0.0633	-0.0986***	0.0153
Doctor's Independent Clinics Ratio	-0.0112	0.007	-0.0511*	0.031	-0.0123*	0.0075
_Constant	1.0184***	0.2325	2.2365**	0.9922		
Number of Observation	14,795		14,795			
LR chi2			480.86			
Prob > F / chi2	0		0			
R-squared	0.0318					
Adjusted R-squared	0.0298					
Pseudo R2			0.024			

\*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1

The estimation results were controlled for covariates related to population, housing, and asset ownership.

Tabel 3. Estimation Results for Non-Poor Samples

Variabel	OLS		Logit			
	Coef	Std Err	Coef	Std Err	Mfx	Std Err
Beneficiary program	-0.0706***	0.0029	-0.3079***	0.0127	-0.0700***	0.0029
Non-beneficiary program	-0.1037***	0.0038	-0.4733***	0.0174	-0.1037***	0.0036
Additional Insurance	-0.0888***	0.0079	-0.4195***	0.0372	-0.0905***	0.0074
Log of Capita	-0.0140***	0.0027	-0.0653***	0.012	-0.0151***	0.0028
Log of Out-Of-Pocket (OOP) Capita	-0.0129***	0.0006	-0.0567***	0.0027	-0.0131***	0.0006
Ratio of Hospitals	-0.0139	0.0139	-0.0709	0.0624	-0.0164	0.0144
Ratio of Primary Healthcare Centers	0.0026***	0.0006	0.0111***	0.0028	0.0026***	0.0007
Ratio of Polyclinics	0.0054	0.004	0.0234	0.0177	0.0054	0.0041
Doctor's Independent Clinics Ratio	-0.0149***	0.0018	-0.0682	0.0084	-0.0157***	0.0019
_Constant	0.9098***	0.0366	1.8627***	0.163		
Number of Observation	145,937		145,937			
LR chi2			3,896.56			
Prob > F / chi2	0		0			
R-squared	0.0263					
Adjusted R-squared	0.0261					
Pseudo R2			0.0204			

\*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1

The estimation results were controlled for covariates related to population, housing, and asset ownership.

which is -0.0986, which is larger than the puskesmas of -0.0107. Similar results were found for the coefficients of the OLS method. On the other hand, the coefficients of the log capita and log capita OOP variables were negative but not significant.

The second analytical model was the logit analysis model, which determined the effect of participation in the National Health Insurance on unmet health service needs in non-poor groups. The estimation results of the OLS and logit test for the non-poor samples are shown in Table 3. The regression results of the non-poor samples show similar coefficient values between the OLS method and the marginal effect of the logit method. Most coefficients showed significant values at the 1%, 5%, and 10%. The results of the F test using the OLS method produced an F-value of 0.000 ( $F < 0.005$ ) or significance at 5% alpha, indicating that the independent variables simultaneously affect the dependent variable.

Partial tests were performed on each coefficient value to interpret the logit estimation results. The results show that the coefficient of the health insurance ownership is negative and significant. The coefficient of the marginal effect of beneficiary ownership for non-poor individuals was -0.0700, leading to 7% lower probability of unmet needs than non-poor individuals without health insurance. A higher value of the marginal effect coefficient (-0.1037) was found for the non-beneficiary program. This implies that the probability of non-poor individuals with non-beneficiary membership to experience unmet needs was 10.37% lower than non-poor individuals without health insurance. The coefficients of the OLS method were not significantly different from those of the logit model. The OLS estimation showed that the coefficients were -0.0706 for beneficiary membership and -0.1037 for non-beneficiary membership.

The logit estimation of supply side variables from health services shows that

the marginal effect coefficient value from the logit method has various directions. The coefficient of the hospital ratio was negative but not significant, whereas the coefficient of the polyclinic ratio was positive but not significant. In addition, the coefficient of the primary healthcare center ratio shows a positive and significant direction with a value of 0.0026, while that of the doctors' independent clinics ratio was negative and significant, with a value of -0.0157. Similar results were also observed for the coefficients of the OLS method.

Identifying the effect of participation in National Health Insurance on unmet needs for health services can open doors for the government to improve National Health Insurance services. The estimation results indicate that national health insurance membership, both for beneficiary and non-beneficiary groups, generally has an impact on reducing unmet healthcare needs for both poor and non-poor communities. Connolly (2017), Otieno (2021), Basar (2021), and Choi *et al.*, (2020) support this study by stating that the probability of unmet needs for outpatient health services is lower in people with health insurance coverage or free registration for primary health services. In addition, Shrestha (2021) states that health insurance participation can increase the utilization of health services by both the poor and non-poor groups. However, the estimation tests show that the effect of non-beneficiary participation was more elastic in both poor and non-poor groups than beneficiary participation. This result can be interpreted as national health insurance membership being more utilized for outpatient care among non-poor communities than among poor communities. This statement is in line with Detollenaere *et al.*, (2017) who found that certain vulnerable groups face barriers in accessing healthcare services compared with wealthier individuals. Consistent with these findings, Basar (2021) also reported that one of the most common reasons for unmet healthcare needs is affordability of healthcare costs.

The importance of availability of healthcare facilities in meeting the

healthcare needs of the community was also evidenced by this study. The estimation results show that the availability of healthcare facilities generally has an impact on reducing unmet healthcare needs in both poor and non-poor communities. This result is in line with research by Misnaniarti *et al.*, (2017) and Burger and Christian (2020), which states that the supply side of healthcare services is an important factor in facilitating community access to healthcare facilities.

Another issue that the government needs to address immediately is the problem of inclusion and exclusion errors among beneficiaries of the National Health Insurance assistance program. Government Regulation No. 101 of 2012 regarding Recipients of Health Insurance Contribution Assistance explains that the National Health Insurance premium assistance program is only given to the poor. Therefore, to ensure fairness in healthcare utilization by the community, the government needs to take immediate steps to improve the accuracy of targeting beneficiaries of National Health Insurance premium assistance.

## Conclusion

This study determined the effect of participation in National Health Insurance programs on unmet healthcare service needs using SUSENAS and PODES 2018 data. In general, the estimation results show that National Health Insurance participation negatively affects the probability of unmet needs for healthcare services. For the poor groups, beneficiary participation influenced the probability of unmet needs up to 7.7% lower compared to those who did not have health insurance. In addition, non-beneficiary participation by non-poor groups gave 10.4% lower probability of the unmet needs for healthcare services than those without health insurance. The different economic conditions in both sample groups may contribute to a variety of marginal effect coefficient values based on logit estimates. This conclusion is also supported by the coefficients of the log variable per capita



expenditure and the log variable OOP per capita. The results show that an increase in the log variable per capita expenditure and the log variable OOP per capita can significantly reduce the chance of unmet needs, especially in non-poor groups, but not significantly in poor groups.

### Abbreviations

Char: Characteristic; Coef: Coefficient; LR: Logit Regression; MFX: Marginal Effect; OECD: Organization for Economic Co-operation and Development; Std Err: Standard Error; WHO: World Health Organization.

### Declarations

#### Ethics Approval and Consent Participant

This study used secondary data sourced from the Central Statistics Agency/ *Badan Pusat Statistik (BPS)* accessible to the public (SUSENAS)

#### Conflict of Interest

The authors declare that there are no personal interests that can affect performance.

#### Availability of Data and Materials

Research data and materials are available on <http://silastik.bps.go.id/>

#### Authors' Contribution

FAF conceptualized the study, created the methodology, wrote the original draft, and edited the manuscript. IGDKW provided inputs to the manuscript and reviewed the manuscript.

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### References

Başar, D., Dikmen, F.H. and Öztürk, S. (2021) 'The prevalence and determinants of unmet health care needs in Turkey', *Health Policy*,

125(6), pp. 786–792. Available at: <https://doi.org/10.1016/j.healthpol.2021.04.006>.

Boateng, E.Y. and Abaye, D.A. (2019) 'A review of the logistic regression model with emphasis on medical research', (January). Available at: <https://doi.org/10.4236/jdaip.2019.74012>.

Burger, R. and Christian, C. (2020) 'Access to health care in post-apartheid South Africa: availability, affordability, acceptability', *Health Economics, Policy and Law*, 15(1), pp. 43–55. Available at: <https://doi.org/10.1017/S1744133118000300>.

Choi, N.G., Dinitto, D.M. and Choi, B.Y. (2020) 'Unmet healthcare needs and healthcare access gaps among uninsured U.S. adults aged 50–64', *International Journal of Environmental Research and Public Health*, 17(8). Available at: <https://doi.org/10.3390/ijerph17082711>.

Connolly, S. and Wren, M.A. (2017) 'Unmet healthcare needs in Ireland: analysis using the EU-SILC survey', *Health Policy*, 121(4), pp. 434–441. Available at: <https://doi.org/10.1016/j.healthpol.2017.02.009>.

Detollenaere, J. et al. (2017) 'Do we reap what we sow? Exploring the Association between the Strength of European primary healthcare systems and inequity in unmet need', *PLoS ONE*, 12(1), pp. 1–13. Available at: <https://doi.org/10.1371/journal.pone.0169274>.

Fjaer, E.L. et al. (2017) 'Subjective perceptions of unmet need for health care in Europe among social groups: Findings from the European social survey (2014) special module on the social determinants of health', *European Journal of Public Health*,

- 27, pp. 82–89. Available at: <https://doi.org/10.1093/eurpub/ckw219>.
- Grossman, M. (2017) 'On the concept of health capital and the demand for health', *Determinants of Health*, pp. 6–41. Available at: <https://doi.org/10.7312/gros17812-004>.
- Kementerian PPN/ Bappenas (2020) *Metadata Indikator Tujuan Pembangunan Berkelanjutan (TPB)/Sustainable Development Goals (SDGs) Indonesia*. Jakarta. Available at: <https://sdgs.bappenas.go.id/wp-content/uploads/2020/10/Metadata-Pilar-Sosial-Edisi-II.pdf>.
- Kim, Y. *et al.* (2019) 'Poor people and poor health: examining the mediating effect of unmet healthcare needs in Korea', *Journal of Preventive Medicine and Public Health*, 52(1), pp. 51–59. Available at: <https://doi.org/10.3961/jpmph.18.16>.
- Lindström, C., Rosvall, M. and Lindström, M. (2020) 'Unmet health-care needs and mortality: A prospective cohort study from southern Sweden', *Scandinavian Journal of Public Health*, 48(3), pp. 267–274. Available at: <https://doi.org/10.1177/1403494819863530>.
- Misnaniarti, M. *et al.* (2017) 'Availability of facilities and health workers to support universal coverage of national health insurance', *Jurnal Penelitian dan Pengembangan Pelayanan Kesehatan*, 1(1), pp. 6–16. Available at: <https://doi.org/https://doi.org/10.22435/jpppk.v1i1.425>.
- OECD (2019) *Health at a glance 2019*. OECD. Available at: <https://doi.org/10.1787/4dd50c09-en>.
- Otieno, P.O. *et al.* (2021) 'Unmet need for primary healthcare and associated individual and household-level factors in Kenya: results from a national survey', *BMJ Open*, 11(5), pp. 1–6. Available at: <https://doi.org/10.1136/bmjopen-2020-041032>.
- Shrestha, R. (2021) 'Health insurance for the poor, healthcare use and health outcomes in Indonesia', *Bulletin of Indonesian Economic Studies*, 57(1), pp. 85–110. Available at: <https://doi.org/10.1080/00074918.2020.1753655>.
- United Nation (2022) *About the 2030 agenda on sustainable development: OHCHR and the 2030 agenda for sustainable development*. Available at: <https://www.ohchr.org/en/sdgs/about-2030-agenda-sustainable-development> (Accessed: 30 April 2022).
- Wellay, T. *et al.* (2018) 'Demand for healthcare service and associated factors among patients in the community of Tsegedie District, Northern Ethiopia', 18(1), pp. 1–9. Available at: <https://doi.org/https://doi.org/10.1186/s12913-018-3490-2>.
- WHO (2017) *Tracking universal health coverage: 2017 global monitoring report, Tracking Universal Health Coverage: 2017 Global Monitoring Report*. Available at: <https://doi.org/10.1596/978-92-4-151355-5>.

# THE EFFECT OF PARTICIPATION IN JKN ON UNMET NEEDS FOR HEALTHCARE SERVICES

## *Pengaruh Kepesertaan JKN terhadap Unmet Needs Pelayanan Kesehatan*

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### Abstract

**Background:** The National Health Insurance or *Jaminan Kesehatan Nasional* (JKN) program is one of the steps taken by the Indonesian government in developing Universal Health Coverage (UHC). However, increased participation in the National Health Insurance is not followed by an increase in met needs for healthcare services.

**Aims:** This study aimed to examine the effect of participation in the National Health Insurance on unmet needs for healthcare services in poor and non-poor population groups.

**Methods:** This study was conducted using data from the 2018 National Socio-Economic Survey/ *Survei Sosial Ekonomi Nasional* (SUSENAS) and Village Potential Survey/ *Survei Potensi Desa* (PODES). Data were processed using binary logistic model analysis to identify the effect of participation in the National Health Insurance on the unmet needs for healthcare services.

**Results:** Participation in the National Health Insurance including beneficiary program for poor groups could reduce the risks of unmet needs for healthcare services by 7.7%, while non-beneficiary program could reduce the risks of unmet needs for health services for non-poor groups by 10.4%.

**Conclusion:** Both beneficiaries and non-beneficiaries affect the unmet needs for health services for both poor and non-poor groups. However, the non-beneficiary program is more elastic than beneficiary program to fulfill needs for both sample groups.

**Keywords:** healthcare services, national health insurance, logit, unmet need

### Abstrak

**Latar Belakang:** Program *Jaminan Kesehatan Nasional* (JKN) merupakan salah satu langkah pemerintah dalam membangun Universal Health Coverage (UHC). Namun, kepesertaan JKN yang meningkat tidak diikuti oleh peningkatan kebutuhan pelayanan kesehatan masyarakat yang terpenuhi.

**Tujuan:** Penelitian ini bertujuan untuk menguji pengaruh kepesertaan JKN terhadap pemenuhan kebutuhan pelayanan kesehatan di kalangan masyarakat miskin dan tidak miskin.

**Metode:** Penelitian ini diselenggarakan dengan menggunakan data dari *Survei Sosial Ekonomi Nasional* (SUSENAS) and *Survei Potensi Desa* (PODES) Tahun 2018. Data diolah menggunakan analisis model logistik biner untuk mengidentifikasi pengaruh kepesertaan JKN terhadap kebutuhan pelayanan kesehatan masyarakat.

**Hasil:** Kepesertaan JKN, yakni program penerima bantuan iuran (PBI) di kalangan masyarakat miskin mampu menurunkan risiko kebutuhan pelayanan kesehatan yang tidak terpenuhi sebesar 7,7%, sedangkan kepesertaan yang bukan PBI mampu menurunkan risiko kebutuhan pelayanan kesehatan yang tak terpenuhi di kalangan masyarakat tidak miskin sebesar 10,4%.

**Kesimpulan:** Kedua program PBI maupun bukan PBI berpengaruh negatif terhadap kebutuhan layanan yang tak terpenuhi di kalangan masyarakat miskin maupun tidak miskin. Namun, program bukan PBI lebih elastis dari pada program PBI untuk memenuhi kebutuhan layanan bagi dua kelompok sampel tersebut.

**Kata kunci:** jaminan kesehatan nasional, layanan kesehatan, logit, unmet need



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## Introduction

Public health development has a crucial influence on human resource quality, economic growth, and poverty reduction (Grossman, 2017). Awareness of health promptly encourages governments worldwide to focus on improving public health. As evidenced by the declaration of the Sustainable Development Goals (SDGs), Universal Health Care (UHC) has become one of the joint targets of countries around the world by 2030 (United Nations, 2022).

Successful UHC in Indonesia relies on government budgetary support. Following Law no. 36/2009 on Health, Indonesian governments have allocated a minimum health budget of 5% of the state budget and 10% of the regional budget since 2016. The government allocates nearly 30% of the health budget annually to finance the National Health Insurance program/*program Jaminan Kesehatan Nasional (JKN)*. The annual increase in the health budget is in line with the annual increase in the number of insurance participants. Data from Social Security Agency for Health/ BPJS Kesehatan show that as of December 31, 2020, the number of JKN participants was 222.5 million, equivalent to 81.3% of the population in Indonesia (Figure 1). An annual increase in insurance membership is expected to encourage prosperity. However, this increase is not proportional to the increase in met healthcare service needs. An unmet need is an assessment method for measuring the equality of access to health services (Fjaer *et al.*, 2017; OECD, 2019).

An unmet need for health services occurs when an individual experiences health complaints that disrupt their daily activities, without seeking outpatient treatment (Kementerian PPN/ Bappenas, 2020). Based on Indonesian Statistics data in 2020, the level of unmet needs for healthcare services has increased over the last 3 (three) years (from 2018 to 2020) (Figure 1). The increase in unmet needs for health services indicates potential economic disruption due to public health problems, considering that delaying or

discontinuing treatment can harm the health status (Kim *et al.*, 2019; Lindström, Rosvall, and Lindström, 2020). In addition, neglecting primary health care can be detrimental in the long term or even lead to poorer health (WHO, 2017). Based on these problems, it is necessary to ascertain whether JKN, as a form of JKN program developed by the government, can reduce the unmet need for public health services.

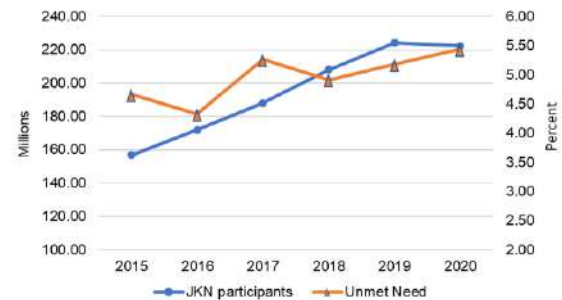


Figure 1. The trends of participation in the National Health Insurance and unmet needs for healthcare services from 2015 to 2020

Many challenges still occur in improving health conditions in Indonesia. As unmet needs for healthcare services are considered an essential indicator in the healthcare system, it is critical to identify barriers that may prevent people from accessing healthcare services. This study focused on unmet needs for health care services aimed at ensuring that society has access to health care facilities, regardless of differences in socioeconomic status. Therefore, it is important to identify the effect of National Health Insurance on unmet healthcare service needs in Indonesia.

This study adopted the utility function approach of Wellay to show one's behavior towards the utilization of health services (Wellay *et al.*, 2018). This approach argues that utility depends on health conditions and consumption of goods other than medical care. If a person has a health disorder, he/she will decide to seek medical treatment. Medical care is expected to improve health conditions with minimal treatment costs. Individuals can choose alternative health facilities such as modern health facilities, traditional health facilities,

and self-medication. Each healthcare provider offers a specific cost for a certain healthcare service. The costs charged for these alternatives included medical expenses and other costs. Considering income, one might choose facilities that produce the highest utility at lower costs. Suppose we assume that an individual in illness "i" will maximize his utility ( $U$ ) through medical care from health care provider "j" subject to budget constraints and the health production function. The utility function can be expressed as follows:

$$\text{Max } U_{ij} = U(H_{ij}, C_{ij}) + e_{ij} \quad (1)$$

subject to:

$$m_i = P_{ij} + P_c C_{ij} \text{ (budget constraint)} \quad (2)$$

$$H_{ij} = H_o + Q_{ij}(X, Z) \text{ (health production function)} \quad (3)$$

where  $H_{ij}$  is the individual's health status after medical treatment from a healthcare service provider  $j$ ;  $C_{ij}$  is the level of consumption of other goods and services after choosing provider  $j$ ;  $e_{ij}$  is a random error term;  $m_i$  is total household income;  $P_{ij}$  is the price of treatment from the healthcare service provider  $j$  (including travel costs to the medical service and time);  $P_c$  is the price of consumer goods;  $H_o$  is the individual's initial health status; and the last element is  $Q_{ij}$ , the increase in the individual's health status after medical treatment from the healthcare service provider  $j$ .

The increase in individual health status  $Q_{ij}$  varies according to the characteristics of the medical service provider. In addition, individual characteristics such as disease severity, education level, age, and gender can influence individual health status. Therefore, an increase in an individual's health status is a function of individual characteristics ( $Z$ ) and the characteristics of medical service providers ( $X$ ). Therefore, individual  $i$  maximizes the unconditional utility function ( $U^*$ ) as follows:

$$U_j^* = \max(U_{i1}, U_{i2}, \dots, U_{ij+1}) \quad (4)$$

where  $U_{ij}$  is the utility function of service provider  $j=1, 2, \dots, j+1$ . Meanwhile,  $U_j^*$  is the maximum utility that an individual deserves from the choice of medical service  $j$ . The

solution to equation (4) provides the healthcare alternative that yields the highest utility and is chosen by an individual. The probability of the chosen healthcare service can be interpreted as a demand function in the discrete-choice model. By normalizing  $P_c$  to be equal to one and substituting equations (2) and (3) into equation (1), the equation yields the conditional utility function of medical service provider  $j$  which can be written as

$$U_{ij} = U(H_o + Q_{ij}(X, Z), m_i - P_{ij}) + e_{ij} \quad (5)$$

When the above utility function is quasi-linear on  $H_{ij}$  and  $C_{ij}$  with a component value greater than 0, the indirect utility function can be written as

$$V = V(P, H, Q(X, Z), m) + e \quad (6)$$

Equation (6) is the reduced form of the indirect utility function of the selected healthcare service. Most studies use the above function to estimate the basic demand for healthcare functions. This implies that the demand for healthcare services depends on the cost of healthcare services, individual health status, improvement in health status after medical treatment, individual characteristics and characteristics of health/ medical service providers, and individual income.

## Method

This study used a binary logistic model analysis approach and the Stata 15 application to analyze the data. The binary logistic model analysis is feasible for examining the effect of participation in the National Health Insurance on the rates of unmet needs for healthcare services, considering that the dependent variable was logistically distributed and the independent variables consisted of discrete and continuous variables (Boateng and Abaye, 2019). The specifications of the dependent variable for unmet needs were determined by examining certain conditions. For example, if an individual experienced an unmet need for health services, he/she was given a code of 1, while a code of 0 was given to individuals who did not experience an unmet need. Therefore, the empirical model to test people's experiences, whether they

experienced unmet needs or not, was used in combination with a binary logit approach as follows:

$$n \left( \frac{P_i^{UN=1}}{P_i^{UN=0}} \right) = \beta_0 + \beta_1 X_i + \varepsilon_0 \quad (10)$$

where  $\left( \frac{P_i^{UN=1}}{P_i^{UN=0}} \right)$  represents the probability of

an individual experiencing an unmet need for health services and of an individual not experiencing an unmet need, with several independent variables ( $X_i$ ) as control variables. The types of participation in the National Health Insurance were arranged as dummy variables and functioned as variables of interest. The interpretation of the binary logit regression model was not based on the model coefficient values, but was viewed from the marginal effect.

The analysis was carried out by separately estimating poor and non-poor samples, considering that the beneficiary program (*Penerima Bantuan Iuran*) was designed for poor and underprivileged groups. By contrast, the non-beneficiary program was intended for people who could pay healthcare costs on their own. The classification of the programs was also aligned with the Poverty Line by regency or city (in rupiah per capita per month) from the Indonesian Statistics.

This study used three representative national data sources: the 2018 National Socio-Economic Survey/ *Survei Sosial Ekonomi Nasional (SUSENAS)*, the 2018 Village Potential Survey/ *Survei Potensi Desa (PODES)*, and Publication Data from the Indonesian Statistics. Cross-sectional data from SUSENAS in March 2018 were used as the primary data source because they contained complete information regarding population social information, which was relatively universal. The 2018 PODES measured the supply side conditions of health services, such as the number of health facilities and independent clinics of doctors.

Two data sets were taken from the population per district/ city and Poverty Line data by district/ city (Rupiah per capita per month) published by the Indonesian Statistics on [www.bps.go.id](http://www.bps.go.id). The data were used to calculate the total ratio of the supply side of health services, and the Poverty

Line data by district/ city (Rupiah per capita per month) were used to separate sample classifications: poor and non-poor groups.

The dependent variable in this study was unmet need for healthcare services. It was arranged with a dichotomous variable coded 1 when the person reported that he/she required examination or treatment but did not consult a doctor or did not seek treatment in the last month. Code 0 was assigned for the opposite response. The types of participation in the National Health Insurance (Beneficiaries/ *Penerima Bantuan Iuran (PBI)* and non-beneficiary programs/ *Non PBI*) used as a treatment were arranged with a dichotomous variable coded 1 when one participated in beneficiary programs. Finally, code 0 was assigned when the participant did not participate in the program.

The analysis used several individual characteristics and the characteristics of health service providers as independent and control variables. The independent variables in question consisted of several sociodemographic characteristics such as age, marital status, gender, area of residence, employment status, ownership of the Citizen Identification Number/ *Nomor Induk Kependudukan (NIK)*, education level, average expenditure per capita per month, average out-of-pocket limit per capita per month for outpatients, possession of additional health insurance, and functional impairment. In addition, the analysis used several independent variables related to aspects of housing and one's asset ownership, as well as the supply side characteristics of health service providers as control variables. The supply side characteristics of health service providers included the ratio of hospitals, health centers/ *Pusat Kesehatan Masyarakat (Puskesmas)*, polyclinics, and doctors' independent clinics by district or city.

## Result and Discussion

From the SUSENAS data in March 2018, the number of individuals who experienced illness that disrupted their activities was 160,732, of whom 59,223

experienced unmet needs. Data were divided into two sample categories: poor and non-poor. The number of poor individuals who experienced illness and disrupted activities was 14,795 people, of whom 6,061 individuals (40.97%) faced unmet needs. The number of sick individuals in non-poor groups getting impacted by their disease was 145,937 people, and 53,162 individuals of them (36.43%) experienced unmet needs.

Table 1 shows the distribution of participation in the National Health Insurance based on the poor and non-poor groups and their experience in developing illnesses that interrupt their daily activities. The number of poor samples was 14,795 people, of which 6,920 individuals (46.77%) in the beneficiary program and 575 individuals (3.89%) in non-beneficiary program. The remaining as many as 7,300 people (49.34%) did not participate in the National Health Insurance. In addition, 2,707 individuals in the poor sample (18.3%) have additional insurance other than national health insurance. The data also show exclusion errors in participation

in non-beneficiary programs, where poor individuals were misclassified as non-beneficiary participants.

Table 1 also provides information on the characteristics of insurance participation in the non-poor samples. The total number of non-poor samples was 145,937 individuals, with 53,011 individuals (36.32%) having the beneficiary membership for their National Health Insurance, while 26,110 individuals (17.89%) had non-beneficiary membership. The rest or 39,957 (43.07%) did not have the National Health Insurance. In addition, 24,606 individuals (16.86%) had additional insurance outside the national health insurance. Further results also indicate misclassifications in non-beneficiary programs. For instance, non-poor individuals were categorized as non-beneficiary program participants instead of beneficiary participants.

The logit analysis model was used to determine the effect of participation in National Health Insurance on unmet healthcare service needs in poor samples. As the initial step, the regression estimation

Table 1. Characteristics of National Health Insurance Participation

Char	Poor Category				Non-poor Category			
	Unmet Needs		Total		Unmet Needs		Total	
	Yes	No			Yes	No		
	Freq	Freq	Freq	%	Freq	Freq	Freq	%
Beneficiary program								
0: No	3,419	4,456	7,875	53.23%	34,370	58,556	92,926	63.68%
1: Yes	2,642	4,278	6,920	46.77%	18,792	34,219	53,011	36.32%
	6,061	8,734	14,795	100.00%	53,162	92,775	145,937	100.00%
Non-beneficiary program								
0: No	5,895	8,325	14,220	96.11%	45,651	74,176	119,827	82.11%
1: Yes	166	409	575	3.89%	7,511	18,599	26,110	17.89%
	6,061	8,734	14,795	100.00%	53,162	92,775	145,937	100.00%
Additional Insurance								
0: No	5,079	7,009	12,088	81.70%	44,657	76,674	121,331	83.14%
1: Yes	982	1,725	2,707	18.30%	8,505	16,101	24,606	16.86%
	6,061	8,734	14,795	100.00%	53,162	92,775	145,937	100.00%

Source: SUSENAS 2018 has been reprocessed

method, that is, ordinary least squares (OLS), was performed. The results of the OLS estimation were compared with the logit estimated results.

Table 2 presents the estimation results for the poor groups. The results show that the coefficient between the OLS method and the marginal effect of the logit method produces values that are relatively similar or not significantly different. The results of the F test on the OLS method show an F value of 0.000 ( $F < 0.005$ ) or significance at 5% alpha. This implies that the independent variables simultaneously affect the dependent variable.

Partial tests were performed to interpret the logit estimation results for each coefficient. The results show that the health insurance ownership coefficient is negative. The coefficient of the marginal effect of beneficiary ownership was -0.0768, indicating 7.68% lower probability of unmet needs for poor individuals with beneficiary membership than for those

without health insurance. The marginal effect coefficient of non-beneficiary program was -0.1449, indicating 14.49% lower probability of unmet needs for poor non-beneficiary participants than poor individuals who did not have health insurance. The coefficient resulting from the OLS method was not significantly different from that of the logit model; the coefficient of the beneficiary program variable was -0.0754, while the coefficient of the non-beneficiary variable was -0.1461.

Logit estimation on the supply-side variables of healthcare services demonstrates negative marginal effect coefficient values with significant directions at the 1%, 5%, and 10%. At a significance level of 1%, the effect of polyclinic availability on reducing unmet healthcare needs was higher than the availability of Puskesmas. This is indicated by the coefficient value of the polyclinic ratio,

Table 2. The Estimation Results for Poor Samples

Variables	OLS		Logit			
	Coef	Std Err	Coef	Std Err	MFx	Std Err
Beneficiary program	-0.0754***	0.0088	-0.3197***	0.0373	-0.0768***	0.0089
Non-beneficiary program	-0.1461***	0.0214	-0.6529***	0.0977	-0.1449***	0.0193
Additional Insurance	-0.1089	0.0811	-0.4864	0.3675	-0.1102	0.0767
Log of Capita	-0.0279	0.0183	-0.1199	0.0779	-0.0289	0.0188
Log of Out-Of-Pocket (OOP) Capita	-0.0015	0.0021	-0.0065	0.0089	-0.0016	0.0022
Ratio of Hospitals	-0.0991**	0.0456	-0.4480**	0.2011	-0.1081**	0.0485
Puskesmas Ratio	-0.0102***	0.0016	-0.0444***	0.0072	-0.0107***	0.0017
Ratio of Polyclinics	-0.0924***	0.0142	-0.4086***	0.0633	-0.0986***	0.0153
Doctor's Independent Clinics Ratio	-0.0112	0.007	-0.0511*	0.031	-0.0123*	0.0075
_Constant	1.0184***	0.2325	2.2365**	0.9922		
Number of Observation	14,795		14,795			
LR chi2			480.86			
Prob > F / chi2	0		0			
R-squared	0.0318					
Adjusted R-squared	0.0298					
Pseudo R2			0.024			

\*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1

The estimation results were controlled for covariates related to population, housing, and asset ownership.



Tabel 3. Estimation Results for Non-Poor Samples

Variabel	OLS		Logit			
	Coef	Std Err	Coef	Std Err	Mfx	Std Err
Beneficiary program	-0.0706***	0.0029	-0.3079***	0.0127	-0.0700***	0.0029
Non-beneficiary program	-0.1037***	0.0038	-0.4733***	0.0174	-0.1037***	0.0036
Additional Insurance	-0.0888***	0.0079	-0.4195***	0.0372	-0.0905***	0.0074
Log of Capita	-0.0140***	0.0027	-0.0653***	0.012	-0.0151***	0.0028
Log of Out-Of-Pocket (OOP) Capita	-0.0129***	0.0006	-0.0567***	0.0027	-0.0131***	0.0006
Ratio of Hospitals	-0.0139	0.0139	-0.0709	0.0624	-0.0164	0.0144
Ratio of Primary Healthcare Centers	0.0026***	0.0006	0.0111***	0.0028	0.0026***	0.0007
Ratio of Polyclinics	0.0054	0.004	0.0234	0.0177	0.0054	0.0041
Doctor's Independent Clinics Ratio	-0.0149***	0.0018	-0.0682	0.0084	-0.0157***	0.0019
_Constant	0.9098***	0.0366	1.8627***	0.163		
Number of Observation	145,937		145,937			
LR chi2			3,896.56			
Prob > F / chi2	0		0			
R-squared	0.0263					
Adjusted R-squared	0.0261					
Pseudo R2			0.0204			

\*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1

The estimation results were controlled for covariates related to population, housing, and asset ownership.

which is -0.0986, which is larger than the puskesmas of -0.0107. Similar results were found for the coefficients of the OLS method. On the other hand, the coefficients of the log capita and log capita OOP variables were negative but not significant.

The second analytical model was the logit analysis model, which determined the effect of participation in the National Health Insurance on unmet health service needs in non-poor groups. The estimation results of the OLS and logit test for the non-poor samples are shown in Table 3. The regression results of the non-poor samples show similar coefficient values between the OLS method and the marginal effect of the logit method. Most coefficients showed significant values at the 1%, 5%, and 10%. The results of the F test using the OLS method produced an F-value of 0.000 ( $F < 0.005$ ) or significance at 5% alpha, indicating that the independent variables simultaneously affect the dependent variable.

Partial tests were performed on each coefficient value to interpret the logit estimation results. The results show that the coefficient of the health insurance ownership is negative and significant. The coefficient of the marginal effect of beneficiary ownership for non-poor individuals was -0.0700, leading to 7% lower probability of unmet needs than non-poor individuals without health insurance. A higher value of the marginal effect coefficient (-0.1037) was found for the non-beneficiary program. This implies that the probability of non-poor individuals with non-beneficiary membership to experience unmet needs was 10.37% lower than non-poor individuals without health insurance. The coefficients of the OLS method were not significantly different from those of the logit model. The OLS estimation showed that the coefficients were -0.0706 for beneficiary membership and -0.1037 for non-beneficiary membership.

The logit estimation of supply side variables from health services shows that

the marginal effect coefficient value from the logit method has various directions. The coefficient of the hospital ratio was negative but not significant, whereas the coefficient of the polyclinic ratio was positive but not significant. In addition, the coefficient of the primary healthcare center ratio shows a positive and significant direction with a value of 0.0026, while that of the doctors' independent clinics ratio was negative and significant, with a value of -0.0157. Similar results were also observed for the coefficients of the OLS method.

Identifying the effect of participation in National Health Insurance on unmet needs for health services can open doors for the government to improve National Health Insurance services. The estimation results indicate that national health insurance membership, both for beneficiary and non-beneficiary groups, generally has an impact on reducing unmet healthcare needs for both poor and non-poor communities. Connolly (2017), Otieno (2021), Basar (2021), and Choi *et al.*, (2020) support this study by stating that the probability of unmet needs for outpatient health services is lower in people with health insurance coverage or free registration for primary health services. In addition, Shrestha (2021) states that health insurance participation can increase the utilization of health services by both the poor and non-poor groups. However, the estimation tests show that the effect of non-beneficiary participation was more elastic in both poor and non-poor groups than beneficiary participation. This result can be interpreted as national health insurance membership being more utilized for outpatient care among non-poor communities than among poor communities. This statement is in line with Detollenaere *et al.*, (2017) who found that certain vulnerable groups face barriers in accessing healthcare services compared with wealthier individuals. Consistent with these findings, Basar (2021) also reported that one of the most common reasons for unmet healthcare needs is affordability of healthcare costs.

The importance of availability of healthcare facilities in meeting the

healthcare needs of the community was also evidenced by this study. The estimation results show that the availability of healthcare facilities generally has an impact on reducing unmet healthcare needs in both poor and non-poor communities. This result is in line with research by Misnaniarti *et al.*, (2017) and Burger and Christian (2020), which states that the supply side of healthcare services is an important factor in facilitating community access to healthcare facilities.

Another issue that the government needs to address immediately is the problem of inclusion and exclusion errors among beneficiaries of the National Health Insurance assistance program. Government Regulation No. 101 of 2012 regarding Recipients of Health Insurance Contribution Assistance explains that the National Health Insurance premium assistance program is only given to the poor. Therefore, to ensure fairness in healthcare utilization by the community, the government needs to take immediate steps to improve the accuracy of targeting beneficiaries of National Health Insurance premium assistance.

## Conclusion

This study determined the effect of participation in National Health Insurance programs on unmet healthcare service needs using SUSENAS and PODES 2018 data. In general, the estimation results show that National Health Insurance participation negatively affects the probability of unmet needs for healthcare services. For the poor groups, beneficiary participation influenced the probability of unmet needs up to 7.7% lower compared to those who did not have health insurance. In addition, non-beneficiary participation by non-poor groups gave 10.4% lower probability of the unmet needs for healthcare services than those without health insurance. The different economic conditions in both sample groups may contribute to a variety of marginal effect coefficient values based on logit estimates. This conclusion is also supported by the coefficients of the log variable per capita

expenditure and the log variable OOP per capita. The results show that an increase in the log variable per capita expenditure and the log variable OOP per capita can significantly reduce the chance of unmet needs, especially in non-poor groups, but not significantly in poor groups.

### Abbreviations

Char: Characteristic; Coef: Coefficient; LR: Logit Regression; MFX: Marginal Effect; OECD: Organization for Economic Co-operation and Development; Std Err: Standard Error; WHO: World Health Organization.

### Declarations

#### Ethics Approval and Consent Participant

This study used secondary data sourced from the Central Statistics Agency/ *Badan Pusat Statistik (BPS)* accessible to the public (SUSENAS)

#### Conflict of Interest

The authors declare that there are no personal interests that can affect performance.

#### Availability of Data and Materials

Research data and materials are available on <http://silastik.bps.go.id/>

#### Authors' Contribution

FAF conceptualized the study, created the methodology, wrote the original draft, and edited the manuscript. IGDKW provided inputs to the manuscript and reviewed the manuscript.

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### References

Başar, D., Dikmen, F.H. and Öztürk, S. (2021) 'The prevalence and determinants of unmet health care needs in Turkey', *Health Policy*,

125(6), pp. 786–792. Available at: <https://doi.org/10.1016/j.healthpol.2021.04.006>.

Boateng, E.Y. and Abaye, D.A. (2019) 'A review of the logistic regression model with emphasis on medical research', (January). Available at: <https://doi.org/10.4236/jdaip.2019.74012>.

Burger, R. and Christian, C. (2020) 'Access to health care in post-apartheid South Africa: availability, affordability, acceptability', *Health Economics, Policy and Law*, 15(1), pp. 43–55. Available at: <https://doi.org/10.1017/S1744133118000300>.

Choi, N.G., Dinitto, D.M. and Choi, B.Y. (2020) 'Unmet healthcare needs and healthcare access gaps among uninsured U.S. adults aged 50–64', *International Journal of Environmental Research and Public Health*, 17(8). Available at: <https://doi.org/10.3390/ijerph17082711>.

Connolly, S. and Wren, M.A. (2017) 'Unmet healthcare needs in Ireland: analysis using the EU-SILC survey', *Health Policy*, 121(4), pp. 434–441. Available at: <https://doi.org/10.1016/j.healthpol.2017.02.009>.

Detollenaere, J. et al. (2017) 'Do we reap what we sow? Exploring the Association between the Strength of European primary healthcare systems and inequity in unmet need', *PLoS ONE*, 12(1), pp. 1–13. Available at: <https://doi.org/10.1371/journal.pone.0169274>.

Fjaer, E.L. et al. (2017) 'Subjective perceptions of unmet need for health care in Europe among social groups: Findings from the European social survey (2014) special module on the social determinants of health', *European Journal of Public Health*,

- 27, pp. 82–89. Available at: <https://doi.org/10.1093/eurpub/ckw219>.
- Grossman, M. (2017) 'On the concept of health capital and the demand for health', *Determinants of Health*, pp. 6–41. Available at: <https://doi.org/10.7312/gros17812-004>.
- Kementerian PPN/ Bappenas (2020) *Metadata Indikator Tujuan Pembangunan Berkelanjutan (TPB)/Sustainable Development Goals (SDGs) Indonesia*. Jakarta. Available at: <https://sdgs.bappenas.go.id/wp-content/uploads/2020/10/Metadata-Pilar-Sosial-Edisi-II.pdf>.
- Kim, Y. *et al.* (2019) 'Poor people and poor health: examining the mediating effect of unmet healthcare needs in Korea', *Journal of Preventive Medicine and Public Health*, 52(1), pp. 51–59. Available at: <https://doi.org/10.3961/jpmph.18.16>.
- Lindström, C., Rosvall, M. and Lindström, M. (2020) 'Unmet health-care needs and mortality: A prospective cohort study from southern Sweden', *Scandinavian Journal of Public Health*, 48(3), pp. 267–274. Available at: <https://doi.org/10.1177/1403494819863530>.
- Misnaniarti, M. *et al.* (2017) 'Availability of facilities and health workers to support universal coverage of national health insurance', *Jurnal Penelitian dan Pengembangan Pelayanan Kesehatan*, 1(1), pp. 6–16. Available at: <https://doi.org/https://doi.org/10.22435/jpppk.v1i1.425>.
- OECD (2019) *Health at a glance 2019*. OECD. Available at: <https://doi.org/10.1787/4dd50c09-en>.
- Otieno, P.O. *et al.* (2021) 'Unmet need for primary healthcare and associated individual and household-level factors in Kenya: results from a national survey', *BMJ Open*, 11(5), pp. 1–6. Available at: <https://doi.org/10.1136/bmjopen-2020-041032>.
- Shrestha, R. (2021) 'Health insurance for the poor, healthcare use and health outcomes in Indonesia', *Bulletin of Indonesian Economic Studies*, 57(1), pp. 85–110. Available at: <https://doi.org/10.1080/00074918.2020.1753655>.
- United Nation (2022) *About the 2030 agenda on sustainable development: OHCHR and the 2030 agenda for sustainable development*. Available at: <https://www.ohchr.org/en/sdgs/about-2030-agenda-sustainable-development> (Accessed: 30 April 2022).
- Wellay, T. *et al.* (2018) 'Demand for healthcare service and associated factors among patients in the community of Tsegedie District, Northern Ethiopia', 18(1), pp. 1–9. Available at: <https://doi.org/https://doi.org/10.1186/s12913-018-3490-2>.
- WHO (2017) *Tracking universal health coverage: 2017 global monitoring report, Tracking Universal Health Coverage: 2017 Global Monitoring Report*. Available at: <https://doi.org/10.1596/978-92-4-151355-5>.

# CHALLENGES AND POLICY SUPPORTS IN INDONESIAN PHARMACEUTICAL RAW MATERIALS INDUSTRY

## Tantangan dan Dukungan Kebijakan Industri Bahan Baku Obat di Indonesia

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### Abstract

**Background:** Indonesian pharmaceutical industry is experiencing many challenges, specifically their raw materials mostly are imported products. Several factors that cause the pharmaceutical raw materials industry to be challenging are lack of mastery of technology, lack of government support, low budget for R&D, high costs of development and time consuming, and low innovation incentives.

**Aims:** The aim of this study is to conduct a study on the strategies for developing the pharmaceutical raw material industry in Indonesia

**Methods:** This study employed a qualitative method, the data triangulation gathered from interviews and discussions with several industries and institutions. The study was conducted for six months in 2022.

**Results:** The policies that require to be implemented in order to make the pharmaceutical raw materials industry thrive are (i) the presence of a clear grand strategy, (ii) determining the priority of pharmaceutical raw materials based on industrial needs, (iii) protecting domestic products, (iv) increasing health spending, (v) strengthening basic chemical product, and (vi) increasing the budget for R&D.

**Conclusion:** Some policies that can be enhanced include providing incentives and policies that favor the local pharmaceutical raw material industry, ranging from regulated prices, put an end to dependence on imported products, tax incentives, domestic products protection through import tariff policies, energy subsidies, technology transfers, et cetera.

**Keywords:** pharmaceutical raw materials, policy, pharmaceutical

### Abstrak

**Latar Belakang:** Industri bahan baku farmasi di Indonesia mengalami banyak permasalahan, terutama ketergantungan terhadap produk impor. Beberapa faktor yang menyebabkan industri bahan baku obat memiliki tantangan tersendiri seperti kurangnya penguasaan teknologi, dukungan pemerintah, anggaran riset rendah, tingginya biaya pengembangan bahan baku, dan insentif untuk inovasi masih rendah.

**Tujuan:** Tujuan dilakukan kajian ini adalah untuk menentukan kebijakan strategi pengembangan industri bahan baku obat Indonesia.

**Metode:** Studi ini menggunakan metode kualitatif, data triangulasi diperoleh dari proses interview dan diskusi dengan beberapa institusi dan industri. Penelitian ini dilakukan selama enam bulan di tahun 2022.

**Hasil:** Kebijakan yang perlu ditingkatkan mulai dari (i) adanya grand strategy yang jelas, (ii) menentukan prioritas bahan baku obat berdasarkan kebutuhan industri, (iii) melindungi produk domestik, (iv) meningkatkan health spending, (v) penguatan industri kimia dasar, dan (vi) meningkatkan anggaran untuk R&D.

**Kesimpulan:** Beberapa kebijakan yang dapat ditingkatkan mulai dari pemberian insentif terhadap industri bahan baku obat mulai dari penetapan harga, berhenti ketergantungan terhadap produk impor, insentif pajak, perlindungan produk domestik melalui kebijakan tarif impor, subsidi energi, transfer teknologi, dll.

**Kata kunci:** bahan baku obat, kebijakan, farmasi



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## Introduction

The COVID-19 pandemic gives us many lessons. Several sectors experienced a decline in their business, but the pharmaceutical industry still survive and has grown significantly (Esparcia and López, 2022; Lim and Rokhim, 2021). Furthermore, Indonesian pharmaceutical sector has experienced rapid growth since the implementation of the Indonesian National Health Insurance (JKN) program in 2014 (Theodore *et al.*, 2022). In 2019, the number of people participating in this program reached 215 million or 83% of the total population. Meanwhile, JKN has gained 86.7% of the total population (Anggriani *et al.*, 2020; Binekasri, 2022). It indicates that the pharmaceutical industry will develop even more rapidly in line with the massive rise of JKN program.

Strategic planning to strengthen the national pharmaceutical industry is needed to improve the resilience of the national drug supply in the JKN program. However, the reality is that the pharmaceutical industry in Indonesia still needs to be more sustainable. The number of industries continues to increase; in 2021, there were 241 pharmaceutical companies (Ministry of Industry Republic of Indonesia, 2021; Ministry of Investment Republic of Indonesia, 2022). Based on National Agency of Drug and Food Control (2022), 86% of pharmaceutical company were concentrated on the finished chemical products, and only 2.9% focused on raw material medicine. Raw material or Active Pharmaceutical Ingredients (API) are primary active ingredients that elicit pharmacological responses. The dependence of the pharmaceutical industry on imported pharmaceutical raw materials reaches 90% (Ministry of Health Republic of Indonesia, 2022; The Jakarta Post, 2022). As such, Indonesia is vulnerable to external disturbances if the government does not obtain a supply of raw materials. As we can see now, Indonesia's pharmaceutical raw material rely heavily on imported products.

Based on previous research by Lim and Rokhim (2021) and Siagian *et al.*

(2020), several factors that cause challenges in the pharmaceutical raw material industry are lack of technology expertise, lack of government support, low budget for R&D, high cost of development and time-consuming in the R&D process, and low innovation incentives. An appropriate development strategy is needed to overcome these problems so the Indonesian pharmaceutical raw material industry can develop or sustain. Although there have been studies on the appropriate drug development policies in Indonesia (Siagian *et al.*, 2020) and the impact of drug pricing in Indonesia (Anggriani *et al.*, 2020), these studies have yet to discuss the strategy for developing pharmaceutical raw materials in Indonesia. From those studies, it needs to map the current situation in Indonesia based on challenge and policy aspects. So, this study aims to map the problems in the pharmaceutical raw material industry and to formulate policy recommendations.

## Method

This study employed a qualitative method. To obtain policy recommendation and information about the current condition of the pharmaceutical industry, interviews and discussions were conducted with several industries and institutions. The study was conducted for four months in 2022-2024. The institutions involved in this study were several related ministries (Ministry of Health, National Agency of Drug and Food Control, Ministry of Industry, Coordinating Ministry for Economic Affairs), Indonesia's state-owned enterprise (PT. Kimia Farma Sungwun Pharmacopia), and experts from the University of Indonesia and Bandung Institute of Technology.

Figure 1 shows the research flowchart. The data triangulation was gathered from discussion and literature study. We invite and discuss with each of the six stakeholders related to the pharmaceutical industry issues to understand the current situation and policy implementation. In regulator, several questions were inquired, such as the current policy to support pharmaceutical raw material industry, pharmaceutical raw

material roadmap, and overview of current challenge. The information from industry are needed to explore their current business, policy needed for industry, and obstacle in their business. The information from college is gathered to give us the perspective from academician in describing the problem based on a public policy approach.

A literature study was carried out to gain information from several countries such as China, Bangladesh, India, and United States (US). We propose these countries because they mostly rely on pharmaceutical sector, high market share of pharmaceutical product, has succeeded in developing pharmaceutical sector, and has increased trend in pharmaceutical sector. These countries can be called the developed hi-tech in pharmaceutical sectors. Bangladesh has made a strong baseline and is moving towards self-sufficiency for pharmaceutical sector. Bangladesh succeeds in manufacturing

API products to become raw materials in medicine. Their pharmaceutical industry is projected to grow 12% annually and surpass USD 6 billion in 2019 – 2025 (Castle, 2022). While China is the highest producer and exporter of more than 1500 API products. The total market size accounts for up to one-third of the global API production (Liu, 2021). Now, China is the second largest pharmaceutical market in the world behind the US (Kanavos *et al.*, 2019). In India, the pharmaceutical industry is expected to grow up to USD 130 billion in 2030. Different from China, India could produce API products at lower cost while maintaining quality (Neshith Desai Associates, 2023). Although the US API products supplied mostly from China and India, the US is widely recognized as a generic medicine producer (Sardella, 2023). As much as 64% of sales of new medicine during 2016-2021 was originated from US (EFPIA, 2022).

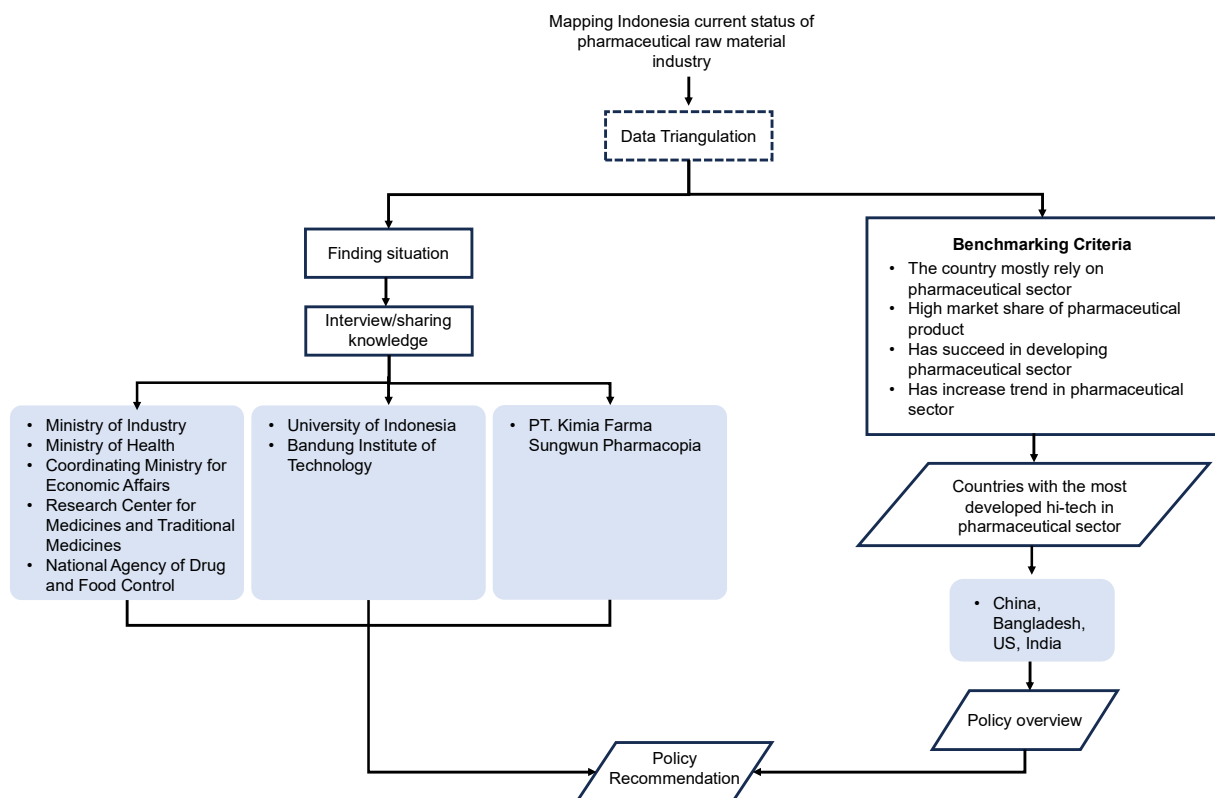


Figure 1. Research flowchart

## Result and Discussion

### Current Status of Indonesian Pharmaceutical Raw Material

Based on the Indonesia National Agency of Drug and Food Control (BPOM), in 2022, 143 pharmaceutical companies already had Good Manufacturing Practice (GMP) certificates. Most of these companies produced medicinal products. Meanwhile, only nine companies produce pharmaceutical raw materials or 3.7% of the total companies. Based on the distribution of industries, several industries are concentrated in western Indonesia (Warsito, 2022). The pharmaceutical raw material industry only exists in Lampung, West Java, and East Java provinces. Most of the pharmaceutical raw materials are supplied from imported products. As of May 2022, imports of auxiliary raw materials, which included chemicals, reached 78% (Ministry of Trade Republic of Indonesia, 2022). The five main pharmaceutical raw materials imported in 2021 reached USD 147,917,018 (IDR 2.1 trillion) (BPS, 2022).

The Ministry of Health reported that the API molecule that has the highest value in Indonesia is clopidogrel, with a total sales value of IDR 4.52 trillion, followed by paracetamol with IDR 4.48 trillion (Ministry of Health Republic of Indonesia, 2022). Further, it is also reported that from the 20 main molecules of drugs, Indonesia can produce only three molecules: clopidogrel, paracetamol, and atorvastatin (Ministry of Health Republic of Indonesia, 2022).

### Current Policy for Supporting Pharmaceutical Raw Material Industry

Through the Ministry of Health, the government continues to encourage the development of drug molecules that are widely used in terms of volume and value. The raw medicinal roadmap made until 2024 includes the development of six drug molecules (candesartan and bisoprolol in 2022, amlodipine and lansoprazole in 2023, and cefixime and ceftriaxone in 2024). The Ministry of Health has several policies to support this; first, developed a mid-term roadmap to determine the main molecules to be developed in the next few years. Second, it is necessary to have a task force

to maintain the R&D ecosystem so that research and development activities can run according to what has been planned on the roadmap. Third, the Ministry of Health also facilitates the transfer of technology change sources to optimize domestic potential.

Other policies protect local industries through Presidential Decree No. 12/2021; the government requires local content on domestic products to be at least 40%. Furthermore, the pharmaceutical raw material industry is regulated through the Minister of Industry No. 16/2020, where the composition of local content for raw materials is 50%, R&D 30%, production processes 15%, and packaging processes 5%. These policies are issued to encourage the growth of the domestic drug raw material industry and will impact the resilience of the Indonesian pharmaceutical industry.

The government also provides incentives for priority sector industries. In Presidential Regulation No. 10/2021, two incentives can be used for priority sectors: fiscal and non-fiscal. In addition, through the Ministry of Finance, the government also issued Minister of Finance Regulation No. 130/2020 regarding tax reduction (Coordinating Ministry for Maritime Affairs and Investment, 2021). Incentives related to COVID-19 are also provided based on the Ministry of Finance Regulation No. 9/2021, where the government bears income tax. Tax reductions can also be made through Ministry of Finance Regulation No. 153/2020, which states that industries that carry out R&D activities could receive a tax deduction of up to 300% of the total cost.

### Lesson Learned from Pharmaceutical Industry Success Story: China, Bangladesh, and India

Table 1 illustrates the differences in policies implemented in China, India, and Bangladesh. India has been successful in developing the local pharmaceutical industry. The Indian government provides a small portion of the budget for health care. Additionally, the Indian government has a role in encouraging the local manufacturing.



Table 1. Best practice policies from several countries to encourage pharmaceutical raw materials industry

Parameters	India	Bangladesh	China	Indonesia
Domestic product protection	<ul style="list-style-type: none"> <li>Implementing price control system.</li> <li>Stop dependence on pharmaceutical raw materials from China.</li> </ul>	<ul style="list-style-type: none"> <li>Implementing a 7.5% export levy (flat rate) for all materials, but a lower rate is applied for pharmaceutical raw materials.</li> <li>Import facilities are subject to a "block list". The block list provides a description of the material.</li> </ul>	Limiting foreign investment with a maximum share ownership of 49%.	Implementing domestic local content policy; 50% for raw materials, 30% for development, 15% for production processes, and 5% for packaging.
Strategy to create pharmaceutical resilience	Focus on the export and domestic markets.	The government provides cash incentives of 10%.	<ul style="list-style-type: none"> <li>Focus on mass-production.</li> <li>Switching from API production to FFPs.</li> </ul>	<ul style="list-style-type: none"> <li>The Ministry of Health has a roadmap of raw materials to be substituted.</li> <li>National Research and Innovation Agency (BRIN) has National Research Master Plan (RIRN) that include pharmaceutical raw materials.</li> <li>The Ministry of Industry creates a national Industrial Master Plan for the pharmaceutical raw material Industry.</li> </ul>
Energy subsidy policy for pharmaceutical raw materials industry	-	-	Energy subsidies to produce cheaper API product.	

Parameters	India	Bangladesh	China	Indonesia
Ease of invest	<ul style="list-style-type: none"> <li>Establishment of special economic zone (SEZs)</li> <li>100% automatic approval for foreign investment.</li> </ul>	<ul style="list-style-type: none"> <li>Bangladesh promotes investment opportunity through Export Processing Zone Authority (BEPZA).</li> <li>Build 100 economic zone.</li> </ul>	<ul style="list-style-type: none"> <li>Developing special economic zone.</li> <li>No import fee for production utilities.</li> </ul>	<ul style="list-style-type: none"> <li>Build industrial estates for integrated pharmaceutical raw materials in Batang.</li> <li>Issuing the law abolishes minimum wage by sector (Omnibus Law)</li> </ul>
Tax incentives to encourage competitiveness	<ul style="list-style-type: none"> <li>Financial cost exemption.</li> <li>Value added tax exemption.</li> <li>100% tax reduction in the first of five year and 50% for the next year.</li> </ul>	<ul style="list-style-type: none"> <li>Tax holiday 5-7%.</li> <li>Refunding value added tax for 10% of finished pharmaceutical formulations product and 20% for API product.</li> </ul>	<ul style="list-style-type: none"> <li>Income tax reduction from 15% to 25%.</li> <li>Income tax reduction up to 50% in special economic zone.</li> </ul>	<p>Provide tax incentives in the form of 100% tax holiday for investments of more than IDR 500 billion (5-20 years) and 50% for investment of IDR 100 – 500 billion (5 years).</p>
Push R&D intensity	<ul style="list-style-type: none"> <li>200% tax deduction from income for R&amp;D.</li> <li>Establishment of API-specific manufacturing clusters</li> </ul>	Technology transfer	<ul style="list-style-type: none"> <li>Increase R&amp;D budget.</li> <li>Tax and import duty exemption incentives for certain materials (15% income tax deduction, 150% "super deduction tax" for R&amp;D).</li> <li>81% of R&amp;D expenditure provided by government and 5.41% from private company.</li> </ul>	<ul style="list-style-type: none"> <li>Super deduction tax for R&amp;D (up to 300%).</li> <li>Joint venture with the company that master the technology of pharmaceutical raw materials (e.g., Kimia Farma Sungwun Pharmacopia).</li> </ul>
References	(Reddy and Gupta, 2013; World Health Organization, 2017)	(Sampath, 2019)	(Atkinson, 2020; Ni <i>et al.</i> , 2017; PWC, 2009; World Health Organization, 2017)	(Coordinating Minister for Maritime Affairs and Investment Republic of Indonesia, 2021; Ministry of Industry Republic of Indonesia, 2021)

India has started the development of the pharmaceutical raw materials industry since 1970. The government mandates the development of API products with schemes of 100% domestic company ownership, foreign investors partially owning the company, and 100% owned by foreign investors (World Health Organization, 2017).

Apart from India, Bangladesh also has an excellent pharmaceutical industry structure. Bangladesh has a similar vision as India; they are not dependent on imported API products. Currently, the Bangladesh drug market is divided into two: generic, with a share of about 92% of the total local production and 8% of patents, Local companies meet 97% of national demand, while imports meet the remaining 3%. Bangladesh has produced 19 API products (Sampath, 2019).

Bangladesh also provides many incentives for domestic pharmaceutical raw material industries, ranging from lower export levies for the pharmaceutical raw material industry, tax breaks, technology transfer, and a "block list" system. Bangladesh has a good development plan for the drug industry. The technology transfer process is carried out properly so the local pharmaceutical industry can develop rapidly. An exciting policy is the application of a "block list" system. In this system, imports of raw materials must go through the approval of the Directorate General of Drug Administration (DGDA) (United Nations, 2012). This system provides information regarding pharmaceutical production plans so that the supply of pharmaceutical raw materials will be recorded and well-known.

China is one of the countries with a rapidly growing pharmaceutical industry (Peña *et al.*, 2021). China has a different strategy from India and Bangladesh. China is a densely populated country, so the strategy to encourage its pharmaceutical industry is to mass-produce low-level generic drugs and API products (Ni *et al.*, 2017). China has 6,807 pharmaceutical companies that produce 2,000 API products with an annual capacity of 2 million tons. China's current strategy is to start shifting from producing API products

to producing finished pharmaceutical products (FFPs). China focuses on FFPs because FFPs have a higher level of profitability (Fang, 2017; World Health Organization, 2017). In addition, China tends to maximize domestic use by limiting pharmaceutical industry investment to a maximum foreign shareholding of 49%.

The pharmaceutical policy in developed countries, such as the US, has a massive concern for the health sector. In 2001, the US experienced an anthrax virus attack, considered as bioterrorism. The US then needed the antibiotic ciprofloxacin more broadly to deal with bioterrorist attacks. The US government provides a 50% discount on antibiotics to enable access to people at a low price. The government can procure and produce drugs at low prices (Kesselheim *et al.*, 2019; Morgan and Sterling, 2019). In 2001, the US spent USD 6 billion in response to bioterrorism attacks, showing the public health system improvement. An excellent public health education program, good clinicians, epidemiological skills, and adequate health infrastructure become the instruments for anticipating outbreaks. Further, they can also minimize casualties and the broader economic impact (Franz, 2009).

### Challenges in Developing Pharmaceutical Raw Material Industry in Indonesia

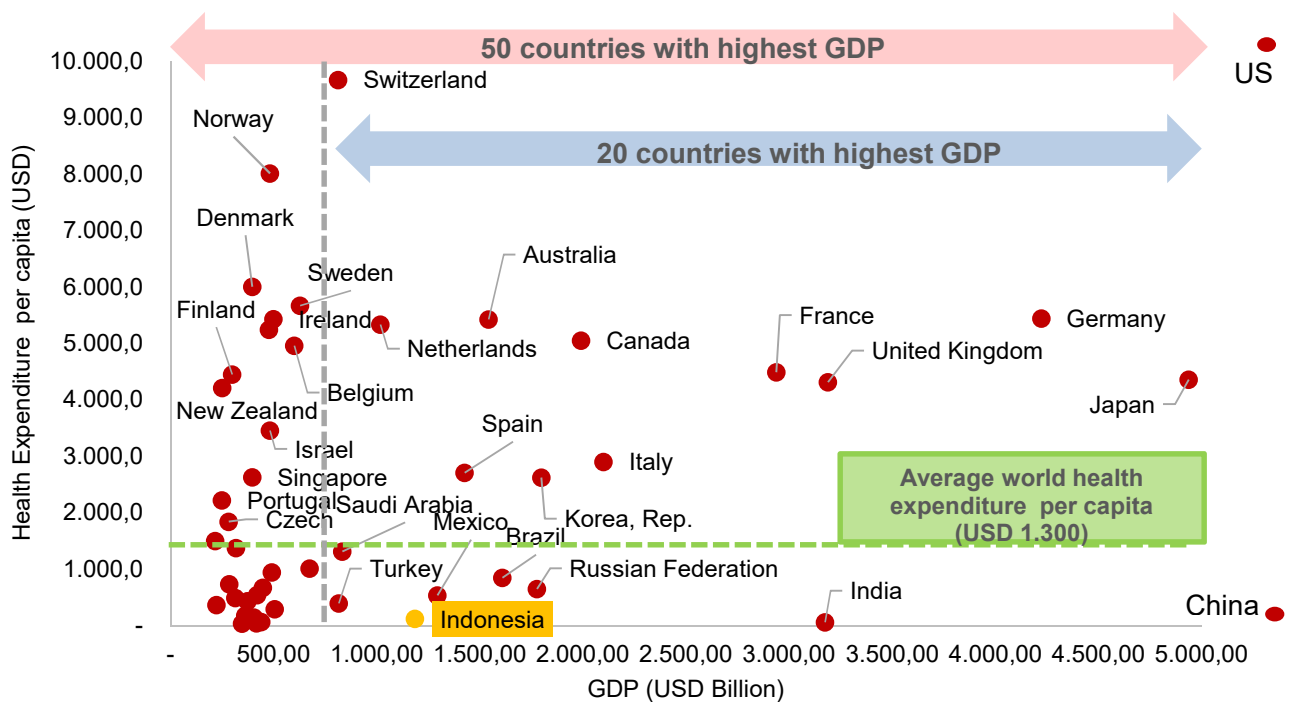
The challenge of the Indonesian pharmaceutical raw material industry is low health expenditure. One indicator related to economic growth is healthcare expenditure (Yang *et al.*, 2021). Based on several studies, healthcare expenditure and economic growth have a relationship (Chaabouni and Saidi, 2017; Raghupathi and Raghupathi, 2020). The increase in healthcare expenditure indicates increased economic growth. Figure 2 shows the plot between health expenditure per capita and GDP. Indonesia is included in the top 20 countries with the largest GDP in the world. However, Indonesia's health expenditure per capita is very low, which is only 3.1% of the total GDP. Indonesia's health expenditure per capita value is still below other ASEAN countries, such as Malaysia

(USD 361), Vietnam (USD 36), Singapore (USD 1,804), and Thailand (USD 111) (Suwantika *et al.*, 2020). Health expenditure is still considered a luxury item, so people tend to be low in spending their income on health needs (Shaikh and Gandjour, 2019).

Another challenge is R&D activities. The financial burden incurred from R&D will not necessarily produce products that can be directly sold to the public. This event is often interpreted as a "valley of death", where it takes a high cost to develop drug molecules with a development period of 15-20 years and a failure rate of up to 95% (Gamo *et al.*, 2017; Scherer, 2014). Industries with a low market share will undoubtedly find it difficult to carry out the R&D process with high-cost requirements and the uncertainty of the developed product. Due to the high cost and uncertainty, pharmaceutical companies in countries such as India tend to develop and manufacture drug molecules that have been proven to be mass-produced and sold. However, the pharmaceutical industry relies heavily on innovation to produce high-value new molecular entities (NMEs)

(Schuhmacher *et al.*, 2021). The R&D budget is an important element for developing the pharmaceutical raw material in terms of competitiveness, technology, efficiency, new products, and services (Rahman and Howlader, 2022). The pharmaceutical sector relies heavily on innovations to produce new molecules (Schuhmacher *et al.*, 2021). The established companies will allocate around 40-50% of their revenue on R&D activities (Rahman and Howlader, 2022). In Indonesia, one of the state-owned companies with a large pharmaceutical market share, PT. Kimia Farma, issued a budget of USD 2 million or 0.2% of total sales in 2021 for R&D (Ayubi, 2022; Kimia Farma, 2021).

Prices of local products tend to be less competitive compared to imported products. On the other hand, the price gap of imported pharmaceutical raw materials varies widely. For example, clopidogrel's lowest price is USD 150 per kg, while the highest is USD 1,392 per kg. The price of local clopidogrel is around USD 210 per kg,



Source: World Bank (2022)

Figure 2. Mapping of health expenditure in 50 countries with highest GDP– reprocessed data

but the price of imported clopidogrel is still lower than local products (Ministry of Industry Republic of Indonesia, 2022). Similarly, amoxicillin made in a small laboratory plant in Indonesia has an estimated price of USD 30-50, which is higher than amoxicillin imported from India and China with a price of USD 20 (Agency for the Assessment and Application of Technology, 2020).

## Discussion and Policy Support

Based on interviewing experts and benchmarking several countries such as India, Bangladesh, and China, there are several important lessons learned in formulating recommendations for developing the pharmaceutical raw material industry in Indonesia, which are as follows:

### Indonesia still needs to have a clear and integrated grand strategy for developing pharmaceutical raw material

The appropriate policy framework still needs to be formulated based on Table 1. It is obvious that several Ministries or agencies organizing the implementation of policies in Indonesia often have different policy philosophies, occasionally reflecting their individual sectoral egos. According to Nugroho (2015), policymaking does not only look at the problems faced, but it is also necessary to determine the expected ideal conditions as a milestone in describing the policy planning that will be pursued (Nugroho, 2015). Handing over to the market to produce pharmaceutical raw materials is impossible because it is less profitable for the private sector. In this situation, the government has to take a major role in fixing the market and giving direction to the stakeholders (Mazzucato, 2017).

### The research goals for pharmaceutical raw materials should be aligned with the national demand

To achieve national resilience in health care, the government must ensure the availability of pharmaceutical raw materials at all times. Priority is an essential

factor that should be stated. This priority is a part of the consensus as previously stated. As we learn from Bangladesh, in 1982, they had 150 essential drugs, but in 2016 there were 285 drugs became the priority (Murshid and Haque, 2019).

At this time, Indonesia has ten drug priorities based on the highest value in the local economy. This should be compared with the technology availability and the basic chemical that already produced in Indonesia by local industry. This priority will keep our strategy on track. After formulating priority drug molecules, further research must be in line with the priority of developing these molecules. It must be clear, understood, and approved by all stakeholders.

### Market protection of local drug prices

Market protection is the main strategy used to maintain the viability of indigenous enterprises, as we can learn from India and Bangladesh. According to Ederington and McCalman (2011) and Melitz (2005), protecting the infant industry from foreign products is vital to close the technology gap with such items. The imposition of import taxes and quotas, along with production subsidies, can provide protection. However, this support is only temporary because the infant industry will eventually mature. As a result, it is exceedingly challenging for the infant industry to compete with established rivals. According to the learning curve principle, in this instance, the unit cost will fall as output rises (Qiu *et al.*, 2019).

Policies such as price control, tax incentives, import duties, etc., should be implemented. As the country with the world's largest economy, The US also applies a policy of protecting local products. In 2018, the US imposed an import tariff of 12%. This policy aimed to preserve the intermediate products of local traders (Barattieri and Caccioto, 2023). Consequently, the import tariffs in the US could reduce imported products, especially those imported from China, and increase exports to non-Chinese countries (Cheng *et al.*, 2021).

The current approach of the government entails the implementation of a

local content policy for pharmaceutical products as a means to protect the market for indigenous pharmaceutical raw material. In accordance with the Ministry of Health's 2020-2024 Action Plan, it is projected that by the year 2024, the local content of the top 10 medicines listed in the National Formulary (FORMAS) will surpass the threshold of 50% (Ministry of Health Republic of Indonesia, 2020). In pricing mechanism, the government use e-catalogues which is facilitated by the National Public Procurement Agency, wherein the necessary pharmaceuticals are subjected to auctions and negotiations to secure the most favorable rates (Winda, 2018).

### **Increase health expenditure to boost up local market industry**

The low health expenditure in Indonesia is the main issue that causes typically low common market share in Indonesia. The large population of Indonesia makes the increase in health expenditure an important variable in increasing the local market. The growth of pharmaceutical market will help reducing the marginal costs, which will impact strengthening competitiveness. Health expenditure is a crucial factor; higher health expenditure will boost economic performance by increasing human capital productivity (Raghupathi and Raghupathi, 2020). Increased health expenditure can be done through public education, improving health insurance performance, and so on.

One of the contributing factors to the limited allocation of funds towards healthcare is the presence of low income levels (Raghupathi, 2020). According to a study conducted by (Ke *et al.*, 2011), there is a positive correlation between the utilization of health insurance mechanisms and the levels of health expenditure in various nations, as indicated by the research conducted by the World Health Organization (WHO). Hence, enhancing the efficacy of Indonesia Social Health Insurance (BPJS) services holds significant importance in promoting individuals' inclination towards seeking medical treatment when afflicted with illness.

### **Strengthening basic chemical industry**

The basic chemical industry is a part of the upstream sector of the pharmaceutical industry. For example, petrochemical products, benzene and propylene, are processed into para-aminophenol (PAF) as a raw material for pharmaceutical products such as paracetamol. Currently the government through Ministry of Industrial is developing Medicine Industrial Area in Batang. This action will accelerate the industry because the area will also integrate among pharmaceutical supply chain. Another action is a paracetamol factory with a 3,800-ton annual capacity was built in partnership between Kimia Farma and Pertamina. The existing local content policy is deemed suitable for fostering growth in the pharmaceutical raw material business. However, it is important to note that the absence of incentives may hinder the industry's progress and expansion. Policy support was also issued by Ministry of Finance, tax holiday and allowance provided to help industry growth. Another policy needs such us ease of licensing, certificate issuance, and support finished good development. The incentive policy will enhance the economic viability of pharmaceutical raw material manufacturing facilities.

### **Increase R&D budget allocation**

The intensity of pharmaceutical R&D, especially for pharmaceutical raw materials, must be increased. In addition, the budget for R&D also needs to be improved. Countries with leading industries in R&D activities (pharmaceutical, engineering, and biotech) tend to be more intense in carrying out R&D. In contrast, countries with industries that mostly depend on natural resources, tourism, finance, and transportation tend to have lower R&D activities (Sandra, 2021). The industrial structure in Indonesia is characterized by a relatively low-intensity R&D activity. The solution to this issue should be found in the mid-term plan

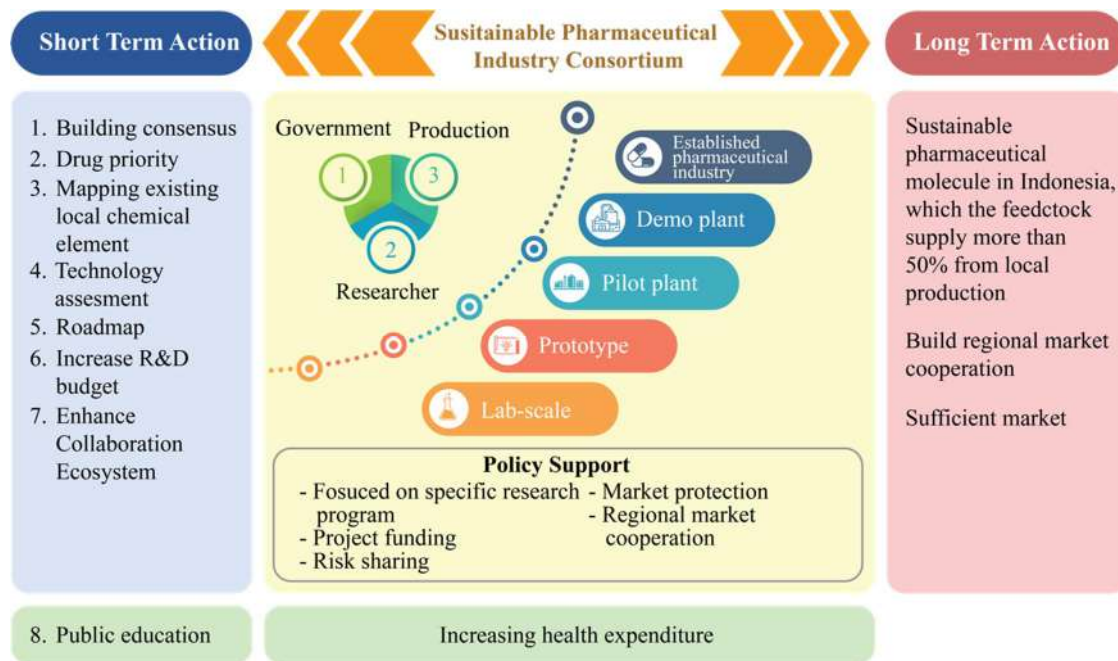


Figure 3. Summary policy recommendations that can be taken as an effort to grow the domestic drug raw material industry (author's concept)

(Figure 3). The mid-term strategy could be a form of improving research collaboration between institutions. By improving R&D intensities, firm innovation will emerge. One indicator that a company is considered to be innovative is if the ratio between R&D spending and revenue is above 3% (Park *et al.*, 2021).

## Conclusion

The pharmaceutical industry has a vital role in supporting the Indonesian economy. To support the current policy, there are several barriers that need to be addressed, starting from Indonesia's low health expenditure, low budget allocation for R&D activities, and price competition against imported pharmaceutical raw material products. Based on benchmarks from several countries that have been at the forefront in developing their pharmaceutical raw material industries, such as India, Bangladesh, and China, of course, providing many incentives and policies favor the local drug raw material companies, ranging from regulated prices, stopping dependence on imported

products, tax incentives, domestic protection products through import tariff policies, energy subsidies, to technology transfers. Several policies carried out by the government to encourage the national pharmaceutical raw material industry are the synchronization between the government and stakeholders that have an interest in the pharmaceutical raw material industry, determining pharmaceutical raw material research priorities following industry needs, protecting the local market, increasing health expenditure, strengthening basic chemical industry, and increasing the budget for R&D.

## Abbreviation

GDP: Gross Domestic Product; RIPIN: National Industrial Development Master Plan; JKN: Jaminan Kesehatan Nasional; GMP: Good Manufacturing Practice; API: Active Pharmaceutical Ingredients; DGDA: Directorate General of Drug Administration; FFPs: finished pharmaceutical products; PAF: para-aminophenol; NMEs: new molecular entities.

## Declaration

### Ethics Approval and Consent Participant

This study has been approved by the National Research and Innovation Agency (BRIN). This research does not display data that is confidential. Most of the data obtained is general information and is contained in the literature.

### Conflict of Interest

The authors state that there were no substantial conflicting financial, professional, or personal interests that could have influenced the performance

### Availability of Data and Materials

The data used to support the findings of this study are included within the article.

### Authors' Contribution

EH conceptualized, analyzed and wrote the study, EDS and NAH analyzed the result, AA and DH reviewed the manuscript, SZ collected the data, AW review policy recommendation, and HAR review country benchmarking and wrote the study.

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## References

Agency for the Assessment and Application of Technology (2020) *Health Technology Outlook 2020*. Jakarta-Indonesia.

Anggriani, Y. *et al.* (2020) 'The Impact of Pharmaceutical Policies on Medicine Procurement Pricing in Indonesia Under the Implementation of Indonesia's Social Health Insurance System', *Value in Health Regional Issues*, 21, pp. 1–8. Available at: <https://doi.org/10.1016/j.vhri.2019.05.005>.

Atkinson, R.D. (2020) *The Impact of China's Policies on Global*

*Biopharmaceutical Industry Innovation*. Information Technology & Innovation Foundation. Available at: <https://itif.org/publications/2020/09/08/impact-chinas-policies-global-biopharmaceutical-industry-innovation/> (Accessed: 5 November 2023).

Ayubi, S. (2022) 'The Role of SOE Healthcare Holding Company in Indonesia Healthcare Ecosystem'.

Barattieri, A. and Cacciatore, M. (2023) 'Self-Harming Trade Policy? Protectionism and Production Networks', *American Economic Journal: Macroeconomics*, 15(2), pp. 97–128. Available at: <https://doi.org/10.1257/mac.20190445>.

Binekasri, R. (2022) '86,7% of Indonesian Population has Already join JKN Program'. Available at: <https://www.cnbcindonesia.com/market/20220630130849-17-351778/867-penduduk-ri-sudah-jadi-peserta-jkn> (Accessed: 9 May 2022).

BPS (2022) *Indonesian GDP 2021*. Badan Pusat Statistik. Available at: <https://www.bps.go.id/indicator/11/106/2/-seri-2010-distribusi-pdb-triwulanan-seri-2010-atas-dasar-harga-berlaku.html> (Accessed: 9 May 2022).

Castle, L. (2022) 'Active Pharmaceutical Ingredient (API) Manufacturing: The Next Growth Driver of The Bangladesh Pharmaceutical Industry'. Available at: <https://www.lightcastlebd.com/insights/2021/08/active-pharmaceutical-ingredient-api-manufacturing-the-next-growth-driver-of-the-bangladesh-pharmaceutical-industry/> (Accessed: 8 October 2022).

Chaabouni, S. and Saidi, K. (2017) 'The dynamic links between carbon dioxide (CO<sub>2</sub>) emissions, health spending and GDP growth: A case study for 51 countries', *Environmental Research*, 158, pp. 137–144. Available at: <https://doi.org/10.1016/j.envres.2017.05.041>.



- Cheng, L. *et al.* (2021) 'Destruction and Deflection: Evidence from American Antidumping Actions against China', *Structural Change and Economic Dynamics*, 57, pp. 203–213. Available at: <https://doi.org/10.1016/j.strueco.2021.03.009>.
- Coordinating Minister for Maritime Affairs and Investment (2021) 'Investment Policy and Development of Integrated Industrial Estates for Pharmaceutical Industry'. Bali.
- Ederington, J. and McCalman, P. (2011) 'Infant industry protection and industrial dynamics', *Journal of International Economics*, 84(1), pp. 37–47. Available at: <https://doi.org/10.1016/j.jinteco.2011.01.002>.
- EFPIA (2022) *The Pharmaceutical Industry in Figures*. Belgium: The European Federation of Pharmaceutical Industries and Associations.
- Esparcia, C. and López, R. (2022) 'Outperformance of the pharmaceutical sector during the COVID-19 pandemic: Global time-varying screening rule development', *Information Sciences*, 609, pp. 1181–1203. Available at: <https://doi.org/10.1016/j.ins.2022.07.146>.
- Fang, Y. (2017) 'Pharmaceutical Policy in China', in Z.-U.-D. Babar (ed.) *Pharmaceutical Policy in Countries with Developing Healthcare Systems*. Cham: Springer International Publishing, pp. 169–191. Available at: [https://doi.org/10.1007/978-3-319-51673-8\\_9](https://doi.org/10.1007/978-3-319-51673-8_9).
- Franz, D.R. (2009) 'Preparedness for an anthrax attack', *Molecular Aspects of Medicine*, 30(6), pp. 503–510. Available at: <https://doi.org/10.1016/j.mam.2009.07.002>.
- Gamo, N.J. *et al.* (2017) 'Valley of death: A proposal to build a "translational bridge" for the next generation', *Neuroscience Research*, 115, pp. 1–4. Available at: <https://doi.org/10.1016/j.neures.2016.11.003>.
- Kanavos, P., Mills, M. and Zhang, A. (2019) *Pharmaceutical policy in China* [PDF]. LSE Consulting. Available at: <https://doi.org/10.21953/LSE.FG2T522B8R1X>.
- Ke, X., Saksena, P. and Holly, A. (2011) *The Determinants of Health Expenditure: A Country-Level Panel Data Analysis*. World Health Organization, p. 4. Available at: [https://www.r4d.org/wp-content/uploads/TransitionsInHealthFinancing\\_DeterminantsofExpenditures.pdf](https://www.r4d.org/wp-content/uploads/TransitionsInHealthFinancing_DeterminantsofExpenditures.pdf).
- Kesselheim, A.S. *et al.* (2019) 'Pharmaceutical Policy in the United States in 2019: An Overview of the Landscape and a Venues for Improvement', in *Stanford Law & Policy Review*. England: University of Stanford, pp. 421–481.
- Kimia Farma (2021) *Annual Report: Kimia Farma to The Next level for Global Healthcare Company*. Jakarta: PT. Kimia Farma, Tbk. Available at: [https://www.kimiafarma.co.id/files/Lap\\_Tahunan/Laporan\\_Tahunan-2021.pdf](https://www.kimiafarma.co.id/files/Lap_Tahunan/Laporan_Tahunan-2021.pdf).
- Lim, H. and Rokhim, R. (2021) 'Factors affecting profitability of pharmaceutical company: an Indonesian evidence', *Journal of Economic Studies*, 48(5), pp. 981–995. Available at: <https://doi.org/10.1108/JES-01-2020-0021>.
- Liu, H. (2021) 'The Impact of the Coronavirus on Chinese Pharmaceutical Industry', in *6th International Conference on Financial Innovation and Economic Development (ICFIED 2021)*, Sanya, China. Available at: <https://doi.org/10.2991/aebmr.k.210319.010>.
- Mazzucato, M. (2018) 'Mission-oriented innovation policies: challenges and opportunities', *Industrial and Corporate Change*, 27(5), pp. 803–815. Available at: <https://doi.org/10.1093/icc/dty034>.
- Melitz, M.J. (2005) 'When and how should infant industries be protected?', *Journal of International Economics*, 66(1), pp. 177–196. Available at:

- <https://doi.org/10.1016/j.jinteco.2004.07.001>.
- Ministry of Health Republic of Indonesia (2022) 'Indonesia Pharmaceutical Policy'. Jakarta, Indonesia.
- Ministry of Health Republic of Indonesia, M. of (2020) *Action Plan Directorate of Pharmaceutical Production and Distribution 2020-2024*. Jakarta.
- Ministry of Industry Republic of Indonesia (2021) 'Increasing the use of domestic products through the Domestic Content policy'. Bali.
- Ministry of Investment Republic of Indonesia (2022) 'Promising Potential in Indonesia's Pharmaceutical and Health Industry'. Available at: <https://www.bkpm.go.id/id/publikasi/detail/berita/potensi-menjanjikan-di-industri-farmasi-dan-kesehatan-indonesia#:~:text=Menurut%20data%20dari%20Kementerian%20Kesehatan,18%20industri%20ekstraksi%20produk%20alami.&text=menjadi%20891%20perusahaan>. (Accessed: 9 May 2022).
- Ministry of Trade Republic of Indonesia (2022) 'Indonesia Trade Balance May 2022'. Available at: <https://www.kemendag.go.id/id/newsroom/press-release/mendag-zulhasneraca-perdagangan-indonesia-mei-2022-surplus-usd-2-9-miliar-1> (Accessed: 9 June 2022).
- Morgan, J.M. and Sterling, S. (2019) *Lowering Drug Prices: A Blueprint for Reform*. The Great Democracy Initiative. Available at: [https://rooseveltinstitute.org/wp-content/uploads/2021/08/GDI\\_Lowering-Drug-Prices-Blueprint\\_201911.pdf](https://rooseveltinstitute.org/wp-content/uploads/2021/08/GDI_Lowering-Drug-Prices-Blueprint_201911.pdf).
- Murshid, M.E. and Haque, M. (2019) 'Bangladesh National Drug Policy 1982-2016 and Recommendations in Policy Aspects', *Eurasian Journal of Emergency Medicine*, 18(2), pp. 104–109. Available at: <https://doi.org/10.4274/eajem.galenos.2019.43765>.
- National Agency of Drug and Food Control (2022) 'Pharmaceutical Industry data In Indonesia That already had GMP Certificate'. Available at: <https://www.pom.go.id/new/view/direct/industri-farmasi> (Accessed: 9 June 2022).
- Neshith Desai Associates (2023) *The Indian Pharmaceutical Industry: Regulatory, Legal and Tax Overview*. India: Neshith Desai Associates, p. 3. Available at: [https://www.nishithdesai.com/fileadmin/user\\_upload/pdfs/Research\\_Papers/The-Indian-Pharmaceutical-Industry.pdf](https://www.nishithdesai.com/fileadmin/user_upload/pdfs/Research_Papers/The-Indian-Pharmaceutical-Industry.pdf).
- Ni, J. *et al.* (2017) 'Obstacles and opportunities in Chinese pharmaceutical innovation', *Globalization and Health*, 13(1), p. 21. Available at: <https://doi.org/10.1186/s12992-017-0244-6>.
- Nugroho, R. (2015) *Policy Making: Mengubah Negara Biasa Menjadi Negara Berprestasi*. Elex Media Komputindo. Available at: [//10.103.0.43:80%2Findex.php%3Fp%3Dshow\\_detail%26id%3D520%26keywords%3D](http://10.103.0.43:80%2Findex.php%3Fp%3Dshow_detail%26id%3D520%26keywords%3D) (Accessed: 6 November 2023).
- Park, H. *et al.* (2021) 'A Study on the Impact of R&D Intensity on Business Performance: Evidence from South Korea', *Journal of Open Innovation: Technology, Market, and Complexity*, 7(2), p. 135. Available at: <https://doi.org/10.3390/joitmc7020135>.
- Peña, O.I.G., Zavala, M.Á.L. and Ruelas, H.C. (2021) 'Pharmaceuticals Market, Consumption Trends and Disease Incidence Are Not Driving the Pharmaceutical Research on Water and Wastewater', *International Journal of Environmental Research and Public Health*, 18(5), p. 2532. Available at: <https://doi.org/10.3390/ijerph18052532>.
- PWC (2009) *Investing in China's Pharmaceutical Industry*. 2nd edn. PricewaterhouseCoopers. Available at: [https://www.pwc.com/gx/en/pharmalife-sciences/assets/en-pharma\\_03-26-small.pdf](https://www.pwc.com/gx/en/pharmalife-sciences/assets/en-pharma_03-26-small.pdf).

- Qiu, L.D., Zhan, C. and Wei, X. (2019) 'An analysis of the China–US trade war through the lens of the trade literature', *Economic and Political Studies*, 7(2), pp. 148–168. Available at: <https://doi.org/10.1080/20954816.2019.1595329>.
- Raghupathi, V. and Raghupathi, W. (2020) 'Healthcare Expenditure and Economic Performance: Insights From the United States Data', *Frontiers in Public Health*, 8, p. 156. Available at: <https://doi.org/10.3389/fpubh.2020.0156>.
- Rahman, Md.M. and Howlader, Md.S. (2022) 'The impact of research and development expenditure on firm performance and firm value: evidence from a South Asian emerging economy', *Journal of Applied Accounting Research*, 23(4), pp. 825–845. Available at: <https://doi.org/10.1108/JAAR-07-2021-0196>.
- Reddy, C.D. and Gupta, N.V. (2013) 'Overview on Contract Research and Manufacturing Services (CRAMs) and Its Present Status in India', *Asian Journal of Pharmaceutical and Clinical Research*, 6(2). Available at: <https://innovareacademics.in/journal/ajpcr/Vol6Suppl2/1781.pdf>.
- Sampath, P.G. (2019) *Pharmaceutical Manufacturing in Bangladesh – A Success Story. What can we learn?* 1. Federation of East African Pharmaceutical Manufacturers (FEAPM), p. 21. Available at: [https://strapi.eacgermany.org/uploads/5fda30fc68f07136175100\\_44e851ba12.pdf](https://strapi.eacgermany.org/uploads/5fda30fc68f07136175100_44e851ba12.pdf).
- Sandra, P.S. (2021) *R&D intensity as a policy target: main takeaways from 11 international case studies*. OECD, p. 36. Available at: <http://www.oecd.org/termsandconditions>.
- Sardella, A. (2023) *US Generic Pharmaceutical Industry Economic Instability*. US: Center for Analytics and Business Insights & Adjunct Lecturer, Olin Business School Washington University in St. Louis, p. 3.
- Scherer, F.M. (2014) 'Research and Development Costs and Productivity in Biopharmaceuticals', in *Encyclopedia of Health Economics*. Elsevier, pp. 249–255. Available at: <https://doi.org/10.1016/B978-0-12-375678-7.01203-7>.
- Schuhmacher, A. et al. (2021) 'R&D efficiency of leading pharmaceutical companies – A 20-year analysis', *Drug Discovery Today*, 26(8), pp. 1784–1789. Available at: <https://doi.org/10.1016/j.drudis.2021.05.005>.
- Shaikh, M. and Gandjour, A. (2019) 'Pharmaceutical expenditure and gross domestic product: Evidence of simultaneous effects using a two-step instrumental variables strategy', *Health Economics*, 28(1), pp. 101–122. Available at: <https://doi.org/10.1002/hec.3832>.
- Siagian, R.C. et al. (2020) 'A policy-making strategy to forecast outcomes of drug development in Indonesia', *International Journal of Health Governance*, 25(2), pp. 137–149. Available at: <https://doi.org/10.1108/IJHG-12-2019-0083>.
- Suwantika, A.A. et al. (2020) 'Cost-Effectiveness Analysis of Spending on Research and Development to Address the Needs for Innovative Therapeutic Products in Indonesia', *Therapeutics and Clinical Risk Management*, Volume 16, pp. 969–977. Available at: <https://doi.org/10.2147/TCRM.S260377>.
- The Jakarta Post (2018) 'Pharma companies still dependent on imported APIs, says ministry', *The Jakarta Post*. Available at: <https://www.thejakartapost.com/news/2018/10/18/pharma-companies-still-dependent-on-imported-apis-says-ministry.html>.
- Theodore, W. et al. (2022) 'The effects of task environment and organizational agility on perceived managerial discretion and strategy

- implementation in a pharmaceutical company', *International Journal of Pharmaceutical and Healthcare Marketing*, 16(2), pp. 204–221. Available at: <https://doi.org/10.1108/IJPHM-11-2021-0116>.
- United Nations (2012) *Local production of pharmaceuticals and related technology transfer in developing countries: a series de case studies*. New York and Geneva: United Nations.
- Warsito, I. (2022) 'Readiness of Upstream and Downstream Industries in Supporting Independence of Pharmaceutical and Medical Devices'.
- Winda, S. (2018) 'Formularium Nasional (FORNAS) dan e-Catalogue Obat Sebagai Upaya Pencegahan Korupsi dalam Tata Kelola Obat Jaminan Kesehatan Nasional (JKN)', *Integritas*, 4(2), pp. 177–207.
- World Bank (2022) 'Current Health Expenditure per Capita'. Available at: <https://data.worldbank.org/indicator/SH.XPD.CHEX.PC.CD?end=2021&start=2021&view=bar> (Accessed: 9 August 2022).
- World Health Organization (2017) *Indian policies to promote local production of pharmaceutical products and protect public health*. Geneva: World Health Organization. Available at: <https://apps.who.int/iris/handle/10665/336750> (Accessed: 19 September 2022).
- Yang, B., Usman, M. and jahanger, A. (2021) 'Do industrialization, economic growth and globalization processes influence the ecological footprint and healthcare expenditures? Fresh insights based on the STIRPAT model for countries with the highest healthcare expenditures', *Sustainable Production and Consumption*, 28, pp. 893–910. Available at: <https://doi.org/10.1016/j.spc.2021.07.020>.

# DIFFERENCES IN PARENTS' READINESS TO ACCEPT CHILDREN'S COVID-19 VACCINATION IN PATI REGENCY

## Perbedaan Kesiapan Orang Tua Terkait Vaksinasi COVID-19 Untuk Anak di Kabupaten Pati

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### Abstract

**Background:** The coverage of COVID-19 vaccination for children in Pati Regency was still low at 37% in February 2022 compared to the 75% target. Some preliminary studies in Kudus showed that parents who received socialization about children's COVID-19 vaccination experienced concerns affecting their responses negatively to the program.

**Aims:** This study aims to analyze differences in parental acceptance of the COVID-19 vaccination for children in Pati Regency.

**Methods:** This study was quantitative research with a cross-sectional approach. The variables consisted of 7Cs components (Confidence, Complacency, Constraints, Calculation, Collective Responsibility, Compliance, Conspiracy) and acceptance of COVID-19 vaccination. The total sample of respondents was 372 parents divided into two independent groups obtained by cluster and proportional sampling. Data were collected using a questionnaire via Google Forms and analyzed using the Mann-Whitney test.

**Results:** The results showed differences in parental acceptance of COVID-19 vaccination (sig = 0.006) regarding constraints (sig = 0.000), collective responsibility (sig = 0.012), compliance (sig = 0.012), confidence (sig = 0.019), complacency (sig = 0.020), calculation (sig = 0.027), and conspiracy (sig = 0.037).

**Conclusion:** Some differences were found between parents whose children received the vaccine and those whose children did not receive the COVID-19 vaccine. Parents whose children received the COVID-19 vaccine were likely to have a good perception of the COVID-19 vaccination. Meanwhile, parents whose children did not get vaccinated were likely to have a bad perception. Educational and consulting services possibly increase vaccination coverage.

**Keywords:** COVID-19 vaccination for children; different acceptance; 7Cs components

### Abstrak

**Latar Belakang:** Cakupan vaksinasi COVID-19 untuk anak di Pati masih tergolong rendah yakni 37% pada Februari 2022 dibandingkan dengan target sebesar 75%. Penelitian terdahulu di Kudus menunjukkan bahwa orang tua yang telah menerima sosialisasi mengenai vaksinasi COVID-19 pada anak mengalami kekhawatiran yang berpengaruh secara negative pada respon mereka terhadap program.

**Tujuan:** Penelitian ini bertujuan untuk menganalisis perbedaan penerimaan orang tua terhadap vaksinasi COVID-19 pada anak di Kabupaten Pati.

**Metode:** Studi ini merupakan penelitian kuantitatif dengan pendekatan potong lintang. Variabel penelitiannya terdiri atas komponen 7Cs (Confidence, Complacency, Constraints, Calculation, Collective Responsibility, Compliance, Conspiracy) dan penerimaan vaksinasi COVID-19. Total sampel berjumlah 372 orang tua yang dibagi menjadi dua kelompok independent dan diperoleh melalui sampling kluster acak dan sampling proporsional. Data dikumpulkan menggunakan kuisioner melalui Google Form dan dianalisis menggunakan uji beda Mann Whitney.

**Hasil:** Hasil dari penelitian menunjukkan terdapat perbedaan penerimaan vaksinasi COVID-19 (sig = 0,006) pada variabel hambatan (sig = 0,001), tanggung jawab kelompok (sig = 0,012), kepatuhan (sig = 0,012), kepercayaan (sig = 0,019), kepuasan (sig = 0,020), perhitungan (sig = 0,027), dan konspirasi (sig = 0,037).

**Kesimpulan:** Beberapa perbedaan ditemukan antara kelompok orang tua yang anaknya telah mendapatkan vaksin dan pada kelompok orang tua yang anaknya belum mendapatkan vaksin COVID-19. Orang tua yang anaknya telah mendapatkan vaksin cenderung memiliki persepsi yang baik terkait vaksinasi COVID-19. Sedangkan, orangtua yang anaknya belum menerima vaksin cenderung memiliki persepsi yang buruk. Upaya edukasi dan optimalisasi layanan konsultasi diperlukan untuk meningkatkan cakupan vaksinasi.

**Kata kunci:** komponen 7C, perbedaan penerimaan, Vaksinasi COVID-19 untuk anak



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## Introduction

Coronavirus Disease 2019 (COVID-19) is a new variant of severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2) (Rothan and Byrareddy, 2020). The rapid transmission results in a fluctuating increase in cases in various countries, including Indonesia. Since COVID-19 was first announced on March 2, 2021, COVID-19 cases have continued to increase and spread rapidly in various regions of Indonesia.

The Indonesian Government responded to the significant increase by issuing Presidential Decree Number 12 of 2020 concerning the Determination of Non-Natural Disasters of the Spread of COVID-19 as a National Disaster. Due to massive COVID-19 cases, the Government followed up by issuing the COVID-19 vaccination policy. The policy aims to prevent and overcome the transmission of COVID-19 through vaccinations. The COVID-19 vaccination policy in Indonesia is carried out in stages for health workers, public service workers, the elderly, the public, and children aged 6-11 years (Sutari *et al.*, 2022). In the school context, schools with teaching staff who received the COVID-19 vaccination could carry out direct face-to-face learning for the 2021/2022 academic year as stated in Joint Decree of the Minister of Education and Culture, Minister of Religion, Minister of Health, and Minister of Home Affairs regarding Guidelines for Organizing Learning during the COVID-19 Pandemic. The implementation of direct learning was determined based on the zonation of COVID-19 vaccination coverage and the vaccination status of teaching staff in each district. The zoning level is based on the implementation of Community Activities Restrictions Enforcement. Direct learning was expected to encourage children's vaccination evenly (Kemendikbud, 2021). The COVID-19 vaccination policy for the 6-11-year-old group began in December 2021 to suppress the spread of COVID-19 in children (Nurhidayah *et al.*, 2021; Nurrizka *et al.*, 2023).

Pati Regency is one of Central Java's regencies conducting a few direct learning

trials during the pandemic with various careful considerations to prevent transmission and clusters of COVID-19 cases at schools. According to the COVID-19 vaccination coverage, Pati Regency was in zone one in January 2022, and thus, it had to apply direct learning. However, after one month running, children's vaccination coverage was still relatively low at 37% compared to the 75% target based on the Pati Regency Health Office in January 2022 (Dinas Kesehatan Kabupaten Pati, 2022). In addition, after two weeks of implementation, direct learning was stopped at some schools because of clusters of COVID-19 cases discovered.

From a preliminary study conducted on 20 mothers who had children aged 6-11 years, 14 mothers (70%) received direct explanations and outreach about children's vaccination programs from teachers and educators. Nine mothers (64.3%) who received the information were highly concerned about the COVID-19 vaccination program for their children. Some parents even indicated no need to vaccinate their children. Some parents even avoided the COVID-19 vaccination by setting off their children's school schedules. This condition shows the reluctance of parents to vaccinate their children against COVID. Possibly, they had doubts about the safety of the COVID-19 vaccine (Horiuchi *et al.*, 2021; Ruggiero *et al.*, 2021) and thus responded negatively to the vaccination program (Wouters *et al.*, 2021; Bell *et al.*, 2020).

The COVID-19 vaccination policy for children has evoked different societal responses, including those from parents. It has been proven that many parents decided not to vaccinate their children (Nurrizka *et al.*, 2023) because their negative perceptions affected their attitudes toward refusing vaccinations (Bono *et al.*, 2022). Differences in vaccination acceptance indicate the need for different interventions in each group to increase child vaccination coverage, especially in groups with low acceptance and without a vaccination status. This study aims to analyze differences in parental readiness for children's COVID-19 vaccination between parents whose

children were vaccinated and those whose children were not vaccinated.

## Method

This study was quantitative and analytical research with a cross-sectional approach. The research method was descriptive comparative to determine the differences in parental acceptance between two independent groups. The study location was in Pati Regency, Central Java Province, a district with low COVID-19 vaccination coverage in 2021. Primary data sources were collected by filling out an online questionnaire (via Google form) because the research was conducted during physical distancing situations. Secondary data were collected from various documents and reports from the Public Health Center and the Regency Health Office.

The population was parents of children aged 6-11 years old in Pati Regency. Data from the Pati Regency Health Office showed that 112,000 children aged 6-11 years were used for the basis of the COVID-19 vaccination. Two independent groups sampled consisted of 186 people each. One group comprised parents who got their children vaccinated and parents who did not. Sampling was done using cluster and proportional random sampling techniques based on the distance between the district and the city center. For this study, three districts, namely the Pati District, Gembong District, and Gunungwungkal District, were selected. The proportional sampling technique was used to determine the number of respondents representing each district.

The inclusion criteria of the respondents were parents who lived in Pati Regency, had children aged 6-11 years old attending schools, and participated in filling out an online questionnaire. The exclusion criteria were parents who did not complete and return the questionnaire. If the respondents filled out the questionnaire more than once, the questionnaire sent for the first time was used.

Variables in this study adopting Geiger's vaccination readiness model included the 7C components: Confidence, Complacency, Constraints, Calculation, Collective Responsibility, Compliance, and Conspiracy (Geiger *et al.*, 2022). Data was collected using a questionnaire containing 35 items of positive and negative statements adapted from Geiger's model, which had been tested for validity and reliability. Data processing and analysis using computer software started with editing, coding, scoring, data input, data checking, and grouping. Univariate analysis with the frequency distribution of each variable and bivariate analysis was done using a non-parametric difference test (Mann-Whitney test) because the data were not normally distributed.

## Results and Discussion

Table 1 shows the characteristics of the parent group whose children were vaccinated (Group A) and those whose children were not vaccinated (Group B). Most of the parents were  $\geq 30$  years old. In Group A, the majority of the respondents were male, while the majority in Group B were female. It could be seen that male parents were less likely to refuse vaccination than female parents. This study aligns with Zintel *et al.*'s study, stating that men's intention to vaccinate their children was higher than women's (Zintel *et al.*, 2022). It is possibly because mothers were more likely to experience doubts about vaccinations than fathers (Horiuchi *et al.*, 2021).

Table 1. Frequency of respondents' characteristic distribution

Characteristics	Vaccinated		Not Vaccinated	
	f	%	f	%
<b>Parents' Age</b>				
<30 years	67	36	68	36.6
$\geq 30$ years	119	64	118	63.4
<b>Gender</b>				
Men	115	61.8	71	38.2
Woman	71	38.2	115	61.8

Table 2. Variable frequency distribution

Variable	Vaccination Status				p-value
	Vaccinated		Not Vaccinated		
	f	%	f	%	
<b>Confidence</b>					
Low	33	17.7	146	78.5	0.019
High	153	82.3	40	21.5	
<b>Complacency</b>					
High	36	19.4	135	72.6	0.020
Low	150	80.6	51	27.4	
<b>Constraints</b>					
High	16	8.6	120	64.5	0.000
Low	170	91.4	66	35.5	
<b>Calculation</b>					
Low	38	20.4	147	79	0.027
High	148	79.6	39	21	
<b>Collective Responsibility</b>					
Low	44	23.7	116	62.4	0.012
High	142	76.3	70	37.6	
<b>Compliance</b>					
Low	28	15.1	125	67.2	0.012
High	158	84.9	61	32.8	
<b>Conspiracy</b>					
High	86	46.2	96	51.6	0.037
Low	100	53.8	90	48.4	
<b>Children's COVID-19 Vaccination Acceptance</b>					
Low	20	10.8	165	88.7	0.006
High	166	89.2	21	11.3	

Table 2 shows a higher proportion of confidence, calculation, collective responsibility, compliance, perceived obstacles, and acceptance of the COVID-19 vaccination in Group A than in Group B. However, Group B had high aspects of complacency and conspiracy. Statistically, it was also proven that there were significant differences in all indicators of immunization readiness from Geiger's model, which included 7Cs between the two groups because the p-value obtained was less than 0.05 ( $p < 0.05$ ).

Group A was likely to have high confidence in COVID-19 vaccination, while Group B was not. Likewise, perceived constraint factors are also different between the groups. High barriers were experienced by 64.5% of Group B. Barriers were measured based on aspects of structural and psychological barriers. Higher differences in barriers between groups can be seen in Group A than in

Group B. This shows that barriers to accessing COVID-19 vaccination in children can lead to vaccination refusal (Kwok *et al.*, 2021).

Group B had structural barriers when receiving information due to the low exposure and access to information, especially on social media, while they just relied on health workers to get information (Skjefte *et al.*, 2021). However, the health worker-assisted broadcast was not optimal since schools were identified as the ones that broadcast information on WhatsApp. Meanwhile, increasing online consultation for parents from schools and health workers is necessary. In addition to structural barriers, Group B also experienced psychological barriers in readiness and willingness to pay. Low income causes a budget shortage for parents to pay for vaccination services (Ginting *et al.*, 2021). Thus, door-to-door services are recommended to minimize



cost barriers in COVID-19 vaccination services for children.

The results showed a p-value of 0.012 in the collective responsibility variable, indicating significant differences between groups. In this case, 62.4% of Group B had lower responsibility for their children's vaccination than Group A. Collective responsibility is measured through people's intention to protect others. Vaccinated groups have a high desire and awareness to protect others (Giuseppe *et al.*, 2022). Group responsibility is a form of individual awareness affecting an individual's perception and motivation to act. The low collective awareness in Group B could be due to a lack of knowledge about COVID-19 vaccination, including its positive impact on oneself, family, and the surrounding environment (Liu *et al.*, 2022). Thus, it is necessary to provide information to family welfare empowerment groups and female health cadres to spread the information more rapidly.

This study showed that Group B had lower compliance (67.2%) than Group A. Compliance was measured through the aspect of self-regulatory. Compliance is community support for a policy. Low adherence in an unvaccinated group may be caused by low trust in policy-making authorities (Lazarus *et al.*, 2020). Policy regarding COVID-19 mitigation is considered insufficient and thus requires a lengthy response from policymakers and the public (Wiranti *et al.*, 2020). Therefore, various approaches related to the implementation of regulation are needed, for example, by collaborating with various parties such as media and community leaders.

This study obtained a p-value of 0.019 in the confidence variable, suggesting a difference in confidence between Group A and Group B. Group B (78.5%) had lower confidence in vaccine safety and effectiveness, policy-making authority, and competence of health workers than Group A. In other words, Group A's trust was higher than Group B's. Trust becomes a motivation or encouragement for individuals in determining a preventive action (Guidry *et al.*, 2020). Low confidence, on the other

hand, may be caused by low knowledge, especially of the manufacture and development of COVID-19 vaccines (Paul *et al.*, 2020). In addition, society might put low trust in the approach and lack of transparency of the relevant policy-making authorities and government (Lazarus *et al.*, 2020). Besides, low trust may related to health workers' competence due to unsatisfactory health service experience and lack of information delivery regarding the service mechanism (Lasmita *et al.*, 2021). Hence, education and training are needed, especially to improve the communication skills of health workers for disseminating information about vaccination programs.

Differences in the complacency variable between groups were found with a p-value of 0.020. This study showed that 72.6% of Group B had higher self-satisfaction about health status and immunity than Group A. Differences in self-satisfaction are associated with low perceptions of pain, causing a low acceptance of preventive services. Every individual has different concepts of health and illness, thus affecting their perception of pain. Parents tend to take precautionary measures when they believe the steps can reduce the risk of disease transmission (Dewi *et al.*, 2021; Laili and Tanoto, 2021). In addition to the low perception of pain, the lack of cues to action because of limited information exposure on mass media, from the surrounding environment, or past service experience leads to individual reluctance to take preventive action (Gerretsen *et al.*, 2021). In tackling the issues, intense exposure to information on social media or direct advocacy may improve group responsibility and trust.

The results showed a p-value of 0.027, indicating differences in the calculation of perceived benefits between groups. Group B (79%) had a lower calculation of perceived benefits than Group A. Individuals' perceived benefits and risks positively influenced individual interest in the COVID-19 vaccination (Erawan *et al.*, 2021). Taking no advantage of COVID-19 vaccination services for children may occur due to the low calculation of perceived benefits (Guidry *et*

*al.*, 2020; Reiter *et al.*, 2021). The information dissemination, which will improve group responsibility, trust, and self-satisfaction, is a way to intervene in the parental calculation of perceived benefits.

Besides, the conspiracy belief variable differed between groups with a p-value of 0.037. This study found that 51.6% of Group B had higher conspiracy trust than Group A. Hoax news and government conspiracies are aspects measured in the conspiracy beliefs. Group B possibly thought that hoax news was aimed at setting up propaganda for certain groups, resulting in the rejection of vaccinations. Hoax news about COVID-19 vaccination without selective attitudes creates public anxiety and responses to vaccination programs (Winter *et al.*, 2022). Some people who agree with vaccination understand that vaccination prevents infectious diseases. However, people who are reluctant to receive vaccinations assert that vaccination is a mass weakening effort conspired by the government together with pharmaceutical companies (Ripp and Röer, 2022). Thus, the public trust issue could be overcome through direct and indirect communicative approaches.

Significant differences in acceptance of vaccination were also found between groups with a p-value of 0.006. Group B (88.7%) had lower acceptance than Group A, likely because of the low perception and desire for vaccinations (Karlsson *et al.*, 2021). In addition to these factors, low acceptance is caused by low support for the program implementation (Navin *et al.*, 2022) and insufficient knowledge of the benefits and constraints of the vaccination (Freitas *et al.*, 2021; Ripp and Röer, 2022). More studies have also shown that parental acceptance is the key to success in the COVID-19 vaccination program for children. Otherwise, low parental acceptance may lead to low vaccination coverage and high COVID-19 transmission rates among children. Previous research also shows differences in acceptance between people who had received the COVID-19 vaccine and those who did not (Lasmita *et al.*, 2021). Supporting the current findings, other research mentions parents whose children had received the

HPV vaccine and those whose children did not show different acceptance (Dethan and Suariyani, 2017).

## Conclusion

This study reveals some differences in terms of confidence, complacency, constraints, calculation of benefits and risks, collective responsibility, compliance, and conspiracy against receipt of COVID-19 vaccination in children. As different perceptions cause these differences, parents with good perceptions of vaccination programs had children vaccinated. While this study addressed different aspects affecting parental readiness for children's vaccination, it had limited data, focusing only on online data. In addition, this study used a theory that is not commonly cited in previous research, thereby making it difficult to verify the results with the previous findings.

In responding to the findings, this study suggests optimizing online consultation services, conducting health competency and communication skill training for health workers, capacity building for health cadres, and monitoring and evaluating the implementation of COVID-19 vaccinations in children regularly. At the first-level health facilities, schools and health cadres should be empowered to provide education about COVID-19 vaccination to parents directly or indirectly. Access to information from health workers and official government social media is required for all members of society to understand the vaccination programs better. Future researchers are expected to conduct further research on factors or variables that influence differences in parental acceptance.

## Abbreviations

7Cs: Confidence, Complacency, Constraints, Calculation, Collective Responsibility, Compliance, Conspiracy; COVID-19: Coronavirus Disease 2019; SARS-Cov-2: Severe Acute Respiratory Syndrome Coronavirus 2; HPV: Human Papilloma Virus.

## Declarations

### Ethics Approval and Consent Participant

This study has passed the ethical clearance and is feasible according to the seven ethical values set by the World Health Organization's 2011 standards with the ethics review number 139/EA/KEPK-FKM/2022 published by the Health Research Ethics Commission of the Faculty of Public Health, Diponegoro University on April 26, 2022.

### Conflict of Interest

The authors declare that they have no competing interests.

### Availability of Data and Materials

Data and materials are available upon request.

### Author's Contribution

MIV and AS conceptualized the study and created the methodology; MIV, AS, and NN wrote, reviewed, and edited the manuscript; MIV and NN wrote the original draft.

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## References

- Bell, S. *et al.* (2020) 'Parents' and guardians' views on the acceptability of a future COVID-19 vaccine: A multi-methods study in England', *Vaccine* [Preprint]. Available at: <https://doi.org/10.1016/j.vaccine.2020.10.027>.
- Bono, S.A. *et al.* (2022) 'Adults' Acceptance of COVID-19 Vaccine for Children in Selected Lower- and Middle-Income Countries', *MDPI*, 10(11), pp. 1–17. Available at: <https://doi.org/10.3390/vaccines10010011>.

- Dethan, C.M. and Suariyani, N.L.P. (2017) 'Knowledge of and Attitude towards HPV Vaccination of Female Students in Private High Schools', *Jurnal MKMI*, 13(2), pp. 167–175.
- Dewi, F.T., Sriatmi, A. and Nandini, N. (2021) 'Persepsi Dampak Ekonomi dan Sosial terhadap Kerentanan Fisik pada Status Kesehatan selama Pandemi COVID-19 (Studi Kasus di Provinsi Jawa Tengah)', *MKMI*, 20(1), pp. 19–25. Available at: <https://doi.org/10.14710/mkmi.20.1.19-25>.
- Dinas Kesehatan Kabupaten Pati (2022) 'Data Capaian Vaksinasi COVID-19 di Kabupaten Pati'.
- Erawan, M.A. *et al.* (2021) 'Predicting Covid - 19 Vaccination Intention: The Role of Health Belief Model of Muslim Societies in Yogyakarta', *Al-Sihah: Public Health Science Journal*, 13(7), pp. 36–50. Available at: <https://doi.org/10.24252/al-sihah.v13i1.20647>.
- Freitas, L.D., Basdeo, D. and Wang, H. (2021) 'Public trust, information sources and vaccine willingness related to the COVID-19 pandemic in Trinidad and Tobago: an online cross-sectional survey', *The Lancet Regional Health - Americas*, 3(1), pp. 1–8. Available at: <https://doi.org/10.1016/j.lana.2021.100051>.
- Geiger, M. *et al.* (2022) 'Measuring the 7 Cs of Vaccination Readiness', *European Journal of Psychological Assessment*, 38(4), pp. 261–269.
- Gerretsen, P. *et al.* (2021) 'Individual determinants of COVID-19 vaccine hesitancy', *PLoS ONE*, 32(1), pp. 1–14. Available at: <https://doi.org/10.1371/journal.pone.0258462>.
- Ginting, D., Fentiana, N. and Dachi, R.A. (2021) 'Survei Cross-Sectional Online Untuk Menilai Vaksin Covid-19 Terkait Akseptabilitas, Pengetahuan dan Kesiapan Membayar di Kalangan Mahasiswa Kesehatan Masyarakat di Provinsi Sumatera Utara', *JIBJ*, 21(3), pp. 1168–1172. Available at:

- <https://doi.org/10.33087/jiubj.v21i3.1724>.
- Giuseppe, G.D. *et al.* (2022) 'Parents' Willingness to Vaccinate Their Children With COVID-19 Vaccine: Results of a Survey in Italy', *Journal of Adolescent Health*, 70(4), pp. 550–558. Available at: <https://doi.org/10.1016/j.jadohealth.2022.01.003>.
- Guidry, J.P.D. *et al.* (2020) 'Willingness to get the COVID-19 Vaccine with and without Emergency Use Authorization', *AJIC: American Journal of Infection Control*, 11(1), pp. 1–29. Available at: <https://doi.org/10.1016/j.ajic.2020.11.018>.
- Horiuchi, S. *et al.* (2021) 'Factors of parental COVID-19 vaccine hesitancy: A cross sectional study in Japan', *PLoS ONE*, 16(12 December), pp. 1–15. Available at: <https://doi.org/10.1371/journal.pone.0261121>.
- Karlsson, L.C. *et al.* (2021) 'Fearing the disease or the vaccine: The case of COVID-19', *Personality and Individual Differences*, 172(1), pp. 1–11. Available at: <https://doi.org/10.1016/j.paid.2020.110590>.
- Kemendikbud (2021) *Vaksinasi Covid-19 bagi Anak Usia 6-11 Tahun Dorong Optimalisasi Pembelajaran Tatap Muka Terbatas*. Jakarta.
- Kwok, K.O. *et al.* (2021) 'Influenza vaccine uptake, COVID-19 vaccination intention and vaccine hesitancy among nurses: A survey', *International Journal of Nursing Studies*, 114(1), pp. 1–9. Available at: <https://doi.org/10.1016/j.ijnurstu.2020.103854>.
- Laili, N. and Tanoto, W. (2021) 'Model Kepercayaan Kesehatan (Health Belief Model) Masyarakat pada Pelaksanaan Vaksin COVID-19', *JIKK*, 17(3), pp. 198–207. Available at: <https://doi.org/10.26753/jikk.v17i3.625>.
- Lasmita, Y., Misnaniarti and Idris, H. (2021) 'Predisposing Faktor yang Berhubungan dengan Penerimaan Program Vaksinasi COVID-19 pada Masyarakat', *Jurnal Kesehatan Masyarakat Indonesia*, 16(1), pp. 233–239.
- Lazarus, J.V. *et al.* (2020) 'A Global Survey of Potential Acceptance of a COVID-19 Vaccine', *Nature Medicine*, 1(1), pp. 1–9. Available at: <https://doi.org/10.1038/s41591-020-1124-9>.
- Liu, P.L. *et al.* (2022) 'Associations Between COVID-19 Information Acquisition and Vaccination Intention: The Roles of Anticipated Regret and Collective Responsibility', *Health Communication*, 00(00), pp. 1–12. Available at: <https://doi.org/10.1080/10410236.2022.2059801>.
- Navin, M.C. *et al.* (2022) 'COVID - 19 Vaccine Hesitancy Among Healthcare Personnel Who Generally Accept Vaccines', *Journal of Community Health*, 10(7), pp. 1–11. Available at: <https://doi.org/10.1007/s10900-022-01080-w>.
- Nurhidayah, I., Tamara, M. and Setyorini, D. (2021) 'Karakteristik COVID-19 Pada Anak', *Jurnal Ilmu Keperawatan Anak*, 4(1), pp. 7–18. Available at: <http://dx.doi.org/10.26594/jika.4.1.2021.7-18> e-ISSN.
- Nurriszka, R.H., Irvan, M. and Hardianto, V.E. (2023) 'Faktor-Faktor yang Mempengaruhi Keputusan Orang Tua untuk Memberikan Vaksinasi COVID-19 pada Anak', *Jurnal Kesehatan Komunitas*, 9(1), pp. 95–103.
- Paul, E., Steptoe, A. and Fancourt, D. (2020) 'Attitudes towards vaccines and intention to vaccinate against COVID-19: Implications for public health communications', *The Lancet Regional Health - Europe*, 10(101), pp. 100–112. Available at: <https://doi.org/10.1016/j.lanpep.2020.100012>.
- Reiter, P.L., Pennell, M.L. and Katz, M.L. (2021) 'Acceptability of a COVID-19 vaccine among adults in the United

- States : How many people would get vaccinated?', *Vaccine*, 38(42), pp. 6500–6507. Available at: <https://doi.org/10.1016/j.vaccine.2020.08.043>.
- Ripp, T. and Röer, J.P. (2022) 'Systematic Review on the Association of COVID-19 - Related Conspiracy Belief with Infection - Preventive Behavior and Vaccination Willingness', *BMC Psychology*, 10(66), pp. 1–14. Available at: <https://doi.org/10.1186/s40359-022-00771-2>.
- Rothan, H.A. and Byrareddy, S.N. (2020) 'The Epidemiology and Pathogenesis of Coronavirus Disease (COVID-19) Outbreak', *Journal of Autoimmunity*, (February), p. 102433. Available at: <https://doi.org/10.1016/j.jaut.2020.10.2433>.
- Ruggiero, K.M. *et al.* (2021) 'Parents' Intentions to Vaccinate Their Children Against COVID-19', *Journal of Pediatric Health Care*, 35(5), pp. 509–517. Available at: <https://doi.org/10.1016/j.pedhc.2021.04.005>.
- Skjefte, M. *et al.* (2021) 'COVID-19 Vaccine Acceptance Among Pregnant Women and Mothers of Young Children: Results of a Survey in 16 Countries', *European Journal of Epidemiology*, 36(2), pp. 197–211. Available at: <https://doi.org/10.1007/s10654-021-00728-6>.
- Sutari, S., Idris, H. and Misnaniarti, M. (2022) 'Implementasi Kebijakan Vaksinasi COVID-19 di Indonesia: Narrative Review', *Riset Informasi Kesehatan*, 11(1), p. 71. Available at: <https://doi.org/10.30644/rik.v11i1.637>.
- Winter, T. *et al.* (2022) 'Conspiracy Beliefs and Distrust of Science Predicts Reluctance of Vaccine Uptake of Politically Right-Wing Citizens', *Vaccine*, 40(12), pp. 1896–1903. Available at: <https://doi.org/10.1016/j.vaccine.2022.01.039>.
- Wiranti, Sriatmi, A. and Kusumastuti, W. (2020) 'Determinan Kepatuhan Masyarakat Kota Depok Terhadap Kebijakan Pembatasan Sosial Berskala Besar Dalam Pencegahan Covid-19', *Jurnal Kebijakan Kesehatan Indonesia*, 09(03), pp. 117–124.
- Wouters, O.J. *et al.* (2021) 'Challenges in Ensuring Global Access to COVID-19 Vaccines: Production, Affordability, Allocation, and Deployment', *The Lancet*, 397(10278), pp. 1023–1034. Available at: [https://doi.org/10.1016/S0140-6736\(21\)00306-8](https://doi.org/10.1016/S0140-6736(21)00306-8).
- Zintel, S. *et al.* (2022) 'Gender Differences in the Intention to Get Vaccinated Against COVID-19: A Systematic Review and Meta-Analysis', *Journal of Public Health (Germany)*, (07 January 2022), pp. 1–20. Available at: <https://doi.org/10.1007/s10389-021-01677-w>.

# FACTORS ASSOCIATED WITH THE UTILIZATION OF PUBLIC HEALTH CENTER IN CENTRAL JAVA

## Faktor –Faktor yang Berhubungan dengan Pemanfaatan Puskesmas di Jawa Tengah

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### Abstract

**Background:** The Public Health Center (PHC) is a gatekeeper to formal healthcare in Indonesia. PHCs in Central Java have met the basic health facility readiness standard, but there are still numerous challenges to increasing the utilization of PHCs.

**Aims:** This study aimed to analyze the factors related to the utilization of PHC in Central Java.

**Methods:** This cross-sectional study used secondary data from the 2018 Indonesia Basic Health Research, with 63,118 total samples. The independent variables were residence, age, gender, marital status, education, insurance, and socioeconomic, while the dependent variable was the utilization of PHC. The data were analyzed using a binary logistic regression.

**Results:** The average rate of utilization of PHC in Central Java in 2018 was 5.7%. Those aged 46-65 and >65 years old, women, married and widowers, and those with health insurance had a higher possibility of utilizing PHC. Meanwhile, those who graduated from secondary and tertiary school, the employed and the wealthiest group had a lower possibility of utilizing PHC.

**Conclusion:** The factors related to the utilization of PHC in Central Java are age group, gender, marital status, education level, working status, health insurance ownership, and socioeconomic status.

**Keywords:** basic health service, health service access, public health, public health center

### Abstrak

**Latar Belakang:** Puskesmas merupakan gerbang awal dari pelayanan kesehatan formal pada tingkat lanjut di Indonesia. Jawa Tengah telah memenuhi standar kesiapan fasilitas kesehatan dasar, akan tetapi masih terdapat beberapa tantangan dalam peningkatan pemanfaatan Puskesmas.

**Tujuan:** Penelitian ini bertujuan untuk menganalisis faktor-faktor yang berhubungan dengan pemanfaatan Puskesmas di Jawa Tengah.

**Metode:** Penelitian ini merupakan penelitian cross-sectional menggunakan data sekunder dari Riset Kesehatan Dasar (Riskesdas) 2018, dengan total sampel 63.118 responden. Variabel independen adalah tempat tinggal, umur, jenis kelamin, status perkawinan, pendidikan, asuransi, dan sosioekonomi, sementara variabel dependen adalah pemanfaatan Puskesmas. Analisis data dilakukan menggunakan regresi logistik biner.

**Hasil:** Rata-rata tingkat pemanfaatan Puskesmas di Jawa Tengah pada tahun 2018 adalah sebesar 5,7%. Kelompok umur 46-65 and >65 tahun, perempuan, menikah dan janda/duda, dan memiliki asuransi kesehatan memiliki kemungkinan lebih tinggi untuk memanfaatkan puskesmas. Sementara, mereka yang berpendidikan SLTA, bekerja, dan berada di kelompok paling kaya memiliki kemungkinan lebih rendah untuk memanfaatkan Puskesmas.

**Kesimpulan:** Faktor berkaitan dengan pemanfaatan Puskesmas di Jawa Tengah yaitu umur, jenis kelamin, status perkawinan, tingkat pendidikan, status bekerja, kepemilikan asuransi kesehatan, dan status sosioekonomi.

**Kata kunci:** akses pelayanan kesehatan, kesehatan masyarakat, pelayanan kesehatan dasar, Puskesmas



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## Introduction

Public Health Center (PHC/ Puskesmas) is the first-level health facility widely spread and easily accessible by the community for location and expense. According to the Regulation of the Minister of Health of the Republic of Indonesia Number 75 of 2014, the scope of PHC is at the subdistrict level and it focuses on community health development by prioritizing promotive and preventive efforts.

In the era of the National Health Insurance (NHI/JKN) system, PHC has a vital role as the gatekeeper to formal healthcare (Megatsari, Nandini and Laksono, 2023). PHC becomes the first contact and reference to the higher healthcare facilities using medical service standards (Wuri *et al.*, 2021). Reinforcing the service by providing a comprehensive and qualified primary service (Sari, Zulfendri and Sanusi, 2020), followed by an increase in quality through an accreditation system, is taken to level up the utilization of PHC in the community.

The number of inpatients and outpatients of PHC in Central Java from 2017 to 2018 experienced significant growth (Central Java Provincial Health Office, 2018, 2019). This increasing trend can be seen today and is probably along with the government's efforts to optimally accelerate community health levels in the subdistrict area (Sulaiman, 2021). However, the increasing number of PHC patients does not necessarily indicate the achievement in the coverage of PHC utilization in Central Java. It is because, on the other hand, there were also more than two times increasing numbers of inpatients and outpatients in hospitals and other health facilities (Central Java Provincial Health Office, 2018, 2019). This data showed that people also choose to utilize other health services besides PHC.

In general, the Java region has become a benchmark for the distribution of good quality health services. Central Java meets the basic health facility readiness standard and has better knowledge scores than East Java, West Java, Sumatra, Sulawesi, and Lesser Sunda Islands

(Haemmerli *et al.*, 2021). However, this province still faces problems related to the disparity of public health facilities regarding the equitable distribution of PHCs in several districts (Wulandari *et al.*, 2023). Furthermore, numerous obstacles and challenges have been observed in PHC utilization, such as in transportation, socioeconomic factors (Laksono, Nantabah and Wulandari, 2018), and a high number of dissatisfied patients with the service (Wulandari, Ridho, *et al.*, 2019). Health-related utilization cannot be achieved only with high-quality primary services alone but is also related to the individual and the social environment factors (Chotchoungchatchai *et al.*, 2020).

For this reason, this study aimed to analyze the factors related to the utilization of PHC in Central Java Province. Research on factors related to PHC utilization in Indonesia has been carried out many times before (Mulyanto, Kringos and Kunst, 2019; Wulandari and Laksono, 2019). Even so, this article can still provide new information and complement the previous research's findings regarding PHC utilization in Central Java. This article used secondary data from a national-scale survey to provide a more comprehensive representation of the conditions at the provincial level. Therefore, this article can contribute to enriching information concerning the utilization of PHC services in Central Java.

## Method

### Study Design and Data Source

This research was a cross-sectional study using secondary data from the 2018 Basic Health Research (Riskesdas), a national survey conducted by Ministry of Health Republic of Indonesia. It collected the data from May to July 2018 through instrumental interviews of households and individuals. The 2018 Basic Health Research had a scope on the Indonesian household. The sample framework in this survey used the National Socioeconomic Survey conducted by the Central Agency on Statistics (BPS) in March 2018. The 2018 Basic Health Research visited the targeted samples of 300,000 households from 30,000 census blocks in the

Socioeconomic Survey 2018 (National Institute of Health Research and Development of the Ministry of Health of the Republic of Indonesia, 2019). The population of this research was all adults ( $\geq 15$  years old) in Central Java. It investigated 63,118 respondents as the average sample.

### Dependent Variable

This research employed the utilization of PHC as the dependent variable. It is adult access to PHC, either outpatient or inpatient. Outpatients are limited to the range of one month, while inpatient is limited to one year. With these time limits, the respondents are expected to remember the schedule well (National Institute of Health Research and Development of the Ministry of Health of the Republic of Indonesia, 2019).

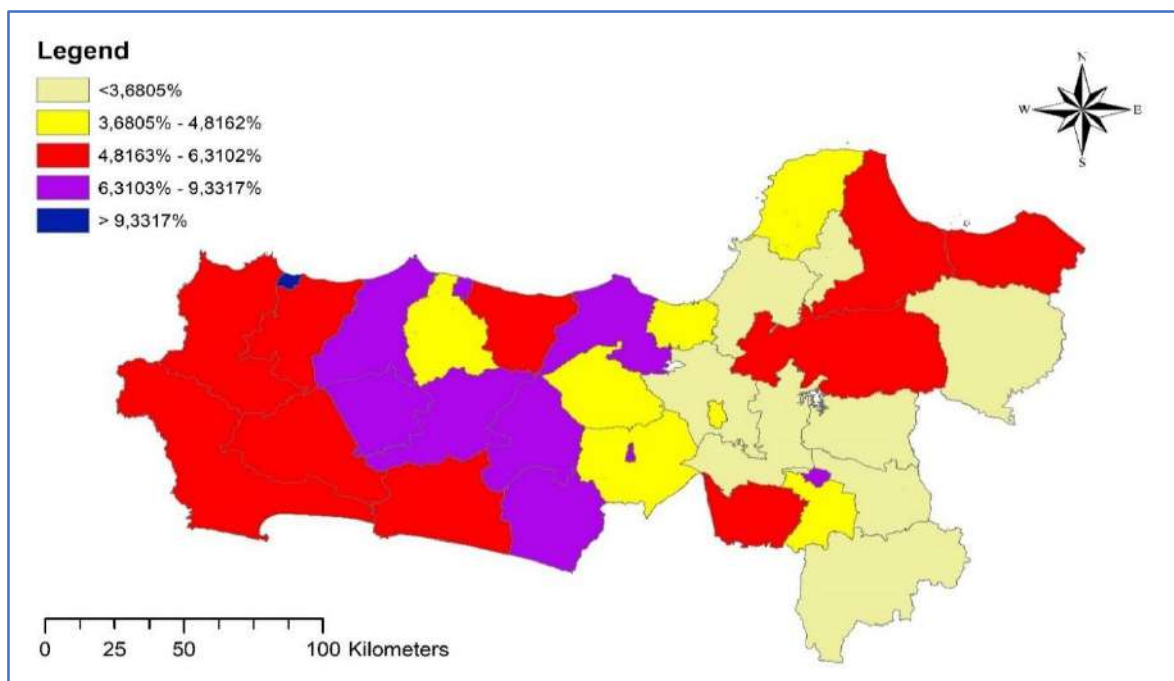
### Independent Variable

This research used eight independent variables: residence, age group, gender, marital status, education level, working status, health insurance ownership, and socioeconomic status. The residence was classified into two

categories: urban and rural, according to the Central Agency on Statistics. The age group was divided into  $\leq 25$  years old, 26-45 years old, 46-65 years old, and  $> 65$  years old. Gender consisted of two categories: men and women. Marital status was categorized into three: unmarried, married, and widowed.

This study defined the respondents' education as the admission of their last education certificate. There were four education levels: no school, primary-middle, secondary, and tertiary. Working status was divided into two: unemployed and employed. This survey was also categorized into having and not having health insurance ownership.

The 2018 Basic Health Research used the wealth index pattern to identify socioeconomic status. It was accounted for using the average household outcome in total. It used the household outcome in the form of health insurance, food, and housing. Furthermore, it divided the income index into five categories of socioeconomic status: poorest, poor, middle, wealthy, and wealthiest (Wulandari, Qomarrudin, *et al.*, 2019; Wulandari *et al.*, 2022).



Source: National Institute of Health Research and Development of Ministry of Health Republic of Indonesia (2019)

Figure 1. Distribution map of PHC utilization in Central Java 2018



Table 1. Descriptive statistics on the utilization of PHC and the respondent characteristics in Central Java 2018 (n=63.118)

Demographic Characteristic	Utilization of PHC		p-value
	Unutilized (n=59,490)	Utilized (n=3,628)	
<b>Residence</b>			0.196
Urban	94.9%	5.1%	
Rural	94.6%	5.4%	
<b>Age group</b>			* < 0.001
≤ 25	96.5%	3.5%	
26-45	96.0%	4.0%	
46-65	93.0%	7.0%	
> 65	91.6%	8.4%	
<b>Gender</b>			
Men	96.1%	3.9%	
Women	93.5%	6.5%	
<b>Marital Status</b>			* < 0.001
Unmarried	97.2%	2.8%	
Married	94.5%	5.5%	
Widowed	91.3%	8.7%	
<b>Education Level</b>			* < 0.001
No school	91.1%	8.9%	
Primary-Middle	94.1%	5.9%	
Secondary	96.8%	3.2%	
Tertiary	98.5%	1.5%	
<b>Working Status</b>			* < 0.001
Unemployed	93.5%	6.5%	
Employed	95.4%	4.6%	
<b>Health Insurance</b>			
No	96.6%	3.4%	
Yes	93.9%	6.1%	
<b>Socioeconomic Status</b>			* < 0.001
Poorest	93.8%	6.2%	
Poor	94.2%	5.8%	
Middle	94.7%	5.3%	
Wealth	95.0%	5.0%	
Wealthiest	96.7%	3.3%	

Note: \*p &lt; 0.001

### Data Analysis

The data were analyzed using the Chi-Square test to get a bivariate comparison. Moreover, it used the collinearity test to ensure the independent variables in the last regression model do not have any strong relations. The last point of the study used binary logistic regression to investigate the multivariate relationships among the independent variables and the utilization of PHC. This study used the IBM SPSS 26 application during the statistical analysis process. The utilization mapping of PHC in Central Java used ArcGIS 10.3 (ESRI Inc., Redlands, CA, USA). The Central Agency on Statistics provided an

administrative border polygon shapefile for this study.

### Results and Discussion

The analysis showed that the average rate of utilization of PHC in Central Java Province in 2018 was 5.7%. The first picture shows the distribution map of the utilization. It reported that this trend in the west side was lower than in any other area, while higher in the central areas. Table 1 describes the descriptive statistics of the utilization. The result shows that the proportion in rural areas was less than in urban. While based on the age group, the older they were, the higher the utilization of

PHC. Based on gender, women tended to have two times higher than men.

Table 1 informs that the widowed had the highest proportion of using PHC. Based on the education level, the higher the level, the smaller the chance to use PHC. For health insurance ownership, those who had one had two times the proportion of those who did not have any in utilizing PHC. Based on socioeconomic status, the higher the status, the lowest the proportion in utilizing PHC.

The result of the collinearity test showed that there was no strong relationship among free variables. The tolerant value for all variables was more significant than 0.10. The variance inflation factor (VIF) value was less than 10.00 for all factors. It can be concluded there were no signs of multicollinearity. Table 2 shows the binary logistic regression using PHC in Central Java Province. The analysis of the last step used it as the reference.

Table 2. Result of binary logistic regression on the utilization of PHC in Central Java 2018

Predictors	Utilization of PHC			
	p-value	AOR	95% CI	
			Below Limit	Upper Limit
<b>Age Group</b>				
≤ 25 (ref.)	-	-	-	-
26-45	0.833	0.984	0.851	1.139
46-65	*<0.001	1.587	1.365	1.844
>65	*<0.001	1.494	1.252	1.783
<b>Gender</b>				
Men (ref.)	-	-	-	-
Women	*<0.001	1.426	1.316	1.546
<b>Marital Status</b>				
Unmarried (ref.)	-	-	-	-
Married	*<0.001	1.552	1.328	1.813
Widowed	*<0.001	1.668	1.375	2.023
<b>Education Level</b>				
No school (ref.)	-	-	-	-
Primary-Middle	0.092	0.904	0.803	1.017
Secondary	*<0.001	0.595	0.510	0.694
Tertiary	*<0.001	0.266	0.200	0.354
<b>Working Status</b>				
Unemployed (ref.)	-	-	-	-
Employed	*<0.001	0.739	0.681	0.803
<b>Health Insurance</b>				
Ownless (ref.)	-	-	-	-
Owned	*<0.001	1.892	1.734	2.064
<b>Socioeconomic Status</b>				
Poorest (ref.)	-	-	-	-
Poor	0.668	0.979	0.887	1.080
Middle	0.114	0.919	0.828	1.020
Wealth	0.059	0.902	0.810	1.004
Wealthiest	*<0.001	0.673	0.591	0.767

Note: AOR: adjusted odds ratio; CI: confidence interval; ref= reference; \*p < 0.001.

Table 2 shows that the age group 46-65 had 1.587 times more probabilities than  $\leq 25$  years old (95% CI 1.365-1.844) in using PHC. The age group of  $>65$  years old had a possibility of 1.494 times higher than  $\leq 25$  years old (95% CI 1.252-1.783) in using PHC. It was supported by the condition that most of society in Central Java was in the productive age (Central Java Provincial Health Office, 2021). In old age, physical function is impaired; therefore, a high health problem is possible. For diabetics, for instance, most patients were in the age range of 55-74 years old (Ministry of Health of the Republic of Indonesia, 2021).

The same result was found in East Java, showing that older people ( $>65$  years old) used PHC service more than younger (Laksono, Megatsari and Zuardin, 2023). It was also in line with the research in North Carolina, which showed that the average rate of mental health check-up visits in health care every year was by the age group of 50 (Brathwaite *et al.*, 2022).

Based on gender, women had 1.426 probabilities greater than men (95% CI 1.316-1.546) to utilize PHC. In developed countries, such as Indonesia, the health care program was mostly addressed to women, especially for increasing maternal health and decreasing maternal mortality (Chakhtoura *et al.*, 2019). The priority programs for women that were included in the minimum health standard in PHC were as follows: the scope of implementation of early detection of cervical cancer and breast cancer, pregnancy check-ups, childbirth, and family planning programs, including lifestyle monitoring for non-communicable disease control (Ministry of Health of the Republic of Indonesia, 2021). The national data also showed that diabetes prevalence in women was higher than in men (Ministry of Health of the Republic of Indonesia, 2019).

Based on marital status, those who were married and widowed had a higher probability of utilizing PHC than those who were unmarried. Previous research also showed that married working women had more chances to finish four or more pregnancy checks (Denny *et al.*, 2022). Some other health care can be used, such

as maternity and postnatal services (Istifa *et al.*, 2021), as well as maternal and child health services (Osaki *et al.*, 2018).

According to the education level, people who graduated from secondary and tertiary school had a lower possibility of utilizing PHC than those who were not in school. This finding contradicted the previous study, where the higher the education that a person had, the higher the possibility of utilizing PHC or any health care (Mulyanto, Kringos and Kunst, 2019).

Several possibilities may explain the results of this study. Tertiary education is associated with better health conditions due to better health knowledge and awareness about health and better critical healthcare behavior. On the other hand, lower education is related to poor health (Raghupathi and Raghupathi, 2020). In addition, the education level influences people's choice to use health services. Those with higher education may choose not to use PHC facilities because they tend to consider the quality and service at PHC to be lower than secondary care (Mulyanto, Kringos and Kunst, 2019).

The employed group had 0.739 lower possibilities than the unemployed group (95% CI 0.681-0.803) to utilize PHC. Other research showed a similar case, stating that mothers and the unemployed community utilized PHC service in most places (Oktarianita, Sartika and Wati, 2021). Generally, outpatient service in PHC was not conducted in an emergency. Therefore, there is a possibility that the employed community will tend to find health services that can be accessed outside working hours. Other research showed that patient's loyalty to the health service correlated with working status. In terms of services provided by health workers, patients who were working have more expectations than those who did not work. Therefore, there is a possibility that those with working status will choose another health service place that can meet their expectations (Cahyani *et al.*, 2021).

Those who owned health insurance had a 1.892 higher possibility of PHC utilization than those who did not have any (95% CI 1.734-2.064). Insurance ownership affects healthcare utilization

(Wulandari, Laksono and Matahari, 2020), including PHC utilization (Ridwanah, Nugraheni and Laksono, 2022). The poor population with contribution assistance recipients of NHI in remote areas mostly use primary care facilities. In contrast, the population group without contribution assistance recipients of NHI in non-remote locations prefers to go directly to an advanced medical facility (Wenang *et al.*, 2021). Insurance ownership can be a protective factor because it covers risk groups such as pregnant women and the elderly (Wulandari, Laksono and Matahari, 2020; Megatsari, Nandini and Laksono, 2023).

Based on socioeconomic status, the wealthiest group had 0.673 possibilities lower than any other group (95% CI 0.591-0.767) to utilize PHC. In line with the result, previous research informed that a society with a low socioeconomic level tended to have higher PHC utilization than the higher socioeconomic group (Wulandari *et al.*, 2022). PHCs have advantages in terms of low or even no costs, and they can be found in almost every sub-district. Thus, transportation costs are more affordable for all, especially those with lower economic status (Johar *et al.*, 2018). In comparison, the wealthiest group preferred to use secondary care health services (Mulyanto, Kringos and Kunst, 2019) due to better quality of service, good-quality equipment, and longer opening hours (Sokang, Westmaas and Kok, 2019).

### Limitation of the Study

The study analyzed big data to represent information at the province level, but on the other hand, it analyzed secondary data. Thus, the accepted variables limited the analyzed factors. Several other characteristics related to the utilization of PHC found in previous studies, such as travel time, travel costs, and type of disease, could not be investigated (Wei *et al.*, 2018; Laksono and Wulandari, 2020; Laksono, Wulandari and Efendi, 2020).

### Conclusion

Seven factors related to PHC utilization in Central Java were observed,

including age group, gender, marital status, education level, working status, health insurance ownership, and socioeconomic status.

The vulnerable groups dominated the utilization of PHC in Central Java. Insurance ownership has also become one of the factors related to PHC utilization. These results show that PHCs in Central Java have successfully provided an easily accessible health facility to vulnerable groups. However, this study's findings also indicate that the role of the PHC as a gatekeeper has not been maximized because it was only reaching certain groups.

PHC utilization can still be increased by reaching out to these groups: young people and adults, unmarried, male, highly educated, employed, and those at the wealthiest socioeconomic level. Efforts must be made to increase the trust of community groups who did not use the PHC facilities. Several strategies can be implemented, such as increasing the quality and completeness of PHC services and the adequacy of medical personnel at the PHC. It is also crucial to strengthen the PHC role, mainly in a promotive and preventive role.

### Abbreviations

PHC: Public Health Center; NHI: National Health Insurance; UHC: Universal Health Coverage; VIF: Variance Inflation Factor.

### Declarations

#### Ethics Approval and Consent Participant

The 2018 Basic Health Research Ethical clearance was obtained from the National Ethics Committee Ministry of Health Republic of Indonesia (Number: LB.02.01/2/KE.024/ 2018). Respondents have been informed about the objective of the research and signed the informed consent to participate in the study. All respondents' identities have been removed from the dataset.

**Conflict of Interest**

The authors have no conflict of interest to declare.

**Availability of Data and Materials**

Data is available by request to the management data laboratory Ministry of Health Republic of Indonesia. The authors, as a third party, have no authorization to reveal data publicly.

**Authors' Contribution**

MK wrote and edited the manuscript; ADL conceptualized the manuscript and analyzed the data; SP, SS, and AN wrote the manuscript. All authors contributed equally and approved the final version of the manuscript.

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**References**

- Brathwaite, D. *et al.* (2022) 'Age and Sex Trends Among Mental Health-related Emergency Department Visits in North Carolina', *Healthcare Analytics*, 2(January), p. 100056. Available at: <https://doi.org/10.1016/j.health.2022.100056>.
- Cahyani, N.R. *et al.* (2021) 'Correlation of Patient Characteristics and Patient Satisfaction with Patient Loyalty in Public Health Center', *Jurnal Aisyah : Jurnal Ilmu Kesehatan*, 6(3), pp. 427–432. Available at: <https://doi.org/10.30604/jika.v6i3.608>
- Central Java Provincial Health Office (2018) *Health Profile of Central Java Province in 2017*. Semarang.
- Central Java Provincial Health Office (2019) *Health Profile of Central Java Province in 2018*. Semarang.
- Central Java Provincial Health Office (2021) *Health Profile of Central Java Province in 2020*. Semarang.
- Chakhtoura, N. *et al.* (2019) 'Importance of Research in Reducing Maternal Morbidity and Mortality Rates', *Am J Obstet Gynecol*, 221(3), pp. 179–182. Available at: <https://doi.org/10.1016/j.ajog.2019.05.050>.
- Chotchoungchatchai, S. *et al.* (2020) 'Primary Health Care and Sustainable Development Goals', *Bulletin of the World Health Organization*, 98(11), pp. 792–800. Available at: <https://doi.org/10.2471/BLT.19.245613>.
- Denny, H.M. *et al.* (2022) 'The Determinants of Four or More Antenatal Care Visits Among Working Women in Indonesia', *Asia Pacific Journal of Public Health*, 34(1), pp. 51–56. Available at: <https://doi.org/10.1177/10105395211051237>.
- Haemmerli, M. *et al.* (2021) 'Poor Quality for the Poor? A Study of Inequalities in Service Readiness and Provider Knowledge in Indonesian Primary Health Care Facilities', *International Journal for Equity in Health*, 20, p. 239. Available at: <https://doi.org/10.1186/s12939-021-01577-1>.
- Istifa, M.N. *et al.* (2021) 'Analysis of Antenatal Care, Intranatal Care and Postnatal Care Utilization: Findings from the 2017 Indonesian Demographic and Health Survey', *PLoS ONE*, 16(10), pp. 1–13. Available at: <https://doi.org/10.1371/journal.pone.0258340>.
- Johar, M. *et al.* (2018) 'Inequality in Access to Health Care, Health Insurance and the Role of Supply Factors', *Social Science & Medicine*, 213, pp. 134–145. Available at: <https://doi.org/10.1016/j.socscimed.2018.07.044>.
- Laksono, A.D., Megatsari, H., and Zuardin (2023) 'Policy to Accelerate Primary Health Care Usage in East Java: Who

- is the Target?', *Journal of Southwest Jiaotong University*, 58(1), pp. 341–353. Available at: <https://doi.org/10.35741/issn.0258-2724.58.1.26>.
- Laksono, A.D., Nantabah, Z.K. and Wulandari, R.D. (2018) 'Access Barriers to Health Center for Elderly in Indonesia', *Buletin Penelitian Sistem Kesehatan*, 21(4), pp. 228–235.
- Laksono, A.D. and Wulandari, R.D. (2020) 'Predictors of Hospital Utilization among Papuans in Indonesia', *Indian Journal of Forensic Medicine and Toxicology*, 14(2), pp. 2319–2324. Available at: <https://doi.org/10.37506/ijfmt.v14i2.3374>.
- Laksono, A.D., Wulandari, R.D. and Efendi, F. (2020) 'Determinants of Hospital Utilisation among Urban Poor Societies in Indonesia', *International Journal of Innovation, Creativity and Change*, 12(9), pp. 375–387.
- Megatsari, H., Nandini, N. and Laksono, A.D. (2023) 'Health Center Utilization among the Elderly in the East Java Province', *Jurnal Promkes: The Indonesian Journal of Health Promotion and Health Education*, 11(1), pp. 26–35. Available at: <https://doi.org/10.20473/jpk.V11.1.2023.26-35>.
- Ministry of Health of the Republic of Indonesia (2019) *Infodatin: World Diabetes Day 2018*. Kementerian Kesehatan.
- Ministry of Health of the Republic of Indonesia (2021) *Indonesia Health Profile 2020*. Kementerian Kesehatan Indonesia.
- Mulyanto, J., Kringos, D.S. and Kunst, A.E. (2019) 'Socioeconomic inequalities in healthcare utilisation in Indonesia: a comprehensive survey-based overview', *BMJ Open*, 9(7), p. e026164. Available at: <https://doi.org/10.1136/bmjopen-2018-026164>.
- National Institute of Health Research and Development Ministry of Health of the Republic of Indonesia (2019) *National Report: The 2018 Basic Health Research*. National Institute of Health Research and Development Ministry of Health of the Republic of Indonesia.
- Oktarianita, Sartika, A. and Wati, N. (2021) 'Relationship of Employment Status and Income with Utilization of Public Health Center as Primary Services in Public Health Center of Sidomulyo', *Avicenna: Jurnal Ilmiah*, 16(2), pp. 91–96.
- Osaki, K. *et al.* (2018) 'Maternal and Child Health Handbook use for Maternal and Child Care: A Cluster Randomized Controlled Study in Rural Java, Indonesia', *Journal of Public Health*, 41(1), pp. 170–182. Available at: <https://doi.org/10.1093/pubmed/idx175>.
- Raghupathi, V. and Raghupathi, W. (2020) 'The Influence of Education on Health: An Empirical Assessment of OECD Countries for the Period 1995-2015', *Archives of Public Health*, 78(1), pp. 1–18. Available at: <https://doi.org/10.1186/s13690-020-00402-5>.
- Ridwanah, A.A., Nugraheni, E. and Laksono, A.D. (2022) 'The Role of Education Level in the Utilization of Puskesmas on Madura Island, East Java, Indonesia', *Jurnal Keperawatan Indonesia Timur*, 2(1), pp. 8–17.
- Sari, F.N., Zulfendri and Sanusi, S.R. (2020) 'Referral Demand of Patients in Pantai Cermin Public Health Center Langkat', *Bio HS Journal*, 2(1), pp. 314–320.
- Sokang, Y.A., Westmaas, A.H. and Kok, G. (2019) 'Jakartans' Perceptions of Health Care Services', *Frontiers in Public Health*, 7, p. 277. Available at: <https://doi.org/10.3389/fpubh.2019.00277>.
- Sulaiman, E.S. (2021) *Management and Health: Theory and Practice in Puskesmas (Manajemen Kesehatan: Teori dan Praktik di Puskesmas)*. UGM Press.
- Wei, Y. *et al.* (2018) 'Hospital Efficiency and Utilization of High-Technology Medical Equipment: A Panel Data

- Analysis', *Health Policy and Technology*, 7(1), pp. 65–72. Available at: <https://doi.org/10.1016/j.hlpt.2018.01.001>.
- Wenang, S. *et al.* (2021) 'Availability and Accessibility of Primary Care for the Remote, Rural, and Poor Population of Indonesia', *Frontiers in Public Health*, 9, p. 721886. Available at: <https://doi.org/10.3389/fpubh.2021.721886>.
- Wulandari, R.D., Ridho, I.A., *et al.* (2019) 'Pengaruh Pelaksanaan Akreditasi Puskesmas terhadap Kepuasan Pasien', *Media Kesehatan Masyarakat Indonesia*, 15(3), p. 228. Available at: <https://doi.org/10.30597/mkmi.v15i3.6195>.
- Wulandari, R.D., Qomarrudin, M.B., *et al.* (2019) 'Socioeconomic Disparities in Hospital Utilization among Elderly People in Indonesia', *Indian Journal of Public Health Research and Development*, 10(11), pp. 1800–1804. Available at: <https://doi.org/10.5958/0976-5506.2019.03885.3>.
- Wulandari, R.D. *et al.* (2022) 'Socioeconomic Disparities in Hospital Utilization Among Female Workers in Indonesia: A Cross-Sectional Study', *Journal of Primary Care & Community Health*, 13(2), pp. 1–7. Available at: <https://doi.org/10.1177/21501319211072679>.
- Wulandari, R.D. *et al.* (2023) 'Regional Differences in Primary Healthcare Utilization in Java Region-Indonesia', *PLoS ONE*, 18(3), p. e0283709. Available at: <https://doi.org/10.1371/journal.pone.0283709>.
- Wulandari, R.D. and Laksono, A.D. (2019) 'Urban-Rural Disparity: The Utilization of Primary Healthcare Centers among Elderly in East Java, Indonesia', *JAKI*, 7(2), pp. 147–154. Available at: <https://doi.org/10.20473/jaki.v7i2.2019.147-154>.
- Wulandari, R.D., Laksono, A.D. and Matahari, R. (2020) 'The Effects of Health Insurance on Maternity Care in Health Services in Indonesia', *IJICC*, 14(2), pp. 478–497.

# FACTORS INFLUENCING EXPECTANT MOTHERS' CONTINUED USE OF DIGITAL HEALTH INFORMATION

*Faktor-Faktor yang Mempengaruhi Kelanjutan Penggunaan Informasi Kesehatan Digital oleh Ibu Hamil*

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## Abstract

**Background:** Expectant women receive healthcare education at antenatal care (ANC) clinics, but it is noteworthy that expectant mothers tend to seek information from various sources beyond their primary healthcare providers.

**Aims:** The study aims to investigate determinants influencing expectant mothers' continuous use of digital media for pregnancy information.

**Methods:** The study involves participants of expectant women who attend ANC clinics in five municipal hospitals. The hypotheses were tested with 580 responses using Structural Equation Modeling (SEM) via SmartPLS version 4.

**Results:** The findings revealed that social media healthcare information usage, perceived severity, and emotional support on social media influence expectant mothers' decisions to continue using digital media for healthcare purposes. However, the effect of perceived vulnerability on social media healthcare information usage was insignificant.

**Conclusion:** This study concludes that expectant mothers will continue to adopt digital platforms to access healthcare information. The findings provide recommendations to help healthcare providers advance antenatal care.

**Keywords:** emotional support, healthcare, expectant women, SMHIC, social media

## Abstrak

**Latar Belakang:** Wanita hamil menerima pendidikan kesehatan di klinik perawatan antenatal (ANC), namun perlu diperhatikan bahwa ibu hamil cenderung mencari informasi dari berbagai sumber di luar penyedia layanan kesehatan utama mereka.

**Tujuan:** Tujuan dari penelitian ini adalah untuk menyelidiki faktor-faktor penentu yang mempengaruhi penggunaan media digital secara terus-menerus untuk informasi kehamilan oleh ibu hamil.

**Metode:** Penelitian ini melibatkan partisipasi wanita hamil yang mengunjungi klinik ANC di lima rumah sakit kota. Hipotesis diuji dengan 580 tanggapan menggunakan Structural Equation Modeling (SEM) melalui SmartPLS versi 4.

**Hasil:** Temuan ini mengungkapkan bahwa penggunaan informasi layanan kesehatan di media sosial, persepsi tingkat keparahan, dan dukungan emosional di media sosial memengaruhi keputusan ibu hamil untuk terus menggunakan media digital untuk tujuan layanan kesehatan. Namun, pengaruh persepsi kerentanan terhadap penggunaan informasi layanan kesehatan di media sosial tidak signifikan.

**Kesimpulan:** Studi ini menyimpulkan bahwa ibu hamil akan terus mengadopsi platform digital untuk mengakses informasi kesehatan. Temuan ini memberikan rekomendasi untuk membantu penyedia layanan kesehatan meningkatkan layanan antenatal.

**Kata kunci:** dukungan emosional, ibu hamil, kesehatan, media sosial, SMHIC



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## Introduction

Pregnancy is a moment of transformation that may be both gratifying and stressful (Downe *et al.*, 2018). It is a period of change that brings physical and emotional challenges to expectant women (Smith *et al.*, 2020).

In order to increase the likelihood of a good pregnancy and delivery, it is imperative that expectant women have access to relevant health information (Ngozi, Anasi, and Allison, 2018). Expectant women have a lot of responsibilities since their mental and physical situations are unique (Hamzehei *et al.* 2018). Per the nature of their condition, they require a lot of information about pregnancy and childcare. Expectant women experience a period of profound change on all fronts, including physical, social, and psychological changes (Özkan, Şengül and Sözbir, 2021). Expectant women attach great importance to the timely availability of information, as they often experience an urgent need to obtain knowledge, especially concerning the well-being of their developing fetus (Jaks *et al.* 2019). Given the multifaceted physiological transformations that transpire during pregnancy, it is essential that expectant mothers receive adequate care from healthcare professionals in an accredited health facility. One of the facilities that has been designated for healthcare education for expectant women is the Antenatal Care [ANC] Clinic.

Notwithstanding, there are other means, including digital sources, that expectant mothers use to obtain healthcare information. The new digital media available has provided new avenues for the dissemination of healthcare information (Ofori, Antwi, and Owusu-Ansah, 2021; Ofori and Wang, 2022). A recent study shows that digital sources are among the most popular types of information sources utilized by expectant women (Harpel, 2018; Broeke *et al.*, 2022). Investigations revealed that diverse determinants significantly impact users' decisions to adopt social media platforms (Ofori and Oduro-Asante, 2022; Ofori, 2023a).

Studies show that expectant women adopt digital health for various purposes (Hamzehei *et al.*, 2018; Harpel, 2018; Broeke *et al.*, 2022; Damayanti *et al.*, 2022). However, little has been done when it comes to combining the use behavior construct of the Unified Theory of Acceptance and Use of Technology (UTAUT) model, emotional support of the Social Support Model, and threat appraisal of the Protection Motivation Theory (PMT) to study expectant women's health.

The overarching aim of this study is to determine the factors that influence expectant women's continued usage of digital healthcare information, especially with regard to social media platforms. This research assesses expectant women's persistence in using social media healthcare information through emotional support on social media, social media healthcare information usage, perceived vulnerability, and perceived severity. Considering the above review, we hypothesized the following:

*H1: Emotional support received on digital platforms has a significant effect on the continued usage of digital platforms.*

*H2: Social media healthcare information usage influences expectant women's decision to continue digital platform usage.*

*H3: Perceived vulnerability relates positively to the continuance usage of social media for healthcare information.*

*H4: Perceived severity has a significant influence on the continuance of usage of social media healthcare information*

## Method

This study utilized the quantitative research method, employing a questionnaire as the primary instrument for data collection. Convenience sampling was used to select participants for the study and the data collection period spanned from May to August 2022. To validate the social media healthcare information continuance (SMHIC) usage model, the study targeted participants from five hospitals located in the Greater Accra region of Ghana. These facilities include Lekma Hospital, Police Hospital, Pentecost Hospital Madina, St.

John's Hospital and Fertility Centre, and Trust Mother and Child Hospital.

The participants selected for this study consisted of expectant women who were receiving prenatal care and possessed the ability to read and write. To ensure compliance with ethical standards, the researchers obtained approval from both the Ghana Health Service Ethics Review Committee (GHSERC:001/01/22) and the hospital authorities. The survey was initiated by providing expectant women with information regarding the purpose and scope of the study. Subsequently, those who expressed their willingness to participate were provided with a consent sheet for endorsement. The questionnaire was either administered by the principal investigator or the field agents. Upon completion, participants were presented with a token package of three pieces of bar soap.

The questionnaire was divided into two sections. The initial part consisted of demographic data, while the subsequent section comprised questions pertaining to the constructs used in this research. The study used a model consisting of five variables, comprising four exogenous constructs and one endogenous construct. The model was assessed using 18 measurement items, excluding all demographic variables. The ESPSM items were adapted from the work of Lin, Wang and Hajli (2019), the SMHIU items were from Venkatesh *et al.* (2003) and Puspitasari and Firdauzy (2019). Additionally, the SMHIC items were developed based on items from Chiu, Cho and Chi (2020), while the PS and PV were adapted from Jun, Park and Cho (2019) and Shatta *et al.* (2020). The question from the second section used a five-point Likert scale, where one (1) indicated strongly disagree and five (5) represented strongly agree.

The concepts of the study were explained as follows: Emotional support on social media refers to the extent to which expectant women regard digital platforms as providing a valuable chance to receive

care and attention from other users. Social media healthcare information usage is explained as the utilization of digital platforms by expectant women to manage their pregnancy through accessing healthcare-related information. Perceived vulnerability is explained as the expectant woman's assessment of the likelihood of encountering a possible risk during the course of her pregnancy. Meanwhile, perceived severity refers to the degree of intensity associated with the potential risks of pregnancy for the overall well-being of expectant women. The continued use of healthcare information on social media is explained as expectant women's persistent use of digital health information.

Hypotheses were formulated, proposing that ESPSM, SMHIU, PS, and PV would exert an influence on SMHIC. This implies that the variables ESPSM, SMHIU, PS, and PV are expected to have a statistically significant positive impact on the dependent variable SMHIC.

The data was analyzed employing the SmartPLS. To evaluate the measurement and structural models, the researchers conducted an analysis of convergent validity (CV), internal consistency reliability, and discriminant validity (DV). The assessment of the CV was conducted by utilizing the outer loadings and average variance extracted (AVE). According to the recommendations put forward by Hair *et al.* (2013), it is advised that the outer loadings values should be equal to or more than 0.70. Additionally, Hair *et al.* (2017) indicate that the average variance extracted (AVE) should be at least 0.50. Once again, the researchers employed composite reliability and Cronbach's alpha as measures of internal consistency reliability, with a recommended threshold value of > 0.70.

In addition, the assessment of discriminant validity (DV) was conducted by utilizing the heterotrait-monotrait ratio test (HTMT), with a recommended threshold of less than 0.9, as suggested by Henseler, Ringle and Sarstedt, (2015).

Table 1. Results of demographic characteristics

Variables	Category	Frequency	Percentage (%)
Age Group	18-25 year	107	18
	26-30 year	260	45
	31-40 year	207	36
	41 year and above	6	1
	Total	580	100
Educational Level	High School	246	42.4
	Diploma	119	30.5
	Degree	177	20.5
	Postgraduate	19	3.3
	Other	19	3.3
	Total	580	100
Pregnancy Stage	1 <sup>st</sup> Trimester	151	26
	2 <sup>nd</sup> Trimester	224	39
	3 <sup>rd</sup> Trimester	205	35
	Total	580	100
Number of Pregnancy	First Pregnancy	256	44.1
	Second Pregnancy	231	39.8
	Third Pregnancy	37	6.4
	Fourth Pregnancy or More	56	9.7
	Total	580	100

Source: Authors' Report

## Result and Discussion

### Results of Demographic variables

As illustrated in Table 1, the age distribution of the respondents reveals several noteworthy findings: 1) A total of 107 respondents, constituting 18% of the sample, fell within the age range of 18–25 years. The largest segment of participants, 260 individuals, or 45% of the sample, belonged to the 26–30 age group. Additionally, 207 respondents, accounting for 36% of the sample, were situated within the age bracket of 31–40 years. 2) A smaller fraction of the respondents, precisely six individuals, representing 1.0% of the sample, were found to be over 40 years of age.

These findings provide a comprehensive overview of the age distribution among the expectant women who participated in the study, offering valuable demographic insights that prove relevant to the research objective. The age

composition of the sample population and other demographic information indicate that expectant women of all ages and different stages are interested in knowing more about pregnancy, which significantly informs the subsequent analyses and interpretations of the study's outcomes.

### The Measurement Model

This model consists of five variables, namely ESPSM, PS, PV, SMHIU, and SMHIC, which had 18 items. The outer loadings of the items ESPSM to SMHIU were greater than 0.6, which indicates good validity. Again, average variance extracted (AVE) values for all the constructs were greater than 0.50, showing adequate validity. Cronbach's alpha and composite reliability had values > 0.78. Discriminant validity was also assessed using HTMT, and the values obtained were < 0.9, as recommended (Henseler, Ringle and Sarstedt, 2015). All the results are presented in Table 2.

Table 2. Results of the measurement model

Constructs	Items	Convergent validity		Internal Reliability		Discriminant Validity
		Outer loadings	AVE	Cronbach's alpha	CR	HTMT Less than 1
Emotional support on social media	ESPSM1	0.771	0.648	0.844	0.846	Yes
	ESPSM2	0.884				
	ESPSM3	0.753				
Perceived severity	PS1	0.863	0.625	0.894	0.892	Yes
	PS2	0.804				
	PS3	0.760				
	PS4	0.722				
	PS5	0.796				
Perceived vulnerability	PV1	0.657	0.559	0.786	0.789	Yes
	PV2	0.682				
	PV3	0.884				
Social media healthcare information continuance usage	SMHIC1	0.826	0.593	0.803	0.805	Yes
	SMHIC2	0.629				
	SMHIC3	0.819				
Social media healthcare information usage	SMHIU2	0.821	0.673	0.892	0.891	Yes
	SMHIU3	0.819				
	SMHIU4	0.780				
	SMHIU5	0.858				

**Coefficients of determination and predictive relevance**

	R-square	Q <sup>2</sup>	Model	SRMR
SMHIC	0.737	0.546	Saturated Model	0.037

Abbreviations: AVE = average variance extracted, CR = Composite reliability; HTMT= heterotrait-monotrait ratio test

**The Structural model**

The structural model was assessed using structural equation modeling (SEM). The findings show that SMHIC was predicted by ESPSM ( $\beta=0.215$ ;  $t=4.174$ ;  $p<0.000$ ), SMHIU ( $\beta=0.659$ ;  $t=12.446$ ;  $p<0.000$ ), and PS ( $\beta=0.151$ ;  $t=2.920$ ;  $p<0.005$ ). However, PV was not influential on SMHIC ( $\beta=-0.039$ ;  $t=0.664$ ;  $p>0.50$ ), which did not support the hypothesis (H3). The findings of the analysis are presented in Table 3. The results show that the variance inflation factor (VIF) was greater than 1.508, which indicates there was no collinearity (Diamantopoulos and Siguaw, 2006). The R<sup>2</sup> for SMHIC was 0.737, which indicates a substantial value (Hair, Ringle and Sarstedt, 2011), while the Q<sup>2</sup> was 0.546, demonstrating the model has predictive relevance (Geisser, 1974). Meanwhile, the model fit was 0.037, which indicates that the data were suitable for the

analysis. The results are presented in Figure 1 and Table 3.

The present study investigated the determinants that contribute to the persistent use of social media for health-related information among expectant mothers. The proposed model was based on social media health information usage, emotional support on social media, perceived vulnerability, perceived severity, and social media. According to the outcome of the study, continued usage of social media for healthcare information is impacted by the emotional support provided on social media. The findings revealed that the hypothesis (H1), emotional support on social media (ESPSM), has a significant effect on social media healthcare information continuance (SMHIC) usage, and it is therefore supported (Table 3).

Table 3. Hypothesis testing results.

Hypothesis	Path relations	Beta	Standard Error	t-value	p-values	Decision
H1	ESPSM -> SMHIC	0.215	0.051	4.174	0.000	Supported
H2	SMHIU -> SMHIC	0.659	0.053	12.446	0.000	Supported
H3	PV -> SMHIC	-0.039	0.059	0.664	0.507	Not Supported
H4	PS -> SMHIC	0.151	0.052	2.920	0.004	Supported

Abbreviations: ESPSM = emotional support on social media PV = perceived vulnerability, and PS = perceived severity, SMHIU = social media healthcare information usage, SMHIC = social media healthcare information continuance usage

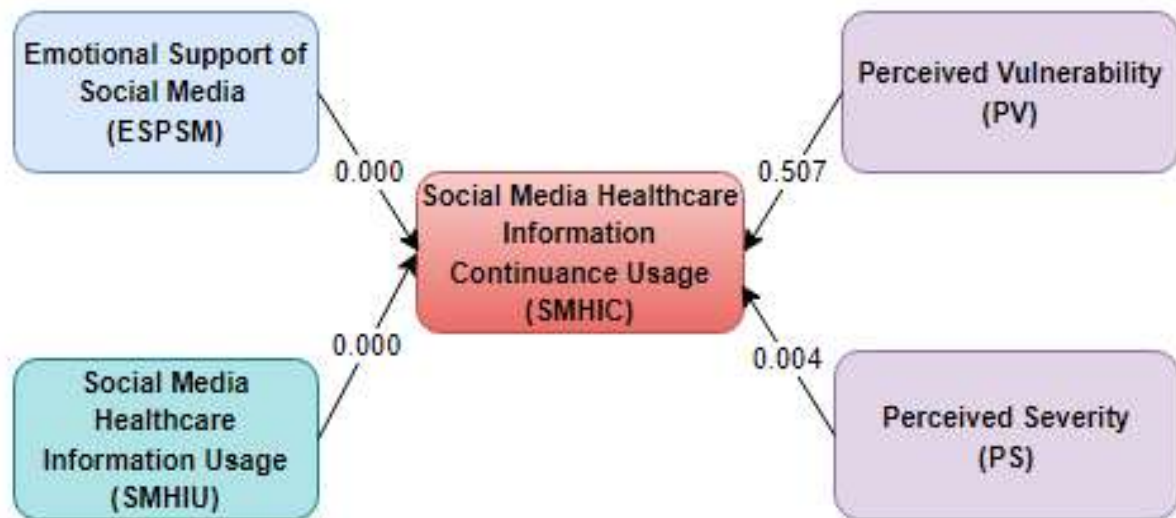


Figure 1. Results of Structural Model

The beneficial importance of this association is demonstrated by the effect that is presented in this study. This suggests that expectant women will continue to utilize digital healthcare platforms to receive emotional support from other users of these platforms. A significant conclusion that emerges from the investigation is that the majority of the women, 256 (44.1%), had conceived for the first time, which shows that this group is desperate for support. The fact that these women have chosen to be active on digital media demonstrates that the assistance they are receiving is beneficial to them; hence, they have decided to continue utilizing these platforms for the optimum impact. The results imply that emotional support on social media helps expectant mothers feel more at peace and happier, both of which have favorable effects on the unborn baby. The findings suggest that receiving emotional support confers a sense of significance and direction in the

life of the expectant woman (Ngai *et al.*, 2021). This study gives a new insight into social media usage and emotional support. The current study used emotional support as an independent variable to assess social media health information continuance usage, which is different from the study by Shensa *et al.* (2016), which used emotional support as a dependent variable in another study. The area of focus in this study makes it unique from previous studies (Pourfallahi *et al.*, 2019; Wu *et al.*, 2019).

Furthermore, the research findings indicate that the utilization of healthcare information on social media has a favorable impact on the continuous use of social media for healthcare purposes. The results supported hypothesis two (H2), that healthcare information on social media will influence the continuance of the usage of such information (Table 3). The outcome clearly shows that expectant women who use digital platforms will persist in their usage. The findings indicate that the

importance of the information obtained from digital media platforms makes it very difficult for them to decline its usage. The findings of the current study presented new dimensions of previous studies (Deng, Liu and Hinz, 2015; Zahedul *et al.*, 2020; Gu *et al.*, 2021). These studies have used behavior as a dependent variable; however, the current studies have this variable as an independent variable, which examines continued use. The outcome of this research is unique in that it presents a different approach to the use of the UTAUT and expectation confirmation models.

Additionally, the effect of perceived vulnerability on the continued use of social media healthcare information was assessed. The results revealed that the perceived vulnerability of a woman's pregnancy has no significant effect on the person's decision to continue using social media for health information. This result did not support the proposed hypothesis three (H3). It is counterintuitive that perceived vulnerability does not result in sustained use. The aforementioned findings can be rationalized by the notion that expectant women initially resort to digital sources due to their susceptibility. Yet, they exercise discerning judgment in regard to the knowledge they obtain. Based on this notion, it is assumed expectant mothers will not persist in utilizing digital information. Furthermore, their decision to discontinue using digital health information may be because the knowledge they have already obtained will prompt them to seek advice from their healthcare providers. The results bring new findings, as most previous studies that employed perceived vulnerability assessed issues such as security protection intention (Hassandoust and Techatassanasoontorn, 2020) or a moderator for behavioral intention in health monitoring (Beh *et al.*, 2019). In as much as other studies in health adopted threat appraisal, its dependent variables were problem and emotion-focused coping (Marakhimov and Joo, 2017) but not continuance use of the health system.

Finally, the study examined the impact of the perceived severity of pregnancy on the continued usage of social media for healthcare information. The

findings indicate that the level of danger is positively associated with the sustained utilization of digital media for health-related information. The result corroborated the hypothesis (H4) that the perceived severity factor will have a noteworthy effect on the sustained usage of digital media in healthcare (Table 3). The observation that perceived severity did impact expectant women's continuance usage of digital health information suggests that the absence of information-seeking behavior in a particular instance does not preclude its manifestation in a critical condition. The findings suggest that expectant women are unable to forego the acquisition of knowledge, regardless of the situation. Jacobs, Steijn, and Pampus (2019) reported that approximately 90% of the female respondents acknowledged the authenticity of the information obtained and relied on it to make decisions regarding their pregnancies. However, the focus of the study was not on the continued use of health information. Even studies (Beh *et al.*, 2019; Hassandoust and Techatassanasoontorn, 2020; Silver, Subramaniam and Stylianou, 2020) that used perceived severity in their study utilize it as a moderator or used it to assess different dependent variables. This study is novel as it combined constructs from social support, UTAUT, and PMT to examine expectant mothers' continued utilization of digital health information. It is also significantly distinct from previous works in continuance intention (Alsyouf, Ishak and Abdullah, 2018; Imlawi and Gregg, 2020; Yang and Jong, 2021; Tian and Wu, 2022).

### Limitations

This study has a few limitations: for example, it only looks at expectant women in a few hospitals in the nation's capital; hence, the results cannot be extrapolated to the whole population. Nevertheless, the data collected for this study were deemed satisfactory in relation to the objectives and scope of the report. Moreover, the participants freely engaged in the study, and their voluntary involvement did not exert any detrimental influence on the outcomes. To compile a comprehensive report, subsequent research might

approach the topic from a longitudinal perspective. This continuing study has room for improvement, and future authors can advance this work by introducing trust and satisfaction to improve the study.

## Conclusion

The utilization of this model demonstrates that expectant women have embraced the use of social media platforms for health-related purposes, and their continued usage is impacted by ESPSM, SMHIU, and PS. Since expectant mothers are using digital media for health-related purposes, health delivery facilities providing services to expectant mothers may consider creating social media groups and platforms aimed at supporting expectant women so that they will not gather false information that will endanger their lives and the unborn child. The findings of this study offer empirical and scientific insights that contribute to a better understanding of the behaviors exhibited by expectant women in relation to their continued use of social media for accessing healthcare information during pregnancy. Moreover, the findings will contribute to the existing body of knowledge in the field of digital health and foster a greater understanding, hence stimulating additional research in this emerging area.

## Abbreviations

ESPSM: emotional support on social media; SMHIU: social media healthcare information usage, SMHIC: social media healthcare information continuance usage; PV: perceived vulnerability; PS: perceived severity; ANC: antenatal care (ANC), UTAUT: the unified theory of acceptance and use of technology model, PMT: protection motivation theory, HTMT: heterotrait-monotrait ratio test, AVE: average variance extracted, CV: convergent validity, DV: discriminant validity, VIF: variance inflation factor, SEM: structural equation modeling.

## Declarations

## Ethics Approval and Consent Participant

This research was approved by the Ghana Health Service Ethics Review Committee (GHSERC:001/01/22), and all five hospital authorities approved this study.

## Conflict of interest

The authors declared no potential conflict of interest with respect to the research and publication of the article.

## Availability of Data and Materials

Not applicable

## Authors' Contribution

PPO developed the study concept and methodology; PPO, KKK, and DKL wrote, reviewed, and evaluated the manuscript; and PPO created the original draft.

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## References

- Alsyouf, A., Ishak, A.K. and Abdullah, O.Y. (2018) 'Understanding EHRs continuance intention to use from the perspectives of UTAUT: Practice environment moderating effect and top management support as predictor variables', *International Journal of Electronic Healthcare*, 10(1–2), pp. 24–59. Available at: <https://doi.org/10.1504/IJEH.2018.092175>.
- Beh, P.K. *et al.* (2019) 'Using smartwatches for fitness and health monitoring: the UTAUT2 combined with threat appraisal as moderators', *Behaviour and Information Technology*, 0(0), pp. 1–18. Available at: <https://doi.org/10.1080/0144929X.2019.1685597>.
- Broeke, M.V. *et al.* (2022) 'Sources of information used by women during pregnancy and the perceived quality', *BMC Pregnancy and Childbirth*, pp. 1–12. Available at: <https://doi.org/10.1186/s12884-022->

- 04422-7.
- Chiu, W., Cho, H. and Chi, C.G. (2020) 'Consumers' continuance intention to use fitness and health apps: an integration of the expectation–confirmation model and investment model', *Information Technology and People*, 34(3), pp. 978–998. Available at: <https://doi.org/10.1108/ITP-09-2019-0463>.
- Damayanti, N.A. *et al.* (2022) 'the Internet As a Health Information in Decision Making of Pregnant Women', *Indonesian Journal of Health Administration*, 10(1), pp. 79–88. Available at: <https://doi.org/10.20473/jaki.v10i1.2022.79-88>.
- Deng, Z., Liu, S. and Hinz, O. (2015) 'The health information seeking and usage behavior intention of Chinese consumers through mobile phones', *Information Technology and People*, 28(2), pp. 405–423. Available at: <https://doi.org/10.1108/ITP-03-2014-0053>.
- Downe, S. *et al.* (2018) 'What matters to women during childbirth: A systematic qualitative review', *PLoS ONE*, 13(4), pp. 1–17. Available at: <https://doi.org/10.1371/journal.pone.0194906>.
- Geisser, S. (1974) 'A predictive approach to the random effect model', *Biometrika*, 61(1), pp. 101–107. Available at: <https://doi.org/https://doi.org/10.1093/biomet/61.1.101>.
- Gu, D. *et al.* (2021) 'Assessing the Adoption of e-Health Technology in a Developing Country: An Extension of the UTAUT Model', *SAGE Open*, 11(3), pp. 1–16. Available at: <https://doi.org/10.1177/21582440211027565>.
- Hair, J.F. *et al.* (2013) 'Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance', *Long Range Planning*, 46(1–2), pp. 1–12. Available at: <https://doi.org/10.1016/j.lrp.2013.01.001>.
- Hair, J.F. *et al.* (2017) 'A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). Thousand Oaks', Sage, p. 165.
- Hair, J.F., Ringle, C.M. and Sarstedt, M. (2011) 'PLS-SEM: Indeed a silver bullet', *Journal of Marketing Theory and Practice*, 19(2), pp. 139–152. Available at: <https://doi.org/10.2753/MTP1069-6679190202>.
- Hamzehei, R. *et al.* (2018) 'Online Health Information Seeking Behavior among Iranian Pregnant Women: A Case Study', *Library Philosophy and Practice (e-journal)*, pp. 1–17.
- Harpel, T. (2018) 'Pregnant women sharing pregnancy-related information on Facebook: Web-based survey study', *Journal of Medical Internet Research*, 20(3), pp. 1–16. Available at: <https://doi.org/10.2196/jmir.7753>.
- Hassandoust, F. and Techatassanasoontorn, A.A. (2020) *Understanding users' information security awareness and intentions: A full nomology of protection motivation theory, Cyber Influence and Cognitive Threats*. Elsevier Inc. Available at: <https://doi.org/10.1016/B978-0-12-819204-7.00007-5>.
- Henseler, J., Ringle, C.M. and Sarstedt, M. (2015) 'A new criterion for assessing discriminant validity in variance-based structural equation modeling', *Journal of the Academy of Marketing Science*, 43(1), pp. 115–135. Available at: <https://doi.org/10.1007/s11747-014-0403-8>.
- Imlawi, J. and Gregg, D. (2020) 'Understanding the satisfaction and continuance intention of knowledge contribution by health professionals in online health communities', *Informatics for Health and Social Care*, 45(2), pp. 151–167. Available at: <https://doi.org/10.1080/17538157.2019.1625053>.
- Jacobs, E.J.A., Steijn, M.E. Van and Pampus, M.G. Van (2019) 'Sexual & Reproductive Healthcare Internet usage of women attempting



- pregnancy and pregnant women in the Netherlands', *Sexual & Reproductive Healthcare*, 21(April), pp. 9–14. Available at: <https://doi.org/10.1016/j.srhc.2019.04.005>.
- Jaks, R. *et al.* (2019) 'Parental digital health information seeking behavior in Switzerland : a cross-sectional study', *BMC Public Health*, pp. 1–11.
- Jun, J., Park, H. and Cho, I. (2019) 'Study on initial adoption of advanced driver assistance system: integrated model of PMT and UTAUT 2', *Total Quality Management and Business Excellence*, 30(sup1), pp. S83–S97. Available at: <https://doi.org/10.1080/14783363.2019.1665820>.
- Lin, X., Wang, X. and Hajli, N. (2019) 'Building E-Commerce Satisfaction and Boosting Sales : The Role of Social Commerce Trust and Its Antecedents', *International Journal of Electronic Commerce*, 23(3), pp. 328–363. Available at: <https://doi.org/10.1080/10864415.2019.1619907>.
- Marakhimov, A. and Joo, J. (2017) 'Consumer adaptation and infusion of wearable devices for healthcare', *Computers in Human Behavior*, 76, pp. 135–148. Available at: <https://doi.org/10.1016/j.chb.2017.07.016>.
- Ngai, S.S. *et al.* (2021) 'Mediating Effects of Emotional Support Reception and Provision on the Relationship between Group Interaction and Psychological Well-Being : A Study of Young Patients', *International Journal of Environmental Research and Public Health* [Preprint]. Available at: <https://doi.org/https://doi.org/10.3390/ijerph182212110>.
- Ngozi, S., Anasi, I. and Allison, G.O. (2018) 'Sociodemographic Determinants of Information Sources Availability and Use Among Pregnant Women in Ilesan-Remo, Ogun State, Nigeria', *Journal of Hospital Librarianship*, 18(1), pp. 47–63. Available at: <https://doi.org/10.1080/15323269.2018.1400833>.
- Ofori, P.P. (2023a) [Forthcoming] 'Social Media in Pregnancy Care: Exploring Adoption Factors and Digital Healthcare Information Utilization among Expectant Mothers in Ghana', *Ethiopian Journal of Health Sciences*.
- Ofori, P.P., Antwi, E.A. and Owusu-Ansah, K.A. (2021) 'The mediating effects of satisfaction and attitude on consumers' intent toward adoption of social media healthcare information', *Journal of Health and Social Sciences*, 6(3), pp. 391–402. Available at: <https://doi.org/10.19204/2021/thmd5>.
- Ofori, P.P. and Oduro-Asante, A. (2022) 'Using Extraversion to Investigate Social Media Purchase Adoption', *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, 8(4), pp. 91–104. Available at: <https://doi.org/10.32628/cseit22849>.
- Ofori, P.P. and Wang, W. (2022) 'Emerging technologies adoption in healthcare: A SOHI model', *Information Development*, pp. 1–19. Available at: <https://doi.org/10.1177/0266666922113766>.
- Özkan, S., Şengül, Ş. and Sözbir, Y. (2021) 'Use of Mobile Applications by Pregnant Women and Levels of Pregnancy Distress During the COVID - 19 ( Coronavirus ) Pandemic', *Maternal and Child Health Journal*, 25(7), pp. 1057–1068. Available at: <https://doi.org/10.1007/s10995-021-03162-y>.
- Pourfallahi, M. *et al.* (2019) 'The effect of informational-emotional support program on illness perceptions and emotional coping of cancer patients undergoing chemotherapy', *Supportive Care in Cancer*, 28(2), pp. 485–495. Available at: <https://doi.org/10.1007/s00520-019-04842-w>.
- Puspitasari, I. and Firdauzy, A. (2019) 'Characterizing consumer behavior in leveraging social media for e-patient

- and health-related activities', *International Journal of Environmental Research and Public Health*, 16(18), pp. 3–5. Available at: <https://doi.org/10.3390/ijerph16183348>.
- Shatta, D.N. *et al.* (2020) 'The Influence of Relative Advantage Towards e-Procurement Adoption Model in Developing Countries: Tanzania Context', *European Scientific Journal ESJ*, 16(28), pp. 130–149. Available at: <https://doi.org/10.19044/esj.2020.v16n28p130>.
- Shensa, A. *et al.* (2016) 'Social Media Use and Perceived Emotional Support Among US Young Adults', *Journal of Community Health*, 41(3), pp. 541–549. Available at: <https://doi.org/10.1007/s10900-015-0128-8>.
- Silver, R.A., Subramaniam, C. and Stylianou, A. (2020) 'The impact of portal satisfaction on portal use and health-seeking behavior: Structural equation analysis', *Journal of Medical Internet Research*, 22(3), pp. 1–13. Available at: <https://doi.org/10.2196/16260>.
- Smith, M. *et al.* (2020) 'The relationship between digital media use during pregnancy, maternal psychological wellbeing, and maternal-fetal attachment', *PLoS ONE*, 15(12 December), pp. 1–15. Available at: <https://doi.org/10.1371/journal.pone.0243898>.
- Tian, X.F. and Wu, R.Z. (2022) 'Determinants of the Mobile Health Continuance Intention of Elders with Chronic Diseases: An Integrated Framework of ECM-ISC and UTAUT', *International Journal of Environmental Research and Public Health*, 19(16). Available at: <https://doi.org/10.3390/ijerph19169980>.
- Venkatesh, V. *et al.* (2003) 'User acceptance of information technology: Toward a unified view', *MIS Quarterly: Management Information Systems*, 27(3), pp. 425–478. Available at: <https://doi.org/10.2307/30036540>.
- Wu, J. *et al.* (2019) 'Impact of Emotional Support, Informational Support, and Norms of Reciprocity on Trust Toward the Medical Aesthetic Community: The Moderating Effect of Core Self-Evaluations', *Interactive Journal of Medical Research*, 8(1), pp. 1–12. Available at: <https://doi.org/10.2196/11750>.
- Yang, J. and Jong, D. (2021) 'Understanding Continuance Intention Determinants to Adopt Online Health Care Community: An Empirical Study of Food Safety', *International Journal of Environmental Research and Public Health*, 18(6514). Available at: <https://doi.org/https://doi.org/10.3390/ijerph18126514>.
- Zahedul, M. *et al.* (2020) 'Factors influencing the adoption of mHealth services in a developing country: A patient-centric study', *International Journal of Information Management*, 50(April 2019), pp. 128–143. Available at: <https://doi.org/10.1016/j.ijinfomgt.2019.04.016>.

# A LONG AND WINDING ROAD OF THE TOBACCO-FREE AREAS IMPLEMENTATION IN SEMARANG

## Perjalanan Panjang dan Berliku Penerapan Kawasan Tanpa Rokok di Kota Semarang

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## Abstract

**Background:** The Tobacco-Free Areas (TFA) policy is an effective way to control the negative effects of smoking on the community, especially passive smokers. Semarang has had a TFA policy since 2013. However, some people still smoke freely in some areas, such as workplaces, kindergartens, and other public places.

**Aims:** Identifying the implementation of Semarang City Local Government Regulation Number 3 of 2013 concerning Tobacco-Free Areas.

**Methods:** This was qualitative research using the case study method. Data were collected using in-depth interviews with some key informants according to the inclusion criteria. Triangulation was conducted through observation and in-depth interviews with some informants. Data were analyzed using content analysis.

**Results:** Some violations still mainly occurred at the workplace and educational places, including government offices and schools. Violations happened due to inadequate support of the office's heads, insufficient workers and the society's awareness, policy rejection, inadequate financial support, lack of media exposure, and obscurity of the regulation articles, which led to misinterpretation. For example, Article 7 verse 3 states that the TFA regulation will be regulated by a mayor's decree. This statement weakens the regulation itself since the mayor's decree is not as strong as the local regulation.

**Conclusion:** The implementation of Semarang City Local Government Regulation Number 3 of 2013 concerning Tobacco-Free Areas has not been carried out properly in all TFA areas. Violations were still found in many areas.

**Keywords:** regulation, secondhand smokers, smoking, tobacco-free areas

## Abstrak

**Latar Belakang:** Kebijakan Kawasan Tanpa Rokok (KTR) adalah cara yang efektif untuk mencegah dampak negatif dari rokok pada perokok pasif. Kota Semarang telah memiliki Peraturan Daerah (Perda) untuk KTR sejak tahun 2013. Namun, peraturan ini belum dilaksanakan dengan baik. Pelanggaran masih terjadi di beberapa Kawasan, seperti tempat kerja, taman anak-anak, dan tempat umum lainnya.

**Tujuan:** Mengidentifikasi pelaksanaan Peraturan Daerah Kota Semarang No. 3 Tahun 2013 tentang Kawasan Tanpa Rokok.

**Metode:** Merupakan penelitian kualitatif menggunakan metode studi kasus. Pengumpulan data dilakukan dengan metode wawancara mendalam pada beberapa informan. Data dianalisis dengan analisis konten.

**Hasil:** Pelanggaran pada pelaksanaan Perda KTR masih terjadi. Pelanggaran paling banyak terjadi di Kawasan Tempat Kerja dan Kawasan Pendidikan, termasuk kantor pemerintahan dan sekolah-sekolah. Pelanggaran terjadi karena kurangnya dukungan dari pimpinan instansi, kurangnya kesadaran dari pekerja dan masyarakat, penolakan terhadap pelaksanaan Perda, kurangnya dukungan finansial, kurangnya publikasi media, dan ketidakjelasan salah satu pasal pada Perda yang membuat misinterpretasi pada pelaksanaan Perda itu sendiri. Pada pasal 7 ayat 3 menyatakan bahwa pemberlakuan Perda KTR akan ditetapkan dengan Keputusan Walikota. Ayat ini melemahkan Perda itu sendiri karena Surat Keputusan Walikota tidak sekuat Peraturan Daerah.

**Kesimpulan:** Pelaksanaan Perda KTR belum dilaksanakan dengan baik di seluruh Kawasan Tanpa Rokok di Kota Semarang. Pelanggaran terhadap Perda KTR masih banyak ditemukan.

**Kata kunci:** Kawasan Tanpa Rokok (KTR), merokok, peraturan daerah, perokok pasif



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## Introduction

In 2015, more than 1.1 million people worldwide were smokers. Indonesia is one of the countries with the highest number of smokers in the world (WHO, 2015). Based on the Basic Health Research 2013, 36.3% of Indonesian smokers were 15 years old and over. It is worsened by the fact that 1.4% of them were 10-14 years old. These data indicate that smokers in Indonesia start smoking at a very early age. The Basic Health Research 2013 also shows that 9.9% of smokers were unemployed, and 32.2% were in the lowest income quintile group. The average number of cigarettes Indonesians smoke was around 12.3 cigarettes daily or equivalent to a pack of cigarettes a day, and Bangka Belitung Province was reported to have the highest cigarette consumption, as many as 18.3 cigarettes or equivalent to 1.5 packs of cigarettes a day (Ministry of Health, 2013). In addition, Basic Health Research 2018 reported that the prevalence of smokers among those  $\geq 10$  years old in Indonesia was 28.8%, and 9.1% among 10-18 years old (Ministry of Health, 2018).

Smoking can endanger the health of smokers and others who inhale the smoke, often referred to as passive smokers (Khoramdad *et al.*, 2020). The Global Adults Tobacco Survey in Indonesia in 2011 found that out of five respondents, four of them were passive smokers who were exposed to smoke at home, and four of five passive smokers were exposed to smoke at restaurants (WHO, 2011).

Cigarette smoke contains 7,000 chemicals, with at least 250 harmful chemicals for the body, including hydrogen cyanide, carbon monoxide, and ammonia. Of the 250 dangerous chemicals, 69 chemicals can trigger cancers in the lungs, esophageal, laryngeal, mouth, throat, kidney, uterus, liver, pancreas, stomach, cervix, colon, rectum, and acute myeloid leukemia. These chemicals are detrimental to passive smokers (U.S. Food and Drug Administration, 2020; Cancer Research UK, 2021).

An optimal quality of people's lives may be achieved with a high degree of health condition. Therefore, the state must

perform integrated and comprehensive health efforts for its citizens. Realizing the efforts, the Semarang city government has made regulations and is expected to protect community health. For example, it regulates the limitation of smoking activity to provide rights to the community's health. In 2009, the Semarang city government stipulated Tobacco-Free Areas (TFA) through the Mayor Regulation Number 12 of 2009 concerning Non-Smoking Areas and Limited-Smoking Areas. However, the implementation of this regulation is considered ineffective due to the lack of commitment of the implementers (Kompas, 2009). From the first evaluation of this regulation, the TFA policy has been re-strengthened through local regulations to expand the regulatory coverage and further strengthen the regional government's commitment. This regulation is known as the Semarang City Local Government Regulation Number 3 of 2013 concerning Tobacco-Free Areas.

Several studies have shown that the implementation of the TFA policy is an effective way to reduce smoking behavior and provide clean air to the community (Levy *et al.*, 2018; Feliu *et al.*, 2019). However, the local government regulation has not been implemented optimally as people still smoke freely in many public places, such as workplaces, playgrounds, and other public places (Handayani *et al.*, 2020; Simaibang and Kismartini, 2016). Recognizing this evolving problem, this study aimed to identify the implementation of Semarang City Local Government Regulation Number 3 of 2013 concerning Tobacco-Free Areas.

## Method

This was descriptive research using a quasi-qualitative approach. Data were collected through in-depth interviews in late 2018. Informants involved in this study fulfilled the inclusion criteria, such as they should be the implementers of Semarang City Local Government Regulation Number 3 of 2013 concerning Tobacco-Free Areas as mentioned in Mayor's Decree No. 440/423/2015. Informants were interviewed by the researchers using Bahasa

Indonesia, and sometimes it was mixed with Javanese. The interview process was noted and recorded according to the informants' agreement. In-depth interviews were conducted with seven key informants, three of whom represented those from educational institutions, three others were from government offices, and the others were from a healthcare facility. All informants were the implementers of the TFA regulation in Semarang City.

The results of the interviews were then transcribed. After that, the transcriptions were simplified, sorted, and coded. Then, the data were displayed, presented, and concluded. After that, the other researchers rechecked to ensure the data and conducted the content analysis by comparing it with the triangulation result.

Validity and reliability were confirmed through triangulation. The triangulation was done through observation and in-depth interviews with three informants who were the supervisory team members from educational institutions, government offices, and a healthcare facility. Observations were conducted in 35 places, including seven areas of concern in the TFA regulation. Each of the areas was observed for as many as five places. The seven areas of concern were educational institutions including, junior high schools, senior high schools, and vocational high schools; working areas including, governmental institutions; public areas, including traditional markets, tourist attractions, and the mall; health care facilities, including a health center, public health care center, and hospital; worship areas including mosques, churches, pagodas, and monasteries; children's playground areas; and public transportation areas including train stations and bus stations. Observations were done at approximately the same time to reduce bias. Each place was divided into 4 to 10 spots, depending on the building area, the number of rooms, and the visibility limit. The observations were conducted for 10 minutes at each spot by observing the positive and negative indicators.

## Result and Discussion

In 2009, the Semarang City's Government established TFA through Mayor Regulation Number 12 of 2009 concerning Tobacco-Free Areas and Limited Smoking Areas. However, the implementation of this regulation was considered ineffective due to the lack of commitment from the implementers. Therefore, the determination of the TFA was strengthened again by making the Regional Regulations to expand the regulatory reach and further strengthen regional commitment. This regulation is known as Semarang City Regional Regulation Number 3 of 2013 concerning Tobacco-Free Areas, which was placed in the 2013 Semarang City Regional Gazette Number 3.

One of the articles of the TFA regulation contained a paragraph stating that the implementation of the Local Regulation of Semarang City No. 3 of 2013 was further regulated by the Mayor's Decrees, namely in Article 7 concerning the Establishment of a Smoking Area in paragraph (3). This paragraph says, "The enforcement of Tobacco-Free Areas in places or areas as referred to in paragraph (2) shall be stipulated by a Mayor's Decree." Thus, the Mayor's Decree No. 440/423/2015 was issued regarding the Stipulation of TFA in Semarang City which regulated, only three focus Tobacco-Free Areas, such as health service facilities, educational places, and government offices in Semarang City. Since then, until this study was conducted, no other mayor's decree regulated the other five Tobacco-Free Areas.

Another Mayor's Decree No. 440/501/2015 was the derivative of the local government regulation concerning formulating a supervision team from 2015-2016. It was the Mayor's Decree No. 440/501/2015. This decree regulates the supervision team of Local Regulation of Semarang City Number 3 of 2013, but the service period was only for 2015-2016. By the time this study was conducted, no amendment or new regulation replaced the expired regulation of the supervision team. Therefore, this study considers that the derivative regulation, the mayor's decree,

weakened the local government regulation of TFA.

### The Implementation of TFA Regulation in Semarang City

The district health office mentioned that the TFA regulation was first applied in three areas, including educational places, healthcare facilities, and government offices. However, only two areas, namely educational places and healthcare facilities, had the best implementation.

*"Until now, out of 7 areas, only 2 have well-performed TFA regulation. These include health facilities and educational places..."* (Informant 1, Government Agencies)

This was in line with the Mayor's Decree of Semarang City No. 440/423/2015 concerning the stipulation of TFA in Semarang that regulates the focus of three tobacco-free areas, such as healthcare facilities, educational places, and government offices.

Several informants also mentioned the enabling factors, such as the lack of smoking room availability. It was consistent with the observation results that showed only 8 out of 35 places (22.86%) have smoking areas. The eight places were included only in three areas, which are the government office area, public transportation area, and public places.

Another crucial enabling factor was financial support. For example, in implementing TFA, some informants hoped that the government would provide smoking areas in certain places. However, there was no budget to build smoking areas since it contradicted public health principles. In addition, funding for policy enforcement existed, but it was considered insufficient. The government required a larger budget to carry out more frequent and repetitive efforts in regulation implementation. Currently, the civil service police unit receives a budget of IDR 500,000,000 per year to enforce the implementation of the TFA regulation in Semarang City (2018).

The lack of financial support also affected other aspects of the TFA implementation, such as the smoking ban

signs, media for the risks of smoking information, and, most importantly, media for the TFA regulation information, including the penalties. For example, the observations showed that only 57.14% of places had smoking ban signs, only 22.86% had media for the risks of smoking information, and only 28.57% had media for the TFA regulation information.

Low awareness of government officials and the community might impede the success of the regulation implementation. Generally, people did not dare to remind and reprimand each other when they saw someone smoking in regulated places. It could also be an act of avoiding being mistreated by violators.

*"...people just read and do not want to take any actions. Avoiding smoking in a prohibited place (the awareness) should be from the individuals who take care of each other and obey the rules...If, if someone else knows, he or she is asked to remind them...If there is an incident that the person who reminds the violator is being mistreated, the government needs to provide protection..."*(Informant 6, Educational Institutions)

Indeed, the TFA regulation has been disseminated by various institutions that have participated in the regulation drafting agenda. For example, the district health office conducted outreach services to schools and government institutions by collaborating with the legal department, civil service police unit, and environmental services. Smoking bans should be posted on TFA information signs in several areas. However, the informants considered the promotion was not robust yet as they did not know about this regulation. This finding was in line with the statement of the triangulation informant below.

*"The government must be more aggressive in informing and approaching the community to talk together. So, based on that, it will become our foothold to move directly..."* (Informant 10, Supervisory Team)

## The Implementation of TFA Regulation within the Institutions

The implementation of TFA regulation was implemented in almost all areas studied, although it still had some flaws. For example, signs of a smoking ban had been installed in the areas. The following were statements from several informants regarding the implementation of the TFA regulation.

*"... Maybe you can see there are banners and stickers everywhere. We try to post non-smoking signs everywhere...even in the room. If we smell cigarette smoke, we will directly reprimand and give a fine as the penalty to the smoker"* (Informant 7, Health Care Facility)

However, some informants stated that their institutions had not implemented the regulation because it was considered unnecessary despite the presence of the local government regulation and the mayor's decree. Moreover, there was no initiation to implement it because they felt it was unnecessary. The informants also stated that there were no instructions to post a smoking ban sign. This finding indicates that the community still did not understand the TFA regulation.

*"There is no implementation yet. The smoking area is also unnecessary. Most of this place is open, so we do not need it (TFA). There are no posters or stickers too (signs of smoking ban)...But if there is an order or an instruction to put up a no-smoking sign, we are ready for that."* (Informant 4, Government Office)

This study discovered that there were some violations, especially in educational places and government offices. This result was supported by the discovery of cigarette butts and ashtrays around the educational institution/school environment, the presence of employees who smoked, and the discovery of ashtrays in the school environment. The same things were also found in government offices. In almost all observed government offices, cigarette

butts were found inside the offices. The observation results showed that staff members who smoked inside the TFA were found in 31.43% of the places, visitors who smoked inside the TFA were found in 42.86% of the places, the smell of cigarette smoke was found inside the TFA in 51.43% of the places, cigarettes' buds were found inside the TFA (outside trashcans) in 80% of the places, and packs of cigarettes were found inside the TFA (outside trashcans) in 34.29% of the places.

Almost all informants stated that the implementation of the TFA regulation was influenced by the community awareness of the TFA regulation implementation. This finding was associated with bad supervisory roles of the leaders. Some informants even stated that there was no internal supervision in their institution, while ideally, the institution head was responsible for the supervision according to the TFA regulation.

*"There is none (internal supervision), and this institution does not enforce the regulation, but implementing it. (supervising) It is the duty of civil service police unit..."* (Informant 4, Government Office)

The implementation of the TFA regulation required the support of the leaders or the heads of the offices, but some of them gave wrong role models as they still smoked, even inside their rooms in the offices. Thus, the informants who saw the violations made by the leaders were afraid to comment on or remind them not to smoke in the offices.

*"Yes, that is one of the difficulties. They know they should be a good role model (for other staff members). I do not feel good when my boss smokes in the office, and I do not dare to remind them."* (Informant 5, Government Office)

## Knowledge

This study revealed that almost all key informants did not understand the TFA concept and the implementation of the TFA regulation in Semarang City. They only

understood that TFA is a place free from cigarette smoke. They did not know that the TFA regulation also prohibited any activities related to cigarette production, cigarette promotion and advertisement, cigarette sales, and smoking activities.

*"Tobacco- Free Areas according to my knowledge are areas free from cigarette smoke..."* (Informant 2, Educational Institution)

Furthermore, the interview results showed that many informants considered people should not smoke in air-conditioned office rooms (although some still smoked in air-conditioned rooms). While they still thought people were still able to smoke in non-air-conditioned (AC) rooms.

*"My office room is air-conditioned, and thus you need to go outside to smoke. Here (outside the informant's room but still inside the office) there is no AC so we can smoke here..."*(Informant 4, Government Office)

Most of the informants were aware of the TFA regulation, but some informants did not know about the regulation. The district health office and civil service police unit have promoted the regulation to many institutions and the community.

*"I do not understand. Maybe I heard about it...Frankly, we do not understand (about the TFA regulation)"* (Informant 3, Educational Institution)

Only a few informants could correctly name eight Tobacco-Free Areas determined in the TFA regulation. The head of the supervision team could not mention the eight TFA completely and correctly. Meanwhile, the informants from the civil service police unit and district health office could mention the eight TFAs correctly. The civil service police unit needed to be able to identify the TFA as it became the enforcer of the local government regulation, while the district health office was the driving force in the implementation of the TFA regulation.

*"...only at malls, at offices, that's it. Smoking at schools is not allowed already, and neither is in open places nor public places such as airports, stations, and ports too..."* (Informant 8, Supervisory Team)

Furthermore, this study also explored the informants' opinions regarding the TFA regulation. All informants, either smokers or not, agreed with the regulation. They were aware of the benefits of the regulation to protect the rights of others.

*"In my opinion, it is very good. Why? Because we want to protect passive smokers. After being investigated, active smokers can affect non-smokers too..."* (Informant 5, Government Agencies)

## Discussion

The Semarang City Local Government Regulation Number 3 of 2013 promulgated 8 (eight) Tobacco-Free Areas (TFA) in 2013. The promotion of this regulation has taken two years since 2015. However, some informants still could not understand and misinterpreted the TFA regulation in recent years. According to the Indonesian Ministry of Law and Human Rights, regulations need to be published in many ways, not only through direct promotion but also through printed media, electronic media, and others, to reach more audiences (Ministry of Law and Human Rights, 2010).

Informants' knowledge of the TFA regulation indicated several things. It suggested that the government provided insufficient assistance in the implementation of TFA regulations. The previous promotion of the regulation was only in the form of announcements that did not provide deep information about the TFA regulation and its implementation. Furthermore, inadequate awareness of informants and institutions also affected the success of the regulation implementation. Although smoking prohibition signs had been posted in some institutions, people still violated the regulation. Moreover, lack of supervision and law enforcement was



associated with the ineffective implementation of the regulation. Research conducted in Indonesia found that the implementation of TFA had to be supported by all parties, not only the government or society, but must also be committed by everyone (Azkha, 2013; Taruna, 2016; Yanthi, Sando and Hayana, 2021).

This study found some obstacles regarding the implementation of TFA regulation in Semarang City. There were predisposing factors such as low knowledge and lack of awareness that might hinder the implementation of TFA regulation. Research conducted in three schools in different cities found that knowledge and attitude correlated to the behavior of complying with the TFA regulation (Hutapea, Rumayar and Maramis, 2017; Sualang, Rumayar and Tucunan, 2019; Hariyanti, Hidayah and Sari, 2021)

Others that affected the implementation involved enabling factors such as lack of financial support and lack of facilities and infrastructure. According to Green, predisposing factors are internal factors that contribute to human behavior. These involved sociological factors, knowledge, attitude, belief, and others (Green and Kreuter, 2005). Some researchers in Indonesia found that enabling factors were correlated with the implementation of regulations. These factors included sufficient facilities, infrastructures, human resources, and budgeting (Dewi, Nuraini and Lionardo, 2018; Adhiguna, 2020; Fitria and Wibisono, 2020). Other researchers also found that resources supported the implementation of the TFA regulations. A study by Monica and Pambudi (2017) found that human resources, finance, and facilities were the driving factors in the implementation of TFA in Yogyakarta. The same result was also found in Khairatunnisa and Telaumbanua's study. It was stated that the lack of facilities, lack of infrastructure, and the absence of specific guidelines were correlated to the TFA implementation in one of Medan's high schools (Monica and Pambudi, 2017; Khairatunnisa and Telaumbanua, 2021).

Based on the informants' statements and observations, people still violated the TFA regulation, especially at government offices and educational places such as schools. Employees and visitors were more dominant in violating the TFA regulation at government offices, while in educational places, school employees and students were the ones who violated the rule. Based on the observation result, staff or employees were still found smoking in the TFA area, in the office, inside the building, and at the security post inside the fence (the TFA area). Forty percent of educational places or schools were identified with smoking employees and smell of cigarette smoke, and 60% of the schools were found to have cigarette butts within the TFA area. Furthermore, the observation result of the government offices found smoking employees in 50% of the offices. It was also found that cigarette butts were also found in the offices (83.3%). A study in Palembang, Indonesia, found that only 30.4% of employees in the government offices complied with the TFA regulation (Dewi, Nuraini and Lionardo, 2018). Other studies also found that the age at which a person started smoking for the first time was under 12 years old (Yang *et al.*, 2019; Husodo *et al.*, 2020). It indicated that teachers needed to educate their students about the dangers of smoking and the implementation of TFA at schools. However, this had to be done by providing full support to students through a social-psychological approach and giving good examples, such as avoiding smoking in front of students, done by teachers and the school employees.

At the institutional level, violations happened due to a lack of support from the head, a lack of supervision, a lack of employee awareness, regulation rejection, and a lack of financial support. According to Green, reinforcing factors, including leader support, contribute to human behavior (Green and Kreuter, 2005). Other studies found that support and commitment from all parties were necessary for the implementation of the TFA regulation (Iriani, 2019; Marchel, 2019; Handayani *et al.*, 2020).

## Conclusion

The implementation of Semarang City Local Government Regulation Number 3 of 2013 concerning Tobacco-Free Areas has not been carried out properly in all TFA areas. In fact, the Semarang Mayor's Decree No. 440/423/2015 concerning the Determination of TFA in Semarang, which regulates the focus of only three places of TFA, still contains violations, namely in educational places and government offices. Therefore, the government should amend the Semarang City Local Government Regulation Number 3 of 2013 to reinforce and strengthen the application of TFA in Semarang City. The amendment of the regulation should be promoted later on through several media to reach more audiences. Lastly, support from all parties, especially the government and heads of each of institutions, is necessary to properly perform the TFA regulation.

## Abbreviations

TFA: Tobacco-Free Areas; KTR: Kawasan Tanpa Rokok; Perda: Peraturan Daerah; AC: Air Conditioning; WHO: World Health Organization.

## Declarations

### Ethics Approval and Consent Participant

All informants in this study were given explanations about the research objectives and a statement of consent form with the right to withdraw from participation at any time. This study has obtained ethical clearance No. 217/EA/KEPK-FKM/2018 from the Faculty of Public Health, Diponegoro University.

### Conflict of Interest

The authors declare that there is no significant conflict of interest in this study.

### Availability of Data and Materials

Not applicable.

### Authors' Contribution

NH, BW, and KC conceptualized the study; NH and BW created the methodology; NH, BW, AA, and DK wrote, reviewed, and

edited the manuscript; NH wrote the original draft.

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## References

- Adhiguna, M.F. (2020) *Penegakan Hukum terhadap Tindak Pidana Korupsi Pengadaan Barang dan Jasa di Indonesia (Penerapan Hukum Progresif)*. Undergraduate Thesis. University of Lampung.
- Azkha, N. (2013) 'Studi Efektivitas Penerapan Kebijakan Perda Kota Tentang Kawasan Tanpa Rokok (KTR) dalam Upaya Menurunkan Perokok Aktif di Sumatera Barat Tahun 2013', *Jurnal Kebijakan Kesehatan Indonesia*, 2(4), pp. 171–179. Available at: <https://doi.org/10.22146/jkki.v2i4.3201>.
- Cancer Research UK (2023) 'What's in a cigarette?' Available at: <https://www.cancerresearchuk.org/about-cancer/causes-of-cancer/smoking-and-cancer/whats-in-a-cigarette-0>.
- Dewi, Y.K., K, F.N. and Lionardo, A. (2018) 'Analysis of Factors Affecting Employee Compliance to the Non-Smoking Area Policy at the Police Station in Palembang', *Sriwijaya Journal of Medicine*, 1(1), pp. 8–15. Available at: <https://doi.org/10.32539/SJM.v1i1.2>.
- Feliu, A. et al. (2019) 'Impact of tobacco control policies on smoking prevalence and quit ratios in 27 European Union countries from 2006 to 2014', *Tobacco Control*, 28(1), pp.

- 101–109. Available at: <https://doi.org/10.1136/tobaccocontr ol-2017-054119>.
- Fitria, N. and Wibisono, N. (2020) 'Regulasi, Komitmen Organisasi, Sumber Daya Manusia, dan Pengelolaan Keuangan Desa terhadap Kinerja Pemerintah Desa', *JAAF (Journal of Applied Accounting and Finance)*, 3(2), pp. 85–98.
- Green, L. and Kreuter, M. (2005) *Health Program Planning: An Educational and Ecological Approach*. East Lansing, Michigan: McGraw-Hill Education.
- Handayani, N. et al. (2020) 'Kawasan Tanpa Rokok di Kota Semarang (Studi Observasional Perda KTR)', *An-Nadaa: Jurnal Kesehatan Masyarakat (e-Journal)*, 7(2), pp. 115–121.
- Hariyanti, D., Hidayah, M.S. and Sari, C.K. (2021) 'Analisis Perilaku Siswa SMP terhadap Kebijakan Kawasan Tanpa Rokok (KTR)', *Jurnal Ilmu Kesehatan Masyarakat*, 10(03), pp. 168–173. Available at: <https://doi.org/10.33221/jikm.v10i03.884>.
- Husodo, B.T. et al. (2020) 'Examining the Smoking Levels of Junior High School Students in Semarang City, Indonesia', *Journal of Public Health for Tropical and Coastal Region*, 3(1), pp. 1–8. Available at: <https://doi.org/10.14710/jphtcr.v3i1.7343>.
- Hutapea, C.E.Z., Rumayar, A.A. and Maramis, F.R.R. (2017) 'Hubungan Antara Pengetahuan Dan Sikap Dengan Tindakan Terhadap Kebijakan Kawasan Tanpa Rokok Pada Siswa Di SMP Kristen Tateli', *Kesmas*, 6(3). Available at: <https://ejournal.unsrat.ac.id/index.php/kesmas/article/view/23061>.
- Iriani, A. (2019) 'Faktor Penguat Dalam Implementasi Kebijakan Kawasan Tanpa Rokok Di Instansi Pemerintahan Kota Palembang', *Wacana Publik*, 13(1).
- Khairatunnisa, K. and Telaumbanua, I.P. (2021) 'Implementasi Kebijakan Kawasan Tanpa Rokok (KTR) di SMA Negeri 17 Medan', *JUMANTIK (Jurnal Ilmiah Penelitian Kesehatan)*, 6(3), p. 247. Available at: <https://doi.org/10.30829/jumantik.v6i3.8918>.
- Khoramdad, M. et al. (2020) 'Association between passive smoking and cardiovascular disease: A systematic review and meta-analysis', *IUBMB Life*, 72(4), pp. 677–686. Available at: <https://doi.org/10.1002/iub.2207>.
- Kompas (2009) 'Implementasi Perwal Rokok Perlu Tegas', *Internet2*. Available at: <https://money.kompas.com/read/2009/05/22/20543972/implementasi.perwal.rokok.perlu.tegas.?source=autonext>.
- Levy, D.T. et al. (2018) 'The Impact of Implementing Tobacco Control Policies: The 2017 Tobacco Control Policy Scorecard', *Journal of Public Health Management and Practice*, 24(5), pp. 448–457. Available at: <https://doi.org/10.1097/PHH.0000000000000780>.
- Marchel, Y.A. (2019) 'Implementasi Kawasan Tanpa Rokok Sebagai Pencegahan Merokok Pada Remaja Awal', *Jurnal PROMKES*, 7(2), p. 144. Available at: <https://doi.org/10.20473/jpk.V7.I2.2019.144-155>.
- Ministry of Health (2013) *Basic Health Research (Riset Kesehatan Dasar / Riskesdas) 2013*. Jakarta: Ministry of Health Republic of Indonesia.
- Ministry of Health (2018) *Basic Health Research (Riset Kesehatan Dasar / Riskesdas) 2018*. Jakarta: Ministry of Health Republic of Indonesia.
- Ministry of Law and Human Rights (2010) 'Proses Pengundangan', *Internet*. Ministry of Law and Human Rights Republic of Indonesia. Available at: <http://ditjenpp.kemenkumham.go.id/pengundangan-dan-penyebarnya.html>.
- Monica, R. and Pambudi, A. (2017) 'Implementasi Kebijakan Kawasan Tanpa Rokok di Kota Yogyakarta', *Journal of Public Policy and Administration Research*, 2(2), pp. 129–140.

- Simaibang, A.A. and Kismartini, K. (2016) 'Implementasi Kebijakan Kawasan Tanpa Rokok pada Angkutan Umum di Kota Semarang (Studi Kasus pada Angkutan Umum di Terminal Penggaron)', *Journal of Public Policy And Management Review*, 5(3). Available at: <https://ejournal3.undip.ac.id/index.php/jppmr/article/view/12201>.
- Sualang, J.S., Rumayar, A.A. and Tucunan, A.A.T. (2019) 'Hubungan Antara Pengetahuan Dan Sikap Dengan Tindakan Terhadap Kebijakan Kawasan Tanpa Rokok Pada Pelajar Di Sma Negeri 7 Manado', *KESMAS: Jurnal Kesehatan Masyarakat Universitas Sam Ratulangi*, 8(2). Available at: <https://ejournal.unsrat.ac.id/v3/index.php/kesmas/article/view/23933>.
- Taruna, Z. (2016) 'Implementasi Kebijakan Kawasan Tanpa Rokok di SMA Gadjah Mada Yogyakarta', *Spektrum Analisis Kebijakan Pendidikan*, 5(6). Available at: <https://journal.student.uny.ac.id/ojs/index.php/sakp/article/view/5322>.
- U.S. Food and Drug Administration (2020) 'Chemicals in Tobacco Products and Your Health'. Available at: <https://www.fda.gov/tobacco-products/health-effects-tobacco-use/chemicals-tobacco-products-and-your-health>.
- WHO (2011) *Global Adult Tobacco Survey (GATS): Indonesia Report 2011*. World Health Organization. Available at: [http://www.searo.who.int/tobacco/data/gats\\_indonesia\\_2011.pdf](http://www.searo.who.int/tobacco/data/gats_indonesia_2011.pdf).
- WHO (2015) 'Prevalence of Tobacco Smoking', *Internet*. Available at: [http://gamapserver.who.int/gho/interactive\\_charts/tobacco/use/atlas.html](http://gamapserver.who.int/gho/interactive_charts/tobacco/use/atlas.html) (Accessed: 12 September 2018).
- Yang, J.J. et al. (2019) 'Tobacco Smoking and Mortality in Asia: A Pooled Meta-analysis', *JAMA Network Open*, 2(3), p. e191474. Available at: <https://doi.org/10.1001/jamanetworkopen.2019.1474>.
- Yanthi, D., Sando, W. and Hayana, H. (2021) 'Pelaksanaan Kebijakan Kawasan Tanpa Rokok Di SMPN 07 Pekanbaru Tahun 2020', *Ensiklopedia of Journal*, 3(2), pp. 201–205.

# NURSE BURNOUT PREDICTORS IN HEALTHCARE UNITS DURING COVID-19 IN EAST JAVA, INDONESIA

*Prediktor Burnout Perawat Unit Pelayanan Kesehatan Pada Masa COVID-19 di Jawa Timur, Indonesia*

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## Abstract

**Background:** As frontline health service providers, nurses play an important role in directly caring for patients during the COVID-19 pandemic. Nurses are very vulnerable to infection, and this causes ongoing anxiety and ultimately causes burnout.

**Aims:** This study aims to identify factors that may lead to nurse burnout in various East Java healthcare facilities.

**Methods:** This research used correlational analysis with a cross-sectional approach. The approach of purposive sampling was applied to select nurses from various health units in East Java with 200 respondents. The Maslach Burnout Syndrome Inventory-Human Services Survey (MBI-HSS) questionnaire was used for burnout variables and questionnaires for efficacy, job stress, and fear variables. Data analysis used multiple logistic regression with the ENTER method.

**Results:** The findings indicated that the variable that had a significant relationship with burnout was work stress. The results of the OR Odds Ratio analysis for the job stress variable are 2.860, meaning that respondents who experience high job stress have a 3-fold risk of experiencing burnout compared to those who do not experience high stress.

**Conclusion:** Job stress is predicted to be the most dominant variable causing burnout during the COVID-19 pandemic. Respondents with high job stress are more at risk of experiencing burnout.

**Keywords:** burnout, COVID-19 pandemic, nurse

## Abstrak

**Latar Belakang:** Perawat sebagai garda terdepan penyedia layanan kesehatan berperan penting dalam merawat pasien secara langsung di masa pandemi COVID-19. Perawat sangat rentan terhadap infeksi dan hal ini menyebabkan kecemasan yang berkelanjutan dan pada akhirnya menyebabkan kelelahan.

**Tujuan:** Tujuan penelitian ini adalah untuk mengidentifikasi prediktor burnout perawat di berbagai unit pelayanan kesehatan di Jawa Timur.

**Metode:** Penelitian ini menggunakan analisis korelasional dengan pendekatan cross sectional. Teknik purposive sampling digunakan untuk memilih perawat dari berbagai unit kesehatan di Jawa Timur dengan jumlah responden sebanyak 200 orang. Kuesioner MBI-HSS digunakan untuk variabel burnout dan kuesioner untuk variabel efficacy, stres kerja, dan ketakutan. Analisis data menggunakan regresi logistik berganda dengan metode ENTER.

**Hasil:** Hasil penelitian menunjukkan bahwa variabel yang memiliki hubungan signifikan dengan burnout adalah stres kerja. Hasil analisis OR Odds Ratio untuk variabel stres kerja sebesar 2,860 artinya responden yang mengalami stres kerja tinggi memiliki risiko 3 kali lipat untuk mengalami burnout dibandingkan dengan yang tidak mengalami stres tinggi.

**Kesimpulan:** Stres kerja diprediksi menjadi variabel paling dominan penyebab burnout pada masa pandemi COVID-19. Responden dengan stres kerja yang tinggi lebih berisiko mengalami burnout.

**Kata kunci:** burnout, perawat, pandemi COVID-19



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## Introduction

China is the origin of the coronavirus disease of 2019 (COVID-19) epidemic, which has now spread to almost every country in the world and is one of the current public health emergencies. Severe Acute Respiratory Syndrome Coronavirus - 2 (SARS-CoV-2), originally Novel Coronavirus 2 2019 (2019-nCoV), is the new coronavirus responsible for this illness (Guo *et al.*, 2020). Epidemics badly impact societies on the social, economic, and psychological levels. The COVID-19 epidemic has significantly impacted the world, similar to earlier epidemics (Elbay *et al.*, 2020). The COVID-19 pandemic represents a significant risk to public health worldwide. According to WHO, as of 7 July 2021, 368,874 new cases, 184,324,026 positive confirmed cases, and 3,992,680 fatalities have been recorded worldwide. Data in Indonesia as of 9 July 2021, 2,417.788, 38,391 new cases, 63,760 total deaths, and 852 deaths within 24 hours (WHO, 2021). The above conditions ultimately require that health workers who are at the forefront are at risk of being directly affected by mental and physical impacts as a result of caring for COVID-19 patients. Putting into practice measures that lower the risk of infection, shorten shifts, and provide mechanisms for mental health support may reduce mortality and morbidity among healthcare workers, according to research findings (Shaukat *et al.*, 2020; Lai, Ma, and Wang, 2020; Talae *et al.*, 2020). Nearly 30% of all hospital employment nationwide nurses, the largest group in our healthcare profession (U.S. Bureau of Labor Statistics, 2019).

Healthcare experts are experiencing psychological stress due the COVID-19 pandemic. Previous research has shown that mental health issues are prevalent among health practitioners. Based on 59 studies consisting of three qualitative, 50 quantitative, two narrative reviews, and four other designs on assessments of employees mental health during the COVID-19 pandemic. The majority of the 54,707 participants were nurses and doctors, as well as other healthcare professionals engaged in direct clinical

care, management, or other clinical responsibilities. Healthcare professionals report anxiety, depression, distress, and sleep issues in one to two out of five cases. One research was the only one to record somatic signs like changes in appetite (Muller *et al.*, 2020).

A total of 65 research involving 97,333 healthcare professionals from 21 nations collected information on the frequency of mild depression, anxiety, and Post-Traumatic Stress Disorder (PTSD). Anxiety was 22.1% (95% CI, 18.2% - 26.3%), PTSD was 21.5% (95% CI, 10.5% - 34.9%), and depression was 21.7% (95% CI, 18.3% - 25.2%). In addition, prevalence numbers are provided for each disorder's mild category. According to studies, the Middle East has the highest rates of depression (34.6%), and anxiety (28.9%) was conducted there (Li *et al.*, 2021). The study's findings indicate that the findings Gender, age, years of work experience, working in multiple institutions, holding management positions, job satisfaction, hardiness, and experience with work-home and home-work interaction appear to be predictors of burnout among nurses, according to multiple linear hierarchical regression analyses (stepwise method) (Queiros and Carlotto, 2013; Ferry *et al.*, 2021; Luceño-Moreno *et al.*, 2022).

Generally, employees deal with rising stress levels related to their jobs, which leads to burnout. Studies show that work-related variables such as formal environments, long workdays, a deficiency of social support from colleagues, workplace stress, job stress, workload, work flexibility, and work-life conflict are associated with burnout (Kay-Eccles, 2012; Albritton, 2020; Buruck *et al.*, 2020). Since nurses are the frontline healthcare providers who directly treat and care for patients, they play a crucial role in the health system's response to the COVID-19 pandemic (Hu *et al.*, 2020; Liu *et al.*, 2020; Zhan *et al.*, 2020). As they are especially vulnerable to the risk of contracting SARS-CoV-2, nurses experience intense and ongoing psychological strain. Their anxiety for their health, the health of their close family members, and the health of their

patients overwhelm them (Joo and Liu, 2021).

Due to high infection rates and lengthy working hours, health workers who are on the front lines of a pandemic are at a significant risk of developing chronic stress. It has been demonstrated that this stressor has a detrimental effect on mental health (Kalmbach *et al.*, 2018) and increases burnout (Xian *et al.*, 2020). A separate Japanese study, discovered that more than 40% of nurses, more than 30% of radiology techs, and more than 40% of pharmacists matched the criteria for burnout. The first study compared job types and risk factors related to burnout among health professionals in Japan during the pandemic (Matsuo *et al.*, 2020).

Burnout syndrome, in general, is a state of chronic involvement in emotionally draining events at work that results in physical, emotional, and cerebral exhaustion (Maslach and Jackson, 1981). Burnout, a problem with occupational health that is on the rise, has been linked to prolonged exposure to industrial stress. Psychological burnout is characterized by extreme levels of physical, emotional, and spiritual exhaustion. The term "burnout" has been used to characterize emotions of exhaustion, depersonalization, negativity toward one's employment, and a diminished sense of personal success in the "helping" professions. Individuals' psychological reactions to pressures in work situations are represented as psychological burnout (Fernandez *et al.*, 2020).

Burnout, thus, lowers the standard of care, leading to an increase in the number of hospital-acquired infections and, eventually, the number of patient deaths (Shenoi *et al.*, 2018). According to Hall *et al.* (2016) burnout also causes job discontent and increased nurse turnover, resulting in a scarcity of nurses and further harm to patients. This study aims to identify factors that may lead to nurse burnout in various East Javan healthcare facilities.

## Method

The study employed correlational analytics and a cross-sectional

methodology, and the researcher solely emphasized on the simultaneous assessment of independent and dependent variables or data observed simultaneously. The sample in this study was nurses in healthcare units in East Java, Indonesia, amounting to 200 respondents. The research sample was taken by purposive sampling technique, the following criteria: willing to be a respondent, nurses who are directly involved in various service units during the COVID-19 pandemic, nurses who are not sick and being cared for at the time of the study, have a device to access google forms when filling out the questionnaire. An online survey distributed to several East Java health service units via a link on a Google form served as the method for gathering data for this study.

The questionnaire consists of five parts, namely demographic data, measurement of efficacy, work stress, and fear. The Maslach Burnout Syndrome Inventory-Human Services Survey (MBI-HSS) questionnaire was used to measure the burnout variable. The Maslach burnout scale, created in 1981, has been regarded as dependable and valid. The MBI-HSS scale has three components: personal accomplishment, depersonalization, and emotional weariness. There are 22 statement items in this questionnaire (Maslach, Jackson and Leiter, 1997).

Researchers gathered data by giving respondents chosen based on the researcher's criteria the opportunity to complete research questionnaires. Previously, the researcher explained the purpose and benefits of the research to the respondents and gave informed consent through the Google form. If the respondent agrees, then proceed with filling out the questionnaire. The multiple logistic regression test with the ENTER technique was used to analyze the data with the SPSS for Windows version 22 application and a significance level of  $\alpha = 0.05$  with the assumption that if  $\alpha = 0.05$ , then  $H_0$  is disregarded, meaning that there is a relationship between demographics, work stress, self-efficacy, and fear of burnout in nurses who worked in all healthcare units during the COVID-19 pandemic.

Table 1. Characteristic of Respondents in East Java, Indonesia (n=200)

Characteristics	n	%
<b>Gender</b>		
Male	58	29.0
Female	142	71.0
<b>Age (in years)</b>		
21 – 30	112	56.0
31 – 40	63	31.5
41 – 50	23	11.5
51 – 60	2	1
<b>License Practical Nurse / Nurse</b>		
Vocational nurse	76	38.0
Bachelor of Science	116	58.0
Bachelor of Science non nursing/ others	3	1.5
Magister/ Nursing specialist	5	2.5
<b>Marital Status</b>		
Single	70	35.0
Married	127	63.5
Divorced	3	1.5
<b>Number of Children</b>		
1	58	29.0
2	46	23.0
3	12	7.0
4-5	2	1.0
>5	11	6.0
No children	68	34.0
<b>Salary (in million rupiahs)</b>		
<3	102	51.0
3-6	83	41.5
7-9	11	5.5
>9	4	2.0
<b>Work Unit</b>		
COVID-19 hospitalization	27	13.5
Non COVID-19 hospitalization	55	27.5
Emergency room	9	4.5
ICU	21	10.5
ICCU	5	2.5
Other units in hospitals	41	20.5
Others	42	21.0
<b>Employment Status</b>		
Permanent	94	47.0
Non permanent	106	53.0
<b>Length of Employment (in years)</b>		
<1	54	27.0
1 – 5	59	29.5
6 – 10	29	14.5
>10	58	29.0
<b>Position</b>		
Practitioner	168	84.0
Head of the ward	19	9.5
Nurse manager	13	6.5
<b>Total</b>	200	100



## Result and Discussion

In this study, most of the respondents were between the ages of 21-30 (112 people or 56%), married (63.5%), and women (142 respondents or 71%) (Table 1). Moreover, the majority of the respondents did not have any children 68 people (34%), had an income of < Rp3 million (51%), and earned a Bachelor of Science degree 116 people (58%). The majority worked in a non-COVID-19 inpatient care unit 55 respondents (27.5%).

Most of the respondents were non-permanent/ contracted employees 106 respondents (53%), have worked for 1-5 years 59 people (29.5%), and were employed as nurse practitioners 168 people (84.0%)

In this study, most of the respondents had high job stress (119 people or 59.5%). Among the respondents, 66% stated that they felt no fear, 74.5% or 149 stated that they were very confident, and 54.5% or 109 stated that they did not experience burnout (Table 2).

Table 2. Distribution of Respondents Based on Job Stress, Fear, Efficacy and Burnout in East Java, Indonesia (n=200)

Variables	n	%
<b>Job Stress</b>		
Low job stress	81	40.5
High job stress	119	59.5
<b>Fear</b>		
No fear	132	66
Extreme fear	68	34
<b>Efficacy</b>		
No efficacy	0	0
Moderate efficacy	51	25.5
High efficacy	149	74.5
<b>Burnout</b>		
No burnout	109	54.5
Burnout	91	45.5
<b>Total</b>	<b>200</b>	<b>100</b>

Table 3. Simple Logistics Regression Analysis, Variable Candidate Selection with Simple Logistics: Variables with *p-Value* < 0.25 enter multivariate candidates

No	Variables	<i>p-value</i>	Multivariate Candidates
1	Age	0.103	Yes
2	Gender	0.663	No
3	Marital status	0.224	Yes
4	Number of children	0.133	Yes
5	Income	0.010	Yes
6	Education	0.940	No
7	Work unit	0.749	No
8	Employment status	0.614	No
9	Length of employment	0.109	Yes
10	Position	0.245	Yes
11	Social support	0.779	No
12	Job stress	0.002	Yes
13	Efficacy	0.363	No
14	Fear	0.778	No

In this study, job stress emerged as the variable most significantly related to the incidence of burnout, even after controlling for confounding variables, such as age, length of employment, income, work unit, position, and number of children (Table 3). The results of the analysis show that the OR Odds Ratio for the job stress variable was 2.860, meaning that respondents who experience high job stress have three times the risk of experiencing burnout compared to those who do not experience a high level of stress.

According to the findings of a survey of 180 nurses, 83 (53.9%) experienced burnout during the COVID-19 pandemic (Sudarsih and Santoso, 2023). Most respondents, precisely 119 (59.5%) had high job stress. In a study, the association between psychosocial risk factors associated to the workplace and stress-related mental disorders (SRD) was examined. With varied incidence rates of 13% for psychological distress, 12-22% for emotional exhaustion, and a prevalence of stress symptoms reaching 50% in specific professions and countries, stress-related mental disorders (SRD) are regularly documented in the working population. The World Health Organization classified burnout as an "occupational phenomenon" in the ICD-11, the 11th revision of the International Classification of Diseases (Van Der Molen *et al.*, 2020).

Nurses commonly experience severe psychological stress as a result of their heavy workloads, long work hours, and placement in risky environments. According to Maslach (1998), Tomaszewska (2019), and Dall'Ora *et al.* (2020), all of these factors contribute to causing burnout. According to Maslach's theory, burnout is a response to excessive job stress, characterized by an emotional exhaustion that manifests as unpleasant behaviors, social isolation, and a decline in productivity and self-confidence work.

Studies have proven that job stress impacts the emergence of burnout. This study shows that almost half of the respondents (91 people or 45.5%) experienced burnout. This corresponds to the research of (Salvagioni *et al.*, 2017), which found that the burnout syndrome as

a result of chronic stress at work harms the welfare and health of workers. Jackson, Schuler, and Schwab also defined that when it comes to interpersonal interactions, burnout is a state of emotional tiredness (MacDonald *et al.*, 2019).

The high infection rates and long work hours of healthcare professionals on the scene of an epidemic put them at a significant risk of developing chronic stress. It has been demonstrated that this stress factor negatively affects mental health and causes burnout. Based on some of the literature above, there is an agreement between the results of this study and previous opinions, so it is vital for nurses to manage job stress as high job stress is a trigger factor for burnout. Burnout rates have increased steadily over the past few years among nursing staff in China (Huang, 2018). Nurses are more prone to burnout than other healthcare professionals because of their close interpersonal relationships with patients (Kowalczyk *et al.*, 2020).

Nurses experience burnout because of the pandemic's challenging working circumstances and heavy workloads (Wu *et al.*, 2020; Chen *et al.*, 2020; Lai, Ma, and Wang, 2020; Li *et al.*, 2020). The COVID-19 increased the risk of burnout among nurses (López-López *et al.*, 2019). The results of this research are in line with those of a Chinese study (Yao, *et al.*, 2018), indicate that 66.34% of the nursing staff there had burnout. These findings are also consistent with those of a cross-sectional study conducted on nurses at work in a Chinese city hospital, which found that 68.1% of nurses experienced burnout. This is also consistent with the research conducted by Galanis *et al.* (2021) that utilized MBI to quantify nurses' burnout, resulting in a substantial prevalence during the COVID-19 epidemic. The findings showed that emotional tiredness, low personal achievement, and depersonalization were all commonly found in nurses with a prevalence of 34.1%, 15.2%, and 12.6% respectively. Nearly half of the respondents of this research reported that they experienced burnout, whereas the rest reported that they did not. One reason for this was the situation of the COVID-19

pandemic, which, was just beginning to spread when the study was conducted. However, respondents were still concerned about the rise in COVID-19 cases or the possibility of a third wave.

Job stress is the variable in this study that is substantially associated with burnout when confounding variables such as age, length of employment, income, work unit, position, and number of children were taken into account. The findings of the analysis indicate that OR (Odds Ratio) of the work stress variable was 2.860.

Healthcare professionals battling against a pandemic from the frontline are vulnerable to significant levels of chronic stress because of the high risk of infection and long work hours. Stress among nurses may be a factor in their burnout (Kim, 2020). Psychological effects on primary healthcare personnel are due to the COVID-19-related psychosocial work environment. Enhancing working conditions for primary healthcare personnel in the COVID-19 pandemic is critically important. Intervention measures that boost personal resilience must be put into place in addition to creating externally supportive work environments (Shi *et al.*, 2022)

Burnout, which is frequently referred to as occupational stress by healthcare professionals, has been found to result from sustained job stress (Çalışkan Tür *et al.*, 2016). Compared to other healthcare workers, nurses have a higher rate of job burnout (Arnetz *et al.*, 2019; Xian *et al.*, 2020; Kelly *et al.*, 2019). The cause of 90% of employee health issues is job stress (Hassard, 2018). The World Health Organization stated that unmanaged workplace stress can result in a phenomenon known as burnout. Its three distinguishing traits are diminished professional competence, a developing sense of separation from one's work and a negative or cynical outlook on one's profession (WHO, 2019). The key stressors in nursing, which is considered to have rigorous and complex job requirements, have been identified as high standards, a lot of responsibilities and insufficient power (Jacobs and Lourens, 2016). Particularly in helping professionals in fields such as

nursing, psychiatry, education, and social work, the detrimental effects of persistent occupational stress and the impact that burnout has on both the individuals and their businesses is well-documented (Wood *et al.*, 2020).

Stress levels are rising as a result of the 2019 coronavirus disease (COVID-19) pandemic, which could lead to instability among the nursing staff. Work related outcomes and factors that lead to nurse burnout globally must be better understood given the expertise of nurses and their proportion of the healthcare workforce (Shah *et al.*, 2021). A growing number of people are concerned about how work stress affects nurses. Nurses make up the majority of healthcare professionals that provide 24-hour care for patients (Mohammed, 2019). The COVID-19 pandemic has impacted medical professionals on the frontline, most of them are nurses. According to literature from previous pandemics, nurses face a lot of stress, worry, and physical side effects because of their jobs (Fernandez *et al.*, 2020).

The COVID-19 pandemic has caused nurses to face a number of challenges in their daily work. Nurses caring for patients suffering from the SARS-CoV-2 virus face a considerable level of psychological stress while carrying out their professional tasks, and they operate in a dangerous environment as a result of their workload. As a result, they experience extreme stress and professional burnout (Tomaszewska *et al.*, 2022). This study is consistent with previous research, which stated that higher stress levels are inextricably linked to greater levels of burnout among nurses (Munnangi *et al.*, 2018; Dev *et al.*, 2020; Kim, 2020).

## Conclusion

Job stress is a variable that is predicted to be the most dominant to cause burnout, which means that respondents who experience a high level of stress are at a greater risk of experiencing burnout than those who do not. To minimize the risk of burnout, all healthcare unit managers need

to pay special attention to making efforts in reducing job stress.

### Abbreviations

WHO: World Health Organization; MBI-HSS: Maslach Burnout Syndrome Inventory-Human Services Survey; SRD: Stress-Related Mental Disorders; ICD: International Classification of Diseases; ICU: Intensive Care Unit; ICCU: Intensive Coronary Care Unit.

### Declarations

#### Ethical Approval and Informed Consent

This research obtained ethical approval from the Health Research Ethics Committee of Aisyah Pringsewu University (NO:102/UAP.OT/KEP/EC/2022) and the researchers gave an informed consent form to be signed by respondents before data collection.

#### Conflict of Interest

The authors declare that they do not contradict the interests of any party.

#### Availability of Data and Materials

Data availability is accessible upon request.

#### Authors' Contribution

WS and SS came up with the idea for the study; WS developed the technique; and WS and SS wrote, evaluated, and edited the first draft of the publication.

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### References

- Albritton, K. (2020) 'Organizational Stressors as Predictors of Burnout', *Dissertations* [Preprint]. Available at: <https://aquila.usm.edu/dissertations/1849>.
- Arnetz, J. *et al.* (2019) 'Nurse Work Environment and Stress Biomarkers: Possible Implications for Patient Outcomes', *Journal of Occupational & Environmental Medicine*, 61(8), pp. 676–681. Available at: <https://doi.org/10.1097/JOM.0000000000001642>.
- Buruck, G. *et al.* (2020) 'The Influence of Workload and Work Flexibility on Work-Life Conflict and the Role of Emotional Exhaustion', *Behavioral Sciences*, 10(11), p. 174. Available at: <https://doi.org/10.3390/bs10110174>.
- Çalışkan Tür, F. *et al.* (2016) 'Occupational stress experienced by residents and faculty physicians on night shifts', *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*, 24(1), p. 34. Available at: <https://doi.org/10.1186/s13049-016-0225-4>.
- Chen, Q. *et al.* (2020) 'Mental health care for medical staff in China during the COVID-19 outbreak', *The Lancet Psychiatry*, 7(4), pp. e15–e16. Available at: [https://doi.org/10.1016/S2215-0366\(20\)30078-X](https://doi.org/10.1016/S2215-0366(20)30078-X).
- Dall'Ora, C. *et al.* (2020) 'Burnout in nursing: a theoretical review', *Human Resources for Health*, 18(1), p. 41. Available at: <https://doi.org/10.1186/s12960-020-00469-9>.
- Dev, V., Fernando, A.T. and Consedine, N.S. (2020) 'Self-compassion as a Stress Moderator: A Cross-sectional Study of 1700 Doctors, Nurses, and Medical Students', *Mindfulness*, 11(5), pp. 1170–1181. Available at: <https://doi.org/10.1007/s12671-020-01325-6>.

- Elbay, R.Y. *et al.* (2020) 'Depression, anxiety, stress levels of physicians and associated factors in Covid-19 pandemics', *Psychiatry Research*, 290, p. 113130. Available at: <https://doi.org/10.1016/j.psychres.2020.113130>.
- Fernandez, R. *et al.* (2020) 'Implications for COVID-19: A systematic review of nurses' experiences of working in acute care hospital settings during a respiratory pandemic', *International Journal of Nursing Studies*, 111, p. 103637. Available at: <https://doi.org/10.1016/j.ijnurstu.2020.103637>.
- Ferry, A.V. *et al.* (2021) 'Predictors of UK healthcare worker burnout during the COVID-19 pandemic', *QJM: An International Journal of Medicine*, 114(6), pp. 374–380. Available at: <https://doi.org/10.1093/qjmed/hcab065>.
- Galanis, P. *et al.* (2021) 'Nurses' burnout and associated risk factors during the COVID-19 pandemic: A systematic review and meta-analysis', *Journal of Advanced Nursing*, 77(8), pp. 3286–3302. Available at: <https://doi.org/10.1111/jan.14839>.
- Guo, Y.-R. *et al.* (2020) 'The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak – an update on the status', *Military Medical Research*, 7(1), p. 11. Available at: <https://doi.org/10.1186/s40779-020-00240-0>.
- Hall, L.H. *et al.* (2016) 'Healthcare Staff Wellbeing, Burnout, and Patient Safety: A Systematic Review', *PLOS ONE*. Edited by F. Harris, 11(7), p. e0159015. Available at: <https://doi.org/10.1371/journal.pone.0159015>.
- Hassard, J. *et al.* (2018) 'The cost of work-related stress to society: A systematic review.', *Journal of Occupational Health Psychology*, 23(1), pp. 1–17. Available at: <https://doi.org/10.1037/ocp0000069>.
- Hu, D. *et al.* (2020) 'Frontline nurses' burnout, anxiety, depression, and fear statuses and their associated factors during the COVID-19 outbreak in Wuhan, China: A large-scale cross-sectional study', *eClinicalMedicine*, 24, p. 100424. Available at: <https://doi.org/10.1016/j.eclinm.2020.100424>.
- Huang, J. (2018) 'Changes of Job Burnout in Chinese Nurses over 2004–2013: Cross-Temporal Meta-Analysis', *Current Psychology*, 37(3), pp. 583–590. Available at: <https://doi.org/10.1007/s12144-016-9540-1>.
- Jacobs, A.C. and Lourens, M. (2016) 'Emotional Challenges Faced by Nurses When Taking Care of Children in a Private Hospital in South Africa', *Africa Journal of Nursing and Midwifery*, 18(2), pp. 196–210. Available at: <https://doi.org/10.25159/2520-5293/1076>.
- Joo, J.Y. and Liu, M.F. (2021) 'Nurses' barriers to caring for patients with COVID-19: a qualitative systematic review', *International Nursing Review*, 68(2), pp. 202–213. Available at: <https://doi.org/10.1111/inr.12648>.
- Kalmbach, D.A., Anderson, J.R. and Drake, C.L. (2018) 'The impact of stress on sleep: Pathogenic sleep reactivity as a vulnerability to insomnia and circadian disorders', *Journal of Sleep Research*, 27(6), p. e12710. Available at: <https://doi.org/10.1111/jsr.12710>.
- Kay-Eccles, R. (2012) 'Meta-Analysis of the Relationship Between Coworker Social Support and Burnout Using a Two-Level Hierarchical Linear Model', *Western Journal of Nursing Research*, 34(8), pp. 1062–1063. Available at: <https://doi.org/10.1177/0193945912453684>.
- Kelly, L.A., Lefton, C. and Fischer, S.A. (2019) 'Nurse Leader Burnout, Satisfaction, and Work-Life Balance', *JONA: The Journal of Nursing Administration*, 49(9), pp. 404–410. Available at:

- <https://doi.org/10.1097/NNA.0000000000000784>.
- Kim, J. (2020) 'Emotional Labor Strategies, Stress, and Burnout Among Hospital Nurses: A Path Analysis', *Journal of Nursing Scholarship*, 52(1), pp. 105–112. Available at: <https://doi.org/10.1111/jnu.12532>.
- Kowalczyk, K., Krajewska-Kułak, E. and Sobolewski, M. (2020) 'Working Excessively and Burnout Among Nurses in the Context of Sick Leaves', *Frontiers in Psychology*, 11, p. 285. Available at: <https://doi.org/10.3389/fpsyg.2020.0285>.
- Lai, J. *et al.* (2020) 'Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019', *JAMA Network Open*, 3(3), p. e203976. Available at: <https://doi.org/10.1001/jamanetworkopen.2020.3976>.
- Li, D.-J. *et al.* (2020) 'COVID-19-Related Factors Associated with Sleep Disturbance and Suicidal Thoughts among the Taiwanese Public: A Facebook Survey', *International Journal of Environmental Research and Public Health*, 17(12), p. 4479. Available at: <https://doi.org/10.3390/ijerph17124479>.
- Li, Y. *et al.* (2021) 'Prevalence of depression, anxiety and post-traumatic stress disorder in health care workers during the COVID-19 pandemic: A systematic review and meta-analysis', *PLOS ONE*. Edited by J. Pietschnig, 16(3), p. e0246454. Available at: <https://doi.org/10.1371/journal.pone.0246454>.
- Liu, Q. *et al.* (2020) 'Supporting Frontline Nurses During the Fight Against COVID-19', *Journal of the American Psychiatric Nurses Association*, 26(6), pp. 525–526. Available at: <https://doi.org/10.1177/1078390320946825>.
- López-López, I.M. *et al.* (2019) 'Prevalence of burnout in mental health nurses and related factors: a systematic review and meta-analysis', *International Journal of Mental Health Nursing*, 28(5), pp. 1035–1044. Available at: <https://doi.org/10.1111/inm.12606>.
- Luceño-Moreno, L., Talavera-Velasco, B. and Martín-García, J. (2022) 'Predictors of burnout in female nurses during the COVID-19 pandemic', *International Journal of Nursing Practice*, 28(5), p. e13084. Available at: <https://doi.org/10.1111/ijn.13084>.
- MacDonald, P., Kelly, S. and Christen, S. (2019) 'A Path Model of Workplace Solidarity, Satisfaction, Burnout, and Motivation', *International Journal of Business Communication*, 56(1), pp. 31–49. Available at: <https://doi.org/10.1177/2329488414525467>.
- Maslach, C. (1998) 'A Multidimensional Theory of Burnout', in C.L. Cooper (ed.) *Theories of organizational stress*. Oxford; New York: Oxford University Press.
- Maslach, C. and Jackson, S.E. (1981) 'The measurement of experienced burnout', *Journal of Organizational Behavior*, 2(2), pp. 99–113. Available at: <https://doi.org/10.1002/job.4030020205>.
- Maslach, C., Jackson, S.E. and Leiter, M.P. (1997) 'Maslach Burnout Inventory: Third edition', in *Evaluating stress: A book of resources*. Lanham, MD, US: Scarecrow Education, pp. 191–218.
- Matsuo, T. *et al.* (2020) 'Prevalence of Health Care Worker Burnout During the Coronavirus Disease 2019 (COVID-19) Pandemic in Japan', *JAMA Network Open*, 3(8), p. e2017271. Available at: <https://doi.org/10.1001/jamanetworkopen.2020.17271>.
- Mohammed, A.I. (2019) 'Workplace Stress among Nurses', *International Journal of Innovative Research in Medical Science*, 4(12). Available at: <https://doi.org/10.23958/ijirms/vol04-i12/802>.
- Muller, A.E. *et al.* (2020) 'The mental health impact of the covid-19 pandemic on

- healthcare workers, and interventions to help them: A rapid systematic review', *Psychiatry Research*, 293, p. 113441. Available at: <https://doi.org/10.1016/j.psychres.2020.113441>.
- Munnangi, S. *et al.* (2018) 'Burnout, Perceived Stress, and Job Satisfaction Among Trauma Nurses at a Level I Safety-Net Trauma Center', *Journal of Trauma Nursing*, 25(1), pp. 4–13. Available at: <https://doi.org/10.1097/JTN.0000000000000335>.
- Queiros, C. and Carlotto, M.S. (2013) 'Predictors of burnout among nurses: An interactionist approach', *Psicothema*, (25.3), pp. 330–335. Available at: <https://doi.org/10.7334/psicothema2012.246>.
- Salvagioni, D.A.J. *et al.* (2017) 'Physical, psychological and occupational consequences of job burnout: A systematic review of prospective studies', *PLOS ONE*. Edited by J.P. Van Wouwe, 12(10), p. e0185781. Available at: <https://doi.org/10.1371/journal.pone.0185781>.
- Shah, M.K. *et al.* (2021) 'Prevalence of and Factors Associated With Nurse Burnout in the US', *JAMA Network Open*, 4(2), p. e2036469. Available at: <https://doi.org/10.1001/jamanetworkopen.2020.36469>.
- Shaukat, N., Ali, D.M. and Razzak, J. (2020) 'Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review', *International Journal of Emergency Medicine*, 13(1), p. 40. Available at: <https://doi.org/10.1186/s12245-020-00299-5>.
- Shenoi, A.N. *et al.* (2018) 'Burnout and Psychological Distress Among Pediatric Critical Care Physicians in the United States\*', *Critical Care Medicine*, 46(1), pp. 116–122. Available at: <https://doi.org/10.1097/CCM.00000000000002751>.
- Shi, L. *et al.* (2022) 'The Impact of COVID-19-Related Work Stress on the Mental Health of Primary Healthcare Workers: The Mediating Effects of Social Support and Resilience', *Frontiers in Psychology*, 12, p. 800183. Available at: <https://doi.org/10.3389/fpsyg.2021.800183>.
- Sudarsih, S. and Santoso, W. (2023) 'Sleep quality with nurse burnout during the covid-19 pandemic in East Java', *Media Keperawatan Indonesia*, 6(1), p. 18. Available at: <https://doi.org/10.26714/mki.6.1.2023.18-24>.
- Talae, N. *et al.* (2022) 'Stress and burnout in health care workers during COVID-19 pandemic: validation of a questionnaire', *Journal of Public Health*, 30(3), pp. 531–536. Available at: <https://doi.org/10.1007/s10389-020-01313-z>.
- Tomaszewska, K. *et al.* (2022) 'Stress and Occupational Burnout of Nurses Working with COVID-19 Patients', *International Journal of Environmental Research and Public Health*, 19(19), p. 12688. Available at: <https://doi.org/10.3390/ijerph191912688>.
- Tomaszewska, K. and Majchrowicz, B. (2019) 'Professional burnout of nurses employed in non-invasive treatment wards', *Journal of Education, Health and Sport*, 9(9), pp. 1147–1161.
- U.S. Bureau of Labor Statistics (2019) *Registered nurses made up 30 percent of hospital employment in May 2019: The Economics Daily*. Available at: <https://www.bls.gov/opub/ted/2020/registered-nurses-made-up-30-percent-of-hospital-employment-in-may-2019.htm> (Accessed: 28 November 2023).
- Van Der Molen, H.F. *et al.* (2020) 'Work-related psychosocial risk factors for stress-related mental disorders: an updated systematic review and meta-analysis', *BMJ Open*, 10(7), p. e034849. Available at:

- <https://doi.org/10.1136/bmjopen-2019-034849>.
- WHO (2021) *WHO Coronavirus (COVID-19) Dashboard*. Available at: <https://covid19.who.int> (Accessed: 28 November 2023).
- WHO (2019) *Burn-out an 'occupational phenomenon': International Classification of Diseases*. Available at: <https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases> (Accessed: 28 November 2023).
- Wood, B.A. *et al.* (2020) 'Academic Librarian Burnout: A Survey Using the Copenhagen Burnout Inventory (CBI)', *Journal of Library Administration*, 60(5), pp. 512–531. Available at: <https://doi.org/10.1080/01930826.2020.1729622>.
- Wu, Y. *et al.* (2020) 'A Comparison of Burnout Frequency Among Oncology Physicians and Nurses Working on the Frontline and Usual Wards During the COVID-19 Epidemic in Wuhan, China', *Journal of Pain and Symptom Management*, 60(1), pp. e60–e65. Available at: <https://doi.org/10.1016/j.jpainsymman.2020.04.008>.
- Xian, M. *et al.* (2020) 'The role of work resources between job demands and burnout in male nurses', *Journal of Clinical Nursing*, 29(3–4), pp. 535–544. Available at: <https://doi.org/10.1111/jocn.15103>.
- Yao, Y. *et al.* (2018) 'General self-efficacy modifies the effect of stress on burnout in nurses with different personality types', *BMC Health Services Research*, 18(1), p. 667. Available at: <https://doi.org/10.1186/s12913-018-3478-y>.
- Zhan, Y. *et al.* (2020) 'The Current Situation and Influencing Factors of Job Stress Among Frontline Nurses Assisting in Wuhan in Fighting COVID-19', *Frontiers in Public Health*, 8, p. 579866. Available at: <https://doi.org/10.3389/fpubh.2020.579866>.



# DO ANTI-SMOKING ADVERTISEMENTS INFLUENCE STUDENTS TO QUIT SMOKING?

## Apakah Iklan Anti-Rokok Mempengaruhi Siswa Untuk Berhenti Merokok?

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### Abstract

**Background:** The prevalence of adolescent smoking in Indonesia increased from 2013 to 2018.

**Aims:** This study examines the influence of pro and anti-cigarette advertising on students' smoking cessation.

**Methods:** The study uses the Global Youth Tobacco Survey Indonesia 2019 data. The sample was students aged 13-15 years who had smoked. The dependent variable is quitting smoking, and the independent variables are pro-cigarette and anti-smoking ads. Chi-square and logistic regression tests with a 95% confidence interval and a p-value of 0.05.

**Results:** The total sample was 1023 students, and 79.32% wanted to quit smoking. In the anti-smoking ads variables: anti-smoking messages in various media (OR=1.63, 95% CI=1.14-2.34); pictorial health warnings (PHW) on cigarette packs (OR=3.46, 95% CI=2.40-4.97); feeling afraid when seeing health warnings on packaged cigarettes (OR=3.03, 95% CI=2.16-4.26); education about harmful of cigarette consumption (OR=1.40, 95% CI=1.00 – 1.96) had a significant association to quit smoking. The most dominant factor in multivariate analysis was pictorial health warnings on cigarette packs (OR=2.53, 95% CI=1.67-3.81).

**Conclusion:** Most student smokers express a desire to quit smoking. Pictorial health warnings are significantly associated with the intention to quit smoking among students.

**Keywords:** cigarette ads, GYTS, pictorial health warning, students

### Abstrak

**Latar Belakang:** Prevalensi merokok pada remaja Indonesia terus meningkat dari tahun 2013 ke 2018.

**Tujuan:** Penelitian ini bertujuan untuk mengetahui pengaruh iklan pro-rokok dan anti-rokok terhadap keinginan berhenti merokok. Pada siswa.

**Metode:** Penelitian ini menggunakan data dari Global Youth Tobacco Survey Indonesia tahun 2019 Sampelnya adalah siswa usia 13-15 tahun yang pernah merokok. Variabel dependen adalah keinginan berhenti merokok dan variabel independen adalah iklan pro-rokok dan iklan anti-rokok. Data dianalisis dengan uji chi-square dan regresi logistik dengan interval kepercayaan 95% dan p-value 0,05.

**Hasil:** Jumlah sampel sebanyak 1023 siswa, 79,32% siswa ingin berhenti merokok. Pada variabel iklan anti rokok: pesan anti rokok di berbagai media (OR=1,63, 95% CI=1,14-2,34); peringatan kesehatan bergambar pada bungkus rokok (OR=3,46, 95% CI=2,40-4,97); merasa takut ketika melihat peringatan kesehatan pada rokok kemasan (OR=3,03, 95% CI=2,16-4,26); pendidikan tentang bahaya konsumsi rokok (OR=1,40, 95% CI=1,00-1,96) memiliki hubungan yang signifikan terhadap keinginan berhenti merokok pada siswa. Faktor yang paling dominan dalam analisis multivariat adalah peringatan kesehatan bergambar pada bungkus rokok (OR=2,53, 95% CI=1,67-3,81).

**Kesimpulan:** Sebagian besar siswa yang merokok ingin berhenti merokok. Peringatan kesehatan bergambar berhubungan signifikan dengan keinginan untuk berhenti merokok pada siswa.

**Kata kunci:** GYTS, iklan rokok, peringatan kesehatan bergambar, siswa.



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## Introduction

Globally, there are 1.3 billion smokers and 80% live in low and middle-income countries. Smoking causes about 8 million deaths yearly (WHO, 2021). Targeted by 2025, the prevalence of tobacco uses for youth aged 15 years over decreased to 19.1%. Meanwhile, 24 million (6.5%) adolescents aged 13-15 years have started smoking, and 6.4 million are in Southeast Asia (WHO, 2019).

The prevalence of adult smoking in Indonesia was the highest, especially for men reaching 62.9% and killing around 225,700 people yearly (WHO, 2020). 1.9% increase in adolescent smoking prevalence compared to 2013 (7.2%) to 2018 (9.1%). (Ministry of Health, 2018). The National Medium-Term Development Plan (RPJMN) 2020-2024 of the Government of Indonesia targets to reduce the percentage of smokers aged 0-18 from 9.1 to 8.7 in 2024 (Mutiarra, 2021).

Adolescence is a productive age that will reflect the quality of human resources and the progress of a country (Patton *et al.*, 2016). Adolescents who smoke will increase the risk of non-communicable diseases such as hypertension, diabetes, stroke, heart attacks, kidney failure, and lung cancer in adulthood (Budreviciute *et al.*, 2020). The multitude of non-communicable diseases suffered will undoubtedly diminish productivity and become a burden to the nation (Benziger, Roth and Moran, 2016). Efforts to prevent smoking during adolescence are crucial in breaking the chain of tobacco addiction (Owens *et al.*, 2020). Comprehensive efforts in tobacco control, such as implementing the MPOWER strategies, are needed (Flor *et al.*, 2021).

Until 2023, Indonesia has not ratified the World Health Organization Framework Convention on Tobacco Control (FCTC) as a commitment against tobacco. One of the pillars regulated in the FCTC is the ban on tobacco advertising, promotion and sponsorship (TAPS) (WHO, 2003). The laws prohibiting TAPS are not comprehensive (Fauzi and Ma'ruf *et al.*, 2018). The law on TAPS regulates various laws and regulations, such as Law 32 of

2002 concerning Broadcasting, Law 40 of 1999 concerning the Press, and PP No. 109 of 2012 concerning the Protection of Materials Containing Addictive Substances in the form of Tobacco Products for health. In electronic, print, and outdoor media, several provisions allow cigarette advertising and promotion based on PP No. 109 of 2012. For example, advertisements on TV are allowed during certain broadcast hours (21.30 – 05.00). Then Law 32/2002 concerning Broadcasting does not mention the prohibition on broadcast hours for cigarette advertisements and only prohibits the promotion of cigarettes that show the form of cigarettes. Likewise, the Press Law only prohibits cigarette advertisements showing images of cigarettes or cigarette packs. Exception from the abovementioned prohibition, the press freely broadcasts cigarette advertisements with various strategies.

A study conducted by Brown (2022) in 42 low and middle-income countries found many advertising and promotional cigarette tactics to get the attention of children and youth. Many points of sale near school's placement of cigarettes at position eye-catching and accessible for to reach by children. Children also allow buying single sticks of cigarettes (Brown *et al.*, 2022). Research conducted by Rosemary (2021) comparing pro and anti-tobacco ads on YouTube shows that cigarette advertisements have more viewers than anti-smoking advertisements (Rosemary *et al.*, 2021). All of the TAPS forms is tobacco industry intervention that creates conditions in which the smoking habit is considered normal, reasonable and acceptable, especially for youth.

TAPS encourage adolescents to start smoking, for adolescents active smoking to continue, and adolescents who quit smoking think to smoke again (Fauzi and Ma'ruf *et al.*, 2018). Health warning messages about anti-tobacco in Indonesia can still not compete with the broad and creative pro-cigarette advertisements on many media platforms (Rosemary *et al.*, 2021). This study aimed to examine the effect of pro-tobacco ads and anti-tobacco ads on students' intention to quit smoking in Indonesia.

## Method

The study using Global Youth Tobacco Survey (GYTS) Indonesia 2019 data. GYTS is open source data can access in website CDC (<https://nccd.cdc.gov/GTSSDataSurveyResources/Ancillary/DataReports.aspx?CAID=2>). The study conducted sample size calculations following standard methods by the CDC in Atlanta. The sample distribution included three regions: Java, Sumatra, and other regions. In each region, 25 junior high schools and 25 high schools were selected, and within each school, a class was randomly chosen using assigned random numbers. The total sample consisted of 150 schools located across 30 provinces (Megatsari *et al.*, 2023). GYTS is a school-based survey, a two-stage cluster sampling technique at the school and classroom levels, with a response rate of 91.00%. GYTS data is used to monitor and control tobacco use at national, regional and global levels (CDC, 2019).

The population of this study comprises students from junior high school (SMP) and senior high school (SMA) levels. The sample was students aged 13-15 years who had ever smoked. The outcome variable is the intention to quit smoking based on the questions "Do you want to stop smoking now?" and "During the past 12 months, did you ever try to stop smoking?". Respondents who answered "Yes" to either of the questions were categorized as students who intentionally quit smoking. The independent variables consist of anti-tobacco advertisements and pro-tobacco advertisements questions. The anti-tobacco advertising questions section is related to "Are seeing or hearing anti-tobacco messages on various media, seeing or hearing anti-tobacco messages at various events, seeing pictorial health warnings on cigarette packs, thought quitting smoking when seeing a cigarette pack warning and education about harm tobacco at school?". Meanwhile, pro-cigarette advertisements questions asked about "Are the students exposure to cigarette advertisements and promotions in the last 30 days on TV, newspaper/magazine, outdoor media, internet/ social

media, sales centres, sporting events, music concerts and community events/social gatherings?". The answers to each question are then categorized as "yes" or "no".

Data missing was excluded from the analysis. Then the data was recoded based on the categories of variables. Data analysis using Stata 13 by considering the weighting variables using the ".svy" command. Risk measurement was interpreted using Odds Ratio (OR) with a 95% Confident Interval (95% CI) and a p-value of 0.05. Then proceed with multivariate analysis with a logistic regression test by selecting a significant variable with p-value less than equal 0.05 as a candidate using the backward method. One by one, insignificant variables were removed from the model with backward steps to get the final fit model (Sabri and Hastono, 2018).

## Result and Discussion

The results showed that 1023 students aged 13-15 had smoked, and 810 (79.32%) students wanted to quit smoking. Respondents were 91.64% male and 8.36% female. Indeed, in a prior investigation conducted by Sari, 92.1% of adolescents in Indonesia indicated a willingness to stop smoking (Sari, Ayunin and Setyowati, 2022). Findings in the same range of figures from Oudah's study in Iraq showed that 87.6% of smokers wanted to quit smoking (Oudah, 2020). The proportion of current tobacco smokers who desired to quit smoking exceeded 50% in most countries assessed (Arrazola *et al.*, 2017).

Students experienced high exposure to Tobacco Advertising and Promotion Strategies (TAPS) on both online and offline platforms (Septiono *et al.*, 2022). Cigarette advertisements portraying smokers as attractive can enhance the appeal of smoking, leading teenagers exposed to such ads to be more open and curious about cigarette use (Nurcahyani *et al.*, 2019).

We can see a very high proportion of students exposed to cigarette advertisements in Table 1. The students

are exposed to cigarette advertisements, such as in outdoor media 64.43%, at shopping centers 62.54%, and students saw cigarette advertisements on TV of 67.68%. Furthermore, the studies from Yogyakarta, Bali and Banyuwangi revealed cigarette promotion banners and outlets selling cigarettes within 250 meters of the school (Astuti *et al.*, 2019; Dewi *et al.*, 2020; Morrison *et al.*, 2021). About two-thirds of outlets near schools sell cigarettes in single sticks and are also sold to children (Astuti *et al.*, 2019). Cigarettes sold as single sticks from walk sellers or outlets make cigarettes accessible. Cigarettes at low prices can be affordable to all economic segments of society, especially students, encouraging students to smoke and being an obstacle to quitting smoking (WHO, 2020).

The prohibition policy around the school of smoking advertisements such as billboards and cigarette banners must be banned. The number of smoking billboards and banners that are installed close to the school will increase students' chances of smoking. A study by Putra showed that installing cigarette advertising billboards near schools increased students' chances of smoking by 12.4% and installing cigarette banners near schools increased students' chances of smoking by 18.4% (Putra *et al.*, 2020). The density of cigarette retailers was 81% higher in areas within 100 meters from facilities for children and adolescents compared to areas situated between 100 to 250 meters from such facilities (Dewi *et al.*, 2022). The regulation of cigarette advertisements is a governmental commitment aimed at safeguarding children, shielding the younger generation from pervasive and highly influential cigarette advertisements that can impact smoking behavior (Napirah *et al.*, 2020).

The results of bivariate analysis (Table 2) showed that in the anti-smoking advertising variable; seen anti-smoking messages in various media (OR=1.63, 95% CI=1.14-2.34), seen pictorial health warnings on cigarette packs (OR=3.46, 95% CI=2.40-4.97), thought when seeing

health warnings on cigarette packs (OR=3.03, 95% CI=2.16-4.26), get a lesson about the dangers of tobacco use (OR=1.40, 95% CI=1.00-1.96) significantly related to the desire to quit smoking in students (p-value <0.05). The pro-cigarette advertising variable showed no significant relationship to students' desire to quit smoking (p-value > 0.05).

Based on multivariate analysis where OR Adjusted health warnings on cigarette packs are significantly related to students' desire to quit smoking. Students who saw illustrated health warnings were 2.53 times more likely to encourage smoking cessation (95% CI=1.67-3.81). These findings are consistent with previous research was conducted in 7 countries on 8000 adults and youth in Mexico, the United States, China, Germany, India, Bangladesh, and Korea, that is pictorial warnings more effective than text-only warnings (p < 0.001) (Hammond *et al.*, 2019). Message delivered with PHW more attention smoker better than text only (Lochbuehler *et al.*, 2017). A study conducted in the United Kingdom and Norway showed that a large novel pictorial increases smokers' warning salience (Moodie *et al.*, 2021). The PHW effective change perceived among smoker intention to quit smoking (Ratih and Susanna, 2018). PHW on cigarette packs is also influential in forming perceptions of adolescents not smoking (Mays *et al.*, 2015; Noar *et al.*, 2016; Hwang and Cho, 2020).

Pictorial Health Warnings (PHWs) on tobacco packages are more comprehensible and have a substantial effect on raising awareness about the health consequences of tobacco consumption in communicating health risks of tobacco use (Kaai *et al.*, 2021; Mia *et al.*, 2021). PHWs are a cost-effective tool for educating the public about the dangers of smoking (Talukder *et al.*, 2022). Pictorial Health Warnings (PHWs) also effectively motivated smokers to quit, decrease cigarette consumption, and prevent relapse in former smokers (Bam, Chand and Shah, 2021).

Table 1. Percentage of Exposure to Anti-Tobacco Ads and Pro-Tobacco Ads to Indonesian Students

Variables		f	%
Gender:	Male	931	91.64
	Female	92	8.36
Age groups:	13 years	329	32.32
	14 years	386	39.23
	15 years	304	28.45
Intention Quit Smoking	No	213	20.82
	Yes	810	79.18
<b>Anti-tobacco Ads</b>			
Seen or heard anti-tobacco messages on various media			
	No	256	24.60
	Yes	767	75.40
Seen or heard anti-tobacco messages at various events			
	No	624	60.56
	Yes	399	39.44
Seen pictorial health warnings on the cigarette packs			
	No	492	47.22
	Yes	531	52.78
Thinking of quitting smoking when you see a cigarette packet warning.			
	No	322	30.51
	Yes	701	69.49
Education about the harm tobacco at school past 12 months			
	No	399	39.88
	Yes	624	60.12
<b>Pro-Tobacco Ads</b>			
Seen any people using tobacco on TV, in videos, or movies			
	Yes	517	49.68
	No	506	50.32
Seen a cigarette ads promo on tv			
	Yes	698	67.68
	No	325	32.32
Seen cigarette ads in cigarette products in newspapers or magazines			
	Yes	321	30.53
	No	702	69.47
Seen cigarette ads in outdoor media			
	Yes	656	64.43
	No	367	35.57
Seen cigarette ads internet/social media			
	Yes	417	39.46
	No	606	60.54
Seen cigarette ads in sales centres (shops, stalls, kiosks and minimarket)			
	Yes	644	62.54
	No	379	37.46
Seen cigarette ads at sports events			
	Yes	279	26.48
	No	744	73.52
Seen cigarette ads at music concerts			
	Yes	264	25.83
	No	759	74.17
Seen cigarette ads at community events/ social gatherings			
	Yes	247	25.00
	No	776	75.00
Total		1023	100.00

Table 2. The Relationship between Advertising and the Intention to Quit Smoking in Students

Variables	OR Crude (95% CI)	p- value	OR Adjusted (95% CI)	p- value
<b>Anti-tobacco Ads</b>				
Seen or heard anti-tobacco messages on various media (ref: No)	1.63 (1.14 – 2.34)	0.007*	-	
Seen or heard anti-tobacco messages at various events (ref: No)	1.39 (0.98 – 1.97)	0.064	-	
Seen pictorial health warning on the cigarette packs (ref: No)	3.46 (2.40 – 4.97)	0.001*	2.53 (1.67 -3.81)	0.001*
Thought quitting smoking when seeing a cigarette pack warning (ref: No)	3.03 (2,16 – 4,26)	0.001*	1.87 (1.27 – 2,76)	0.001*
Education about harmful tobacco at school past 12 months (ref: No)	1.40 (1.00 – 1.96)	0.045*	-	
<b>Pro-Tobacco Ads</b>				
Seen any people using tobacco on TV, in videos, or in movies (ref: Yes)	0.76 (0.55 – 1.06)	0.117	-	
Seen cigarette ads promo on tv (ref: Yes)	0.95 (0.67 – 1.35)	0.788	-	
Seen cigarette ads in cigarette products in newspapers or magazines (ref: Yes)	1.14 (0.80 – 1.62)	0.465	-	
Seen cigarette ads in outdoor media (ref: Yes)	1.18 (0.83 – 1.68)	0.330	-	
Seen cigarette ads internet/social media (ref: Yes)	0.87 (0.62 – 1.22)	0.442	-	
Seen cigarette ads in sales centres (such as shops and minimarket) (ref: Yes)	0.82 (0.58 – 1.15)	0.263	-	
Seen cigarette ads at sports events (ref: Yes)	1.18 (0.82 – 1.70)	0.368	-	
Seen cigarette ads at music concerts (ref: Yes)	1.27 (0.88 – 1.85)	0.194	-	
Seen cigarette ads at community events/social gatherings (ref: Yes)	1.11 (0.75 – 1.62)	0.588	-	

There are five pictorial health warnings on cigarette packs circulating in Indonesia which are determined based on PMK 28/2013, namely pictures of mouth cancer; smoking kills you, throat cancer, smoking near children endangers them and lung cancer. Not all types of pictorial warnings on cigarette packs affect the intention to stop smoking (Hamdan, 2015). Among the five Pictorial Health Warnings (PHWs), the image depicting lung cancer was identified as the most effective in motivating individuals to quit smoking (Alkaff *et al.*, 2020). Smokers also agreed that the PHW was effective and induced fear and worry (Hall *et al.*, 2019; Yuliati *et al.*, 2021).

Pictorial health warnings can change awareness among smokers to stop smoking within the next 12 months (91.2%) and an average time off will be quit smoking of 18.78 months (Suyasa and Santhi, 2018). A randomized trial study over four weeks revealed that PHW would have a psychological outcome such as intention to quit smoking, try not to smoke and succeed in stopping smoking. (Brewer *et al.*, 2017; Peebles *et al.*, 2016). The PHW mechanism can change smoking behavior to stop. PHW will attract smokers' attention and read warnings about the dangers of smoking on cigarette packs. Then PHW, such as pictures of lung cancer, throat cancer and other pictures, will create fear and anxiety about the effects of smoking on health in the future. Repeated exposure from PHW will keep the warnings on their minds. This will further increase the intention to quit smoking. (Brewer *et al.*, 2019).

However, PHW does not significantly change smoking behavior to quit cigarettes, especially in adults. First, adult smokers avoid paying attention to pictures and messages on cigarette packs. Second, they tend to underestimate the warnings about the dangers of smoking and believe in their view that smoking is not dangerous, even though such thinking is wrong. (Hall *et al.*, 2019). The initial period after the introduction of pictorial health warning will be increased the intention to quit cigarettes, but the impact of the warning may wane over time. Change and increasing the size

of pictorial warnings may help prevent warning wear-out (Parada *et al.*, 2018). The small size of PHW provides inadequate information to smokers about the dangers of smoking health (Sychareun *et al.*, 2015). Only 14.7% of smokers felt that a pictorial health warning with 40% cover packs in getting them to quit smoking (Fauzi and Bam *et al.*, 2018). PHW on cigarette packs is a low-cost and effective tool to educate the general public, especially smokers, about the dangers of smoking. However, there is not updating PHW periodically and increasing its size causes PHW to wear-out effect among smokers (Woelbert and Hombres, 2019).

The rules stipulated by FCTC that the size of the PHW must be at least 30- 50 % of the overall display of a cigarette pack (WHO, 2003). Based on PP 109/2012 and PMK 28/2013, the regulation of pictorial health warnings on cigarette packs in Indonesia is still using a size of 40% and from 2014 until now, has never been altered. This law is lagging compared to other countries because some countries have altered the size of pictorial health warnings by up to 90%. More than half of smokers felt that the pictorial health warning cover 90% was very effective in motivating smokers to quit smoking (Fauzi and Bam *et al.*, 2018). Even Australia has required plain cigarette packs. Plain-pack cigarettes can reduce the appeal of cigarette packs to young adult smokers (Johnson *et al.*, 2021). Previously, a study conducted by TCSC-IAKMI stated that most of the public supported increasing the PHW on cigarette packs to 70 to 90%. (Fauzi and Bam *et al.*, 2018).

The strength of the research used a large and diverse sample from valid survey data GYTS so that the findings of this study can represent the actual conditions related to smoking behavior among students in Indonesia. The study's limitation was not measuring the influence of other variables outside of pro and anti-smoking advertisements that may encourage smoking cessation, such as knowledge and attitudes about the dangers of smoking, second-hand smoke at home and in public places, and others.

## Conclusion

The exposure of tobacco advertising, promotion, and sponsorship to students in Indonesia is very massive. Seven of 10 students have seen cigarette advertisements on TV, outdoor media and in shops or stores in the last 30 days. Approximately 80% of students have the intention to quit smoking. PHW has significantly affected the intention to quit smoking in students in Indonesia. The existing laws must comprehensively regulate TAPS prohibition, including in the school environment. As a result, smoking initiative increased among students who did not smoke, and difficulty quitting among students who smoked.

One of the strategies that should be implemented to reduce smoking in youth is Increasing the size and creating a novelty of pictorial health warnings from 40% to 75-90%. In addition, it is necessary to optimize smoking-free areas to create smoke-free schools and educate students that smoking harms health. For future research, evaluating the effectiveness of the old PHW attached to cigarette packs is essential. This is needed as evidence-based in formulating policies so that cigarette companies update PHW regularly.

## Abbreviations

GYTS: Global Youth Tobacco Survey; OR: Odds Ratio; PHW: Pictorial Health Warning; WHO: World Health Organization; RPJMN: Rencana Pembangunan Jangka Menengah Nasional; FCTC: Framework Convention on Tobacco Control; TAPS: Tobacco Advertising, Promotion and Sponsorship; UU: Undang-Undang; PP: Peraturan Pemerintah; SMP: Sekolah Menengah Pertama (Junior High School); SMA: Sekolah Menengah Atas (Senior High School).

## Declarations

### Ethics Approval and Consent Participant

The GYTS Indonesia 2019 has been approved by the Ministry of Health (MoH) Indonesia. The instruments in the survey

have been standardized by World Health Organization (WHO).

### Conflict of Interest

No conflict of interest exists with anyone and any institution in this study.

### Availability of Data and Materials

GYTS is public data access which can be downloaded at <https://www.cdc.gov/tobacco/global/gtss/gtssdata/index.html>.

### Authors' Contribution

The DRF was the main contributor who did the analysis and wrote the original draft, such as background, methods, results and discussion. TS conducted research concepts, selected variables and revised the articles.

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## References

- Alkaff, F.F. *et al.* (2020) 'The effectivity of pictorial health warning to motivate smoking cessation in rural area: A study from Losari village, Indonesia', *Journal of Education and Health Promotion*, 9, p. 67. Available at: [https://doi.org/10.4103/jehp.jehp\\_436\\_19](https://doi.org/10.4103/jehp.jehp_436_19).
- Arrazola, R.A. *et al.* (2017) 'Current Tobacco Smoking and Desire to Quit Smoking Among Students Aged 13-15 Years - Global Youth Tobacco Survey, 61 Countries, 2012-2015', *MMWR. Morbidity and mortality weekly report*, 66(20), pp. 533-537. Available at: <https://doi.org/10.15585/mmwr.mm6620a3>.
- Astuti, P.A.S. *et al.* (2019) 'Cigarette retailer density around schools and neighbourhoods in Bali, Indonesia: A GIS mapping', *Tobacco Induced*



- Diseases*, 17, p. 55. Available at: <https://doi.org/10.18332/tid/110004>.
- Bam, T.S., Chand, A. and Shah, B. (2021) 'Evidence of the Effectiveness of Pictorial Health Warnings on Cigarette Packaging in Nepal', *Asian Pacific Journal of Cancer Prevention*, 22(S2), pp. 35–44. Available at: <https://doi.org/10.31557/APJCP.2021.22.S2.35>.
- Benziger, C.P., Roth, G.A. and Moran, A.E. (2016) 'The Global Burden of Disease Study and the Preventable Burden of NCD', *Global Heart*, 11(4), p. 393. Available at: <https://doi.org/10.1016/j.gheart.2016.10.024>.
- Brewer, N.T. *et al.* (2016) 'Effect of Pictorial Cigarette Pack Warnings on Changes in Smoking Behavior: A Randomized Clinical Trial', *JAMA Internal Medicine*, 176(7), p. 905. Available at: <https://doi.org/10.1001/jamainternmed.2016.2621>.
- Brewer, N.T. *et al.* (2019) 'Understanding Why Pictorial Cigarette Pack Warnings Increase Quit Attempts', *Annals of Behavioral Medicine*, 53(3), pp. 232–243. Available at: <https://doi.org/10.1093/abm/kay032>.
- Brown, J.L. *et al.* (2023) 'Spinning a global web: tactics used by Big Tobacco to attract children at tobacco points-of-sale', *Tobacco Control*, 32(5), pp. 645–651. Available at: <https://doi.org/10.1136/tobaccocontrol-2021-057095>.
- Budreviciute, A. *et al.* (2020) 'Management and Prevention Strategies for Non-communicable Diseases (NCDs) and Their Risk Factors', *Frontiers in Public Health*, 8, p. 574111. Available at: <https://doi.org/10.3389/fpubh.2020.574111>.
- CDC (2019) 'Datasets for South-East Asian (SEAR) Region, Indonesia, Indonesia - National'. Available at: <https://nccd.cdc.gov/GTSSDataSurveyResources/Ancillary/DataReports.aspx?CAID=2>.
- Dewi, D.M.S.K. *et al.* (2022) 'Density of Cigarette Retailers Near Facilities for Children and Adolescents in Urban and Rural Areas in Indonesia: A Geospatial Analysis', *Asia-Pacific Journal of Public Health*, 34(4), pp. 384–391. Available at: <https://doi.org/10.1177/10105395221085067>.
- Dewi, D.M.S.K., Sebayang, S.K. and Lailiyah, S. (2020) 'Density of cigarette retailers near schools and sales to minors in Banyuwangi, Indonesia: A GIS mapping', *Tobacco Induced Diseases*, 18, p. 06. Available at: <https://doi.org/10.18332/tid/115798>.
- Fauzi, R., Ma'ruf, M.A., *et al.* (2018) *Hubungan Terpaan Iklan, Promosi dan Sponsor Rokok dengan Status Merokok di Indonesia*. TCSC – IAKMI. Available at: [https://www.tcsc-indonesia.org/wp-content/uploads/2018/10/Hasil-Studi-Paparan-Iklan-Promosi-dan-Sponsor-Rokok-di-Indonesia\\_TCSC-IAKMI.pdf](https://www.tcsc-indonesia.org/wp-content/uploads/2018/10/Hasil-Studi-Paparan-Iklan-Promosi-dan-Sponsor-Rokok-di-Indonesia_TCSC-IAKMI.pdf).
- Fauzi, R., Bam, T.S., *et al.* (2018) *Opini Publik: Efektifitas Peringatan Kesehatan Bergambar di Indonesia*. Jakarta: IAKMI. Available at: <https://www.tcsc-indonesia.org/wp-content/uploads/2019/03/TCSC-A4-ISBN-02-1.pdf>.
- Flor, L.S. *et al.* (2021) 'The effects of tobacco control policies on global smoking prevalence', *Nature Medicine*, 27(2), pp. 239–243. Available at: <https://doi.org/10.1038/s41591-020-01210-8>.
- Hall, M.G. *et al.* (2018) 'Why smokers avoid cigarette pack risk messages: Two randomized clinical trials in the United States', *Social Science & Medicine*, 213, pp. 165–172. Available at: <https://doi.org/10.1016/j.socscimed.2018.07.049>.
- Hamdan, S.R. (2015) 'Pengaruh Peringatan Bahaya Rokok Bergambar Pada Intensi Berhenti Merokok', *MIMBAR, Jurnal Sosial dan Pembangunan*, 31(1), p. 241. Available at: <https://doi.org/10.29313/mimbar.v31i1.1323>.

- Hammond, D. *et al.* (2019) 'Are the Same Health Warnings Effective Across Different Countries? An Experimental Study in Seven Countries', *Nicotine & Tobacco Research*, 21(7), pp. 887–895. Available at: <https://doi.org/10.1093/ntr/nty248>.
- Hwang, J. and Cho, S. (2020) 'The association between new graphic health warning labels on tobacco products and attitudes toward smoking among south Korean adolescents: a national cross-sectional study', *BMC Public Health*, 20(1), p. 748. Available at: <https://doi.org/10.1186/s12889-020-08638-0>.
- Johnson, A.C. *et al.* (2021) 'Effects of pictorial warning label message framing and standardized packaging on cigarette packaging appeal among young adult smokers', *Addictive Behaviors*, 120, p. 106951. Available at: <https://doi.org/10.1016/j.addbeh.2021.106951>.
- Kaai, S.C. *et al.* (2023) 'Quasi-experimental evaluation of Kenya's pictorial health warnings versus Zambia's single text-only warning: findings from the International Tobacco Control (ITC) Project', *Tobacco Control*, 32(2), pp. 139–145. Available at: <https://doi.org/10.1136/tobaccocontrol-2020-056396>.
- Lochbuehler, K. *et al.* (2018) 'Effect of message congruency on attention and recall in pictorial health warning labels', *Tobacco Control*, 27(3), pp. 266–271. Available at: <https://doi.org/10.1136/tobaccocontrol-2016-053615>.
- Mays, D. *et al.* (2015) 'Framing Pictorial Cigarette Warning Labels to Motivate Young Smokers to Quit', *Nicotine & Tobacco Research*, 17(7), pp. 769–775. Available at: <https://doi.org/10.1093/ntr/ntu164>.
- Megatsari, H. *et al.* (2023) 'The influence of anti-smoking messages to Indonesian youth smoking behavior: the Indonesian 2019 Global Youth Tobacco Survey (GYTS)', *BMC Public Health*, 23(1), p. 907. Available at: <https://doi.org/10.1186/s12889-023-15830-5>.
- Mia, M.T. *et al.* (2021) 'Effects of Graphic Health Warning on Tobacco Packs: A Cross-Sectional Study among Low Socioeconomic Group in Bangladesh', *Journal of Smoking Cessation*, 2021, p. e1354885. Available at: <https://doi.org/10.1155/2021/1354885>.
- Ministry of Health (2018) *Basic Health Research (Riskesmas) 2018*. Ministry of Health Republic of Indonesia.
- Moodie, C. *et al.* (2021) 'The Response of Smokers to Health Warnings on Packs in the United Kingdom and Norway Following the Introduction of Standardized Packaging', *Nicotine & Tobacco Research*, 23(9), pp. 1551–1558. Available at: <https://doi.org/10.1093/ntr/ntab027>.
- Morrison, C.N. *et al.* (2021) 'The geographic distribution of retail tobacco outlets in Yogyakarta, Indonesia', *Drug and Alcohol Review*, 40(7), pp. 1315–1324. Available at: <https://doi.org/10.1111/dar.13285>.
- Mutiara, P. (2021) 'Remaja Merokok Ancaman Bagi Masa Depan Bangsa', *Kementerian Koordinator Bidang Pembangunan Manusia dan Kebudayaan*. Available at: <https://www.kemendikbud.go.id/remaja-merokok-ancaman-bagi-masa-depan-bangsa>.
- Napirah, M.R. *et al.* (2020) 'A Model of Cigarette Advertisement Policy in Preventing Children Smoking Habits in Palu City, Indonesia: A Systematic Review', *Indian Journal of Forensic Medicine & Toxicology* [Preprint]. Available at: <https://doi.org/10.37506/ijfmt.v14i4.12838>.
- Noar, S.M. *et al.* (2016) 'Pictorial cigarette pack warnings: a meta-analysis of experimental studies', *Tobacco Control*, 25(3), pp. 341–354. Available at: <https://doi.org/10.1136/tobaccocontrol-2014-051978>.
- Nurcahyani, E.W. *et al.* (2019) 'The Impact of Cigarette Advertisements on

- Adolescents: A Literature Review', *Jurnal Ilmu Kesehatan Masyarakat*, 10(2), pp. 74–82. Available at: <https://doi.org/10.26553/jikm.2019.10.2.74-82>.
- Oudah, M. (2020) 'Study the prevalence of smoking phenomenon among institute students at the city of Nasiriya / Iraq', *Systematic Reviews in Pharmacy* [Preprint]. Available at: <https://www.semanticscholar.org/paper/Study-the-prevalence-of-smoking-phenomenon-among-at-Oudah/c17ef786e39e62d8c86de0a2f75a63961c59d04d> (Accessed: 29 November 2023).
- Owens, D.K. *et al.* (2020) 'Primary Care Interventions for Prevention and Cessation of Tobacco Use in Children and Adolescents: US Preventive Services Task Force Recommendation Statement', *JAMA*, 323(16), p. 1590. Available at: <https://doi.org/10.1001/jama.2020.4679>.
- Parada, H. *et al.* (2018) 'Trajectories of Responses to Pictorial Cigarette Pack Warnings', *Nicotine & Tobacco Research*, 20(7), pp. 876–881. Available at: <https://doi.org/10.1093/ntr/ntx182>.
- Patton, G.C. *et al.* (2016) 'Our future: a Lancet commission on adolescent health and wellbeing', *The Lancet*, 387(10036), pp. 2423–2478. Available at: [https://doi.org/10.1016/S0140-6736\(16\)00579-1](https://doi.org/10.1016/S0140-6736(16)00579-1).
- Peebles, K. *et al.* (2016) 'Adolescents' Responses to Pictorial Warnings on Their Parents' Cigarette Packs', *Journal of Adolescent Health*, 59(6), pp. 635–641. Available at: <https://doi.org/10.1016/j.jadohealth.2016.07.003>.
- Putra, H.S. *et al.* (2020) 'The Effect of Cigarette Advertising on Smoking Behaviour of Students in Banda Aceh City, Indonesia', *Jurnal Komunikasi: Malaysian Journal of Communication*, 36(2), pp. 348–363. Available at: <https://doi.org/10.17576/JKMJC-2020-3602-21>.
- Ratih, S.P. and Susanna, D. (2018) 'Perceived effectiveness of pictorial health warnings on changes in smoking behaviour in Asia: a literature review', *BMC public health*, 18(1), p. 1165. Available at: <https://doi.org/10.1186/s12889-018-6072-7>.
- Rosemary, R. *et al.* (2021) 'Perceived Effectiveness of the Anti-Smoking Public Service Advertisement on YouTube (#SuaraTanpaRokok)', *Communicare: Journal of Communication Studies*, 8(1), p. 1. Available at: <https://doi.org/10.37535/101008120211>.
- Sabri, L. and Hastono, S.P. (2018) *Statistik Kesehatan - Luknis Sabri*. Depok: Rajawali Pers.
- Sari, M.P., Ayunin, E.N. and Setyowati, Y.D. (2022) 'Determinants of Adolescents' Desire to Quit Smoking in Indonesia: Data Analysis of the 2014 Global Youth Tobacco Survey', *Disease Prevention and Public Health Journal*, 16(2), pp. 85–92. Available at: <https://doi.org/10.12928/dpphj.v16i2.4860>.
- Septiono, W. *et al.* (2022) 'Self-reported exposure of Indonesian adolescents to online and offline tobacco advertising, promotion and sponsorship (TAPS)', *Tobacco Control*, 31(1), pp. 98–105. Available at: <https://doi.org/10.1136/tobaccocontrol-2020-056080>.
- Suyasa, I.N.G. and Santhi, D.G.D.D. (2018) 'Efektifitas tulisan dan gambar peringatan kesehatan pada produk rokok terhadap kesadaran merokok di Kabupaten Badung, Bali-2015', *Intisari Sains Medis*, 9(1). Available at: <https://doi.org/10.15562/ism.v9i1.148>
- Sychareun, V. *et al.* (2015) 'Perceptions and acceptability of pictorial health warning labels vs text only - a cross-sectional study in Lao PDR', *BMC Public Health*, 15(1), p. 1094. Available at:

- <https://doi.org/10.1186/s12889-015-2415-9>.
- Talukder, M.M.A. *et al.* (2022) 'Corrigendum to "Effects of Graphic Health Warning on Tobacco Packs: A Cross-Sectional Study among Low Socioeconomic Group in Bangladesh"', *Journal of Smoking Cessation*, 2022, pp. 1–1. Available at: <https://doi.org/10.1155/2022/9804931>.
- WHO (2003) *WHO Framework Convention on Tobacco Control overview*. Available at: <https://fctc.who.int/who-fctc/overview>.
- WHO (2019) *WHO global report on trends in prevalence of tobacco use 2000-2025*. 3rd ed. Geneva: World Health Organization. Available at: <https://iris.who.int/handle/10665/330221>.
- WHO (2020) *Raise tobacco taxes and prices for a healthy and prosperous Indonesia*. Jakarta: WHO South-East Asia. Available at: <https://www.who.int/publications-detail-redirect/9789290227748>.
- WHO (2023) *Tobacco, Key facts*. Available at: <https://www.who.int/news-room/fact-sheets/detail/tobacco>.
- Woelbert, E. and d'Hombres, B. (2019) 'Pictorial health warnings and wear-out effects: evidence from a web experiment in 10 European countries', *Tobacco Control*, 28(e1), pp. e71–e76. Available at: <https://doi.org/10.1136/tobaccocontrol-2018-054402>.
- Yuliati, R. *et al.* (2021) 'Effect of Message Approach and Image Size on Pictorial Health Warning Effectiveness on Cigarette Pack in Indonesia: A Mixed Factorial Experiment', *International Journal of Environmental Research and Public Health*, 18(13), p. 6854. Available at: <https://doi.org/10.3390/ijerph18136854>.

# PROBLEMATIC OF AUTONOMY REVIEW OF THE COVID-19 VACCINATION INFORMED CONSENT

## Problematika Tinjauan Otonomi dari Persetujuan Vaksinasi COVID-19

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### Abstract

**Background:** Not all approvals to receive COVID-19 vaccination are based on understanding the right information, and it can be seen from some inappropriate motivations related to inadequate government policies.

**Aims:** This study aims to identify the implementation of informed consent in COVID-19 vaccination, in terms of the autonomy of the vaccine recipients, so that the necessary policy could be recommended.

**Methods:** The research took place in Surabaya in June-December 2021 using descriptive qualitative methods through in-depth interviews with five vaccinators and five vaccine recipients by purposive sampling. Data were analyzed from interview transcripts using coding and categorization, and thematic analysis, then compared to relevant references.

**Results:** The results showed some of the COVID-19 vaccination's informed consents were inadequate, lacking complete information disclosure and the signature of consent. These findings suggest that the autonomy of the COVID-19 vaccine recipients has not been respected.

**Conclusion:** Inadequate respect for the autonomy of the vaccine recipients has the risks of causing a medical conflict in the future if there are unexpected effects. Thus, the government needs to make standard informed consent procedures for COVID-19 vaccination and collaborate with the local government.

**Keywords:** COVID-19 vaccination, informed consent, information disclosure, respect for autonomy

### Abstrak

**Latar Belakang:** Belum semua persetujuan untuk menerima vaksinasi COVID-19 didasari oleh pengertian akan informasi yang benar, terlihat dari motivasi yang belum sepenuhnya tepat, yang berkaitan dengan kurang memadainya kebijakan pemerintah.

**Tujuan:** Penelitian ini untuk mengidentifikasi pelaksanaan informed consent dalam vaksinasi COVID-19, terkait otonomi penerima vaksin, sehingga dapat direkomendasikan kebijakan yang diperlukan.

**Metode:** Lokasi penelitian di kota Surabaya pada bulan Juni-Desember 2021 dengan metode kualitatif deskriptif melalui wawancara mendalam kepada lima orang vaksinator dan lima orang penerima vaksin, secara purposive sampling. Data dianalisis dari transkrip wawancara, dengan membuat koding, kategori, dan tema, lalu dibandingkan dengan referensi yang sesuai.

**Hasil:** Hasil penelitian menunjukkan bahwa sebagian informed consent terkait vaksinasi COVID-19 tidak memadai dengan pemberian informasi tidak lengkap dan tanpa tanda tangan persetujuan. Temuan ini menunjukkan bahwa penghormatan terhadap otonomi penerima vaksin COVID-19 belum dilakukan.

**Kesimpulan:** Penghormatan otonomi penerima vaksin yang tidak memadai berisiko menimbulkan sengketa medis di kemudian hari jika terdapat efek yang tidak diharapkan. Dengan demikian, pemerintah perlu membuat standar prosedur informed consent dalam vaksinasi COVID-19 yang memadai.

**Kata kunci:** Vaksinasi COVID-19, informed consent, pemberian informasi medis, penghormatan terhadap otonomi



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## Introduction

The COVID-19 pandemic has hit the whole world since early 2020, impacting various sectors of life. Many people have experienced losses in the fields of economy, health, tourism, trade, industry, etc (Atalan, 2020; Gilardino, 2020). Various efforts have been made by the Indonesian government to suppress the transmission of COVID-19. In addition to carrying out health protocols, the government also tried to build immunity in the wider community against the SARS COV-2 virus, through vaccination (Indonesia, 2021). COVID-19 vaccination is no longer an option to be carried out or not. In the context of a country experiencing an outbreak as written in Law No. 4 of 1984 concerning Infectious Diseases Outbreak, citizens are obliged to support efforts to control the outbreak, including receiving COVID-19 vaccinations. The Indonesian government has made COVID-19 vaccination one of the conditions for using public facilities to travel, shop, attend school, or obtain government facilities (BPJS, BLT, etc.). This method is quite effective in motivating people to be willing to receive the COVID-19 vaccine although it cannot be denied that the motivation of the citizens to receive the vaccination varies, and some are based on incorrect understanding.

In November 2020, a survey was conducted by the Indonesian Ministry of Health, WHO, and UNICEF on the opinion of the Indonesian people regarding their willingness to receive the COVID-19 vaccination, with more than 112.000 respondents (Satgas COVID-19, 2020). The survey results showed that more than 60% of respondents were willing to be vaccinated, more than 7% refused, and the rest said they did not know. Most of the respondents said they did not have complete information about vaccines. Thirty percent of respondents were unsure about the safety of vaccines, 22% of respondents were not sure about the effectiveness of vaccines, and the rest were worried about negative side effects after vaccination. It appears that in the initial stages of vaccination, not all people had the complete and correct information

about vaccination. Another research conducted in January 2021 found that 48.1% of respondents were worried about the COVID-19 vaccine, especially regarding the safety and 'halal' of the vaccine (Putri *et al.*, 2021). In this study, it was found that some respondents who were willing to be vaccinated experienced anxiety about the vaccine they received. After the vaccination program was carried out, another survey was conducted by the "Indikator" survey agency in January-February 2022 (Indikator, 2022) with the result that 61.5% of respondents agreed to the 3rd COVID-19 vaccination (booster). The rest did not agree and did not know. This problem is also faced by various countries as reported by Lazarus *et al.* in 2021 and 2022 (Lazarus *et al.*, 2021, 2023). These studies found that public knowledge based on the information obtained influenced confidence in the COVID-19 vaccination. Even though people are willing to be vaccinated, they do not always trust the vaccine they receive. Some people consider the COVID-19 vaccination as only necessary for formality, fulfillment of obligations, and requirement to use public facilities.

From the various data that have been mentioned before, the most common cause of a lack of understanding was inadequate information or much misinformation that confused the public in determining which information was reliable. One of the ways of providing information about the COVID-19 vaccination was the informed consent process before administering the vaccine. Therefore, it is necessary to study whether the informed consent process for COVID-19 is adequate or not. Sun and Paul also conducted research which showed that the public's willingness to accept the COVID-19 vaccine accompanied by the correct understanding was closely related to information about the vaccine previously received (Paul, Steptoe and Fancourt, 2021; Sun, Lin and Operario, 2021). According to Faden and Beauchamp, being forced to accept a medical action (in this context, including the COVID-19 vaccination) can be caused by incomplete information. This condition will still result in consent although involuntarily, and this

does not respect the autonomy of the vaccine recipient (Faden and Beauchamp, 1986). Data found from the research showed the percentage of people who were not willing to receive the COVID-19 vaccine and the reasons for it. However, the research did not examine this unwillingness from an ethical point of view, specifically in terms of autonomy and the completeness of vaccine information. Therefore, this study was conducted to identify the information disclosure in the informed consent of COVID-19 as a principle of medical ethics respect for autonomy, so that recommendations for appropriate solutions could be given.

## Method

The study was conducted using a descriptive qualitative method through in-depth interviews with five COVID-19 vaccine recipients and five COVID-19 vaccinators. This method was used to explore the experience of the respondents regarding informed consent in COVID-19 vaccination (Martha and Kresno, 2016). The selection of research subjects/respondents was carried out through purposive sampling, targeting vaccine recipients who were at least 18 years old, had received the first or second dose of COVID-19 vaccination, and were willing to participate in this study. The snowball method was also used in this study where participants recommended other participants until data saturation was reached. There were a lot of people in the population who could become respondents, but the results of the interviews reached saturation with ten respondents. As a result, the researcher determined the optimal number of respondents in this study was ten people. This decision was aligned with the principle of saturation in qualitative research (Green and Thorogood, 2018).

To ensure triangulation, different informants (vaccinators) were included. The method of triangulation was conducted through references in legislation, bioethics, and articles in other relevant journals. The research location was chosen *purposively* in Surabaya. Surabaya is a city that is a

priority for vaccination because of the high mobility of the people. With a substantial number of vaccination participants and the snowball sampling method for subject selection, the data collected was rich, representing respondents from various regions in Surabaya. The study was conducted from June to December 2021.

Respondents were interviewed for about 30-45 minutes, addressing several questions related to the implementation of the COVID-19 vaccination approval they received, and the information received by vaccine recipients during the COVID-19 vaccination process. The questions for respondents covered topics such as whether there was information disclosure before receiving the COVID-19 vaccination, the information to be filled in, motivation for receiving the vaccine, understanding of the benefits of the COVID-19 vaccine, and the adequacy of information provided by the government about COVID-19. A semi-structured interview was employed, allowing the respondents to answer questions directionally while also providing the freedom to share stories as long as the response was relevant to the topic of the question. The interviews were held by appointment with the respondents and were recorded using a recording device. The interviewer was the researcher in qualitative research, holding credentials as a medical doctor, a bioethicist, and a lecturer in the medical faculty. This background equipped her with competency in medical ethics, qualitative research, and medical science, particularly related to this topic. The results of the interviews were then transcribed and coded, then classified into categories and themes. Subsequently, the data were analyzed and compared with reference sources, including articles of the relevant journal, bioethics, medical law, and legal references. The findings were presented through a descriptive narrative and supported by tables or diagrams.

## Result and Discussion

Respondents were classified into two groups as source validation, namely vaccinator staff and vaccine recipients of

the COVID-19 vaccine, described in the table 1.

Table 1. The demographic data from research respondents

Data	Vaccinator staff	Vaccine recipients
Gender		
Man	-	2 (20%)
Woman	5 (50%)	3 (30%)
Age (years)		
<30	1 (10%)	-
30-40	3 (30%)	2 (20%)
>40-50	1 (10%)	2 (20%)
>50	-	1 (10%)
Last education		
Senior High School	-	3 (30%)
Diploma of Nursing	4 (40%)	-
Bachelor	-	2 (20%)
Doctor	1 (10%)	-
Occupation		
Health worker	5 (50%)	-
Private employee	-	3 (30%)
Housewife	-	1 (10%)
Entrepreneur	-	1 (10%)
Ever refused a COVID-19 vaccination	-	1 (10%)

The research was not analyzed based on demographic data. However, the demographic data in the table showed that the interviews were conducted with respondents from various backgrounds which enriched the data.

### Overview of the Implementation of the Informed Consent of COVID-19 Vaccination

From the interview results, it was found that three vaccinator respondents and three vaccine recipient respondents said that informed consent before COVID-19 vaccination was given, while the other four respondents said that vaccination was carried out without informed consent even though the screening was done by health professionals.

Two vaccinator respondents stated that the implementation of informed consent for COVID-19 vaccination depends on the policy of each health facility. The

approval of the vaccine recipient was not required in some health facilities, while screening and observation during post-vaccination were still carried out to monitor the occurrence of post-vaccine side effects. Mrs. Vi, the vaccinator, 41 years old, said that it was not the patient who signed the consent but the doctors who screened and injected the vaccines did. It was considered that the patient must have agreed since he/she had filled out the screening form. Several reasons and obstacles in the response to the lack of informed consent for COVID-19 vaccination were too many vaccine recipients (4 participants), limited resources of vaccinators (3 participants), limited time (2 participants), and online registration being considered as a vaccination approval (1 participant). Another vaccinator, Mrs. De, 37 years old, mentioned that there was no explanation given in a mass vaccination because there were too many vaccine recipients. The vaccine recipients filled out the form by themselves without any detailed explanation as in the previous vaccination.

### Completeness of Medical Information Disclosure Before The Informed Consent of COVID-19 Vaccination

From the results of the interview, despite three vaccine recipient respondents who signed the consent before the vaccination, only one vaccine recipient received an explanation about the benefits of the vaccine and the side effects that can occur after receiving the COVID-19 vaccination. Other respondents said that there was no explanation before signing the vaccination consent, and they even said they signed the form without knowing the content of the form. Mr. D, a vaccine recipient, 33 years old, said he signed twice on two pages but did not know what he signed.

Furthermore, based on the respondents' statements, the consent form was not standardized by the government resulting in different information included in the forms. In general, the consent only contains information related to the initial screening criteria before receiving the COVID-19 vaccination and an explanation of what must be done after the vaccination



or if side effects occur. Explanations about the benefits, effectiveness, risks and side effects of vaccination are often not conveyed by vaccinators. In this research, there was even certain information that vaccinators deliberately withhold because of the potential for debate, as stated below by Ms. E, one of the vaccinators. The 39 years old vaccinator mentioned that there were pros and cons about the Astra Zeneca vaccination at that time, and there was fear from both the medical personnel and the vaccinators. Therefore, to avoid making the vaccine recipients worried, they did not inform the vaccine recipients.

The mapping of the information contained in the COVID-19 vaccination is explained in table 2.

Table 2. Types of Information in the COVID-19 Vaccination Informed Consent

Type of information	Frequencies (from 10 respondents)
What to do in case of Post Vaccine Side Effect	5
Who can and can't be vaccinated	4
Explanation to rest	3
Type of the vaccine given	3
Goal of vaccination	3
Vaccine side effects and risks	2
No information	4

In this research, most of the information explained by the vaccinator was the actions to be taken in case of post-vaccine side effects and the requirements of vaccine recipients. The effectiveness of the vaccine given, the benefits of the vaccine/the vaccine goals, and vaccine risks were rarely informed although they were important. This could cause vaccine recipients not to receive complete information that may affect their decision to receive the vaccine. They were vaccinated without knowing about the vaccine.

### The reasons for receiving the COVID-19 vaccine from the vaccine recipients

It is interesting that despite the inadequate information regarding the COVID-19 vaccination, respondents were still willing to receive the vaccination. There are several motivations from vaccine recipients to receive COVID-19 vaccination as expressed by vaccine recipients and vaccinator respondents. Mr. D, a vaccine recipient, 33 years old, said that he would be safe since he learned from the news that the vaccine would only be a problem for old men with illnesses. Another vaccine recipient, Mrs. E., who was 60 years old, said that she was a social worker who was directly in contact with other people, so she was willing to be vaccinated to avoid getting infected.

From the results of the interview, the motivation for receiving the COVID-19 vaccine was not only the concern of health, but also fulfillments of requirements for using public facilities, receiving government assistance, or having previous bad experiences with families exposed to COVID-19. Not all respondents were aware of the true benefits of receiving the COVID-19 vaccine. A vaccinator said that the initial motivation of the vaccine recipients he served was mostly because of getting a vaccine certificate and fear of not being able to access government facilities anymore. This diagram shows the mapping of the reasons for receiving the vaccine from the vaccine recipients. The percentage meant the biggest reason for receiving the vaccine (Figure 1).

### The true meaning of informed consent and respect for patient's autonomy

Respect for the patient's autonomy is a part of the principles of medical ethics. Autonomy is a person's right to make his own choices without any coercion or pressure from outsiders (Beauchamp and Childress, 2019). Kusmaryanto explained, which was rewritten by Dewi, that respect for autonomy is based on respect for human dignity and, that the owner of the body has the right to determine what will happen to his body (Dewi, 2021).

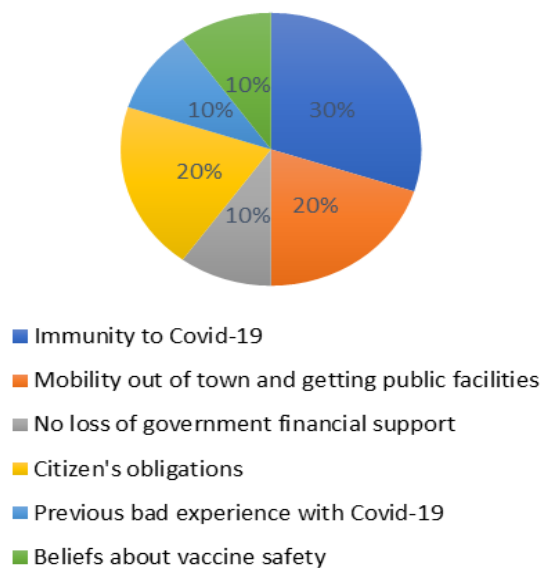


Figure 1. The mapping of the reasons for receiving the vaccine

Informed consent is carried out with respect to the autonomy of the patient, so that the medical therapy that will be given by the doctor/medical professional is legal (Beauchamp and Childress, 2019). The existence of informed consent before medical therapy is carried out indicates that without the consent of the patient, the doctor/medical staff will not be able to perform any medical therapy on the patient.

Informed consent means the consent after an explanation. This means that before a person approves medical therapy, he must first receive an explanation of the medical therapy he will receive ('Minister of Health regulations No. 290/Menkes/PER/III/2008 concerning Informed Consent'). The decision to approve or reject a medical therapy must be based on the right understanding of the right information. Thus, informed consent is not only a formal consent signature but also an agreement based on an understanding of correct information about medical therapy and all its benefits and side effects.

As said by Kadam, for the implementation of quality (autonomous) informed consent, four criteria must be met, namely: competence (competence of the recipient of information), information disclosure (providing information before approval of action), comprehension (understanding of the information

provided), and voluntariness (volunteering in giving consent) (Kadam, 2017). The information submitted in the informed consent must also be in a good manner, complete in content, and true about the things conveyed (Dewi, 2021). At least several components must be conveyed in the medical information, namely indications of action, benefits/ importance of the action, side effects/ complications that can be caused by the action, other alternative actions along with benefits and side effects, and estimated costs.

Approval of action can be in the form of verbal or written. Low-risk medical procedures usually require verbal approval, but moderate or high-risk medical procedures must be approved in writing. Respecting the patient's autonomy means giving the patient the freedom to accept or to refuse a medical treatment. Thus, it should also be understood that to help patients make autonomous decisions, health professionals must provide adequate information to patients about these actions. A medical therapy that was carried out without the consent of the patient/ recipient of the action, or even though there was consent without an understanding of adequate information, would be very prone to causing doctor-patient conflict (Sinaga, 2021).

The results of this study indicated that health workers were not fully aware of the need to respect the autonomy of vaccine recipients by providing adequate information. Being registered to receive the COVID-19 vaccination was already considered as the patient's consent. Health experts considered that there was no longer the need for informed consent and signed approval. The research results showed that not all respondents who wanted to receive the COVID-19 vaccination understood the importance of vaccination, and this could be seen from the motivation of vaccine recipients. When someone received a vaccine without receiving the correct information, or because of compulsion, then the consent to vaccination was not autonomous (Disemadi and Pardede, 2021).

### Informed consent of COVID-19 vaccination in a pandemic context

Giving the COVID-19 vaccination is considered as a medical therapy. Vaccine recipients who do not know the benefits, risks, side effects, etc. of the vaccinations they receive can potentially sue if side effects occur after the vaccination. The provision of correct information along with public understanding is needed so that vaccination is carried out with awareness, not coercion. A study was conducted in China in March-April 2020 regarding the willingness of respondents to take part in a clinical trial of COVID-19 vaccination with the result showing 35.99% disagreed to the COVID-19 vaccination (Sun, Lin and Operario, 2021). This research was supported by Paul who found the factors that cause a person to refuse the COVID-19 vaccination (Paul, Steptoe and Fancourt, 2021). These studies stated that many factors influenced a person's consent to receive the COVID-19 vaccine, and one of the most crucial factors was the provision of correct information.

Seen from the coverage of the first dose of vaccination, 85.26% of the target was achieved and 58.09% of the target for the second dose was achieved. It means vaccination in Indonesia can be said to be quite successful (COVID-19, 2022). However, what needs to be analyzed in terms of medical ethics is whether the vaccination approval is based on an autonomous decision or not, especially in terms of the implementation of providing medical information before vaccination.

Law No. 36 of 2009 concerning Health Article 152 paragraph (1a) states that "Government, local government, and society are responsible for carrying out preventive measures, control and eradication of infectious diseases and the consequences it causes." Because the COVID-19 pandemic was included in these criteria, the public must support the government's efforts to prevent the spread of COVID-19 by vaccinating and limiting social contact (Law No. 6 of 2018 concerning Health Quarantine). Although approval of COVID-19 vaccination is not needed since it is a citizen's obligation, it is

still better if approval is obtained in respect of the autonomy of citizens (Dewi, 2022). Vaccination is still a medical action that has side effects, so citizens need to know the right and complete information regarding the vaccination. Law No. 4 of 1984 concerning Infectious Diseases Outbreak stated that the community must play an active role in efforts to control the epidemic. Thus, the public must support the implementation of the COVID-19 vaccination with the awareness of the importance of this vaccination, not merely out of obligation.

The government has provided information about vaccination through the website (for example Covid19.go.id) and social media with the hope that each member of the Community as an individual will know and agree independently, but that does not mean it has been accepted by the whole community. The number of hoax news on social media can reduce the public's trust in the COVID-19 vaccine, and it was proven in the study that stated respondents who had received hoax news think twice before receiving the COVID-19 vaccine (Marbella *et al.*, 2021). The incessant demands of company leaders who require their employees to be vaccinated as a condition for entering work can cause people's motivation to be vaccinated just so they can still work. Regulations in the transportation sector that require people to get vaccinated before going out of town can also create compulsion to receive vaccines. Vaccination was finally considered a necessity due to a lack of understanding about the importance of the COVID-19 vaccine, which was caused by a lack of proper information regarding the purpose of COVID-19 vaccination. Information in quantity may be sufficient, and social media has also reported a lot, but not all people have received it, because not everyone has access to social media and there is a high number of hoax news. Thus, providing information about the COVID-19 vaccine before vaccination is still needed to accommodate this deficiency. Even though COVID-19 vaccination is a citizen's

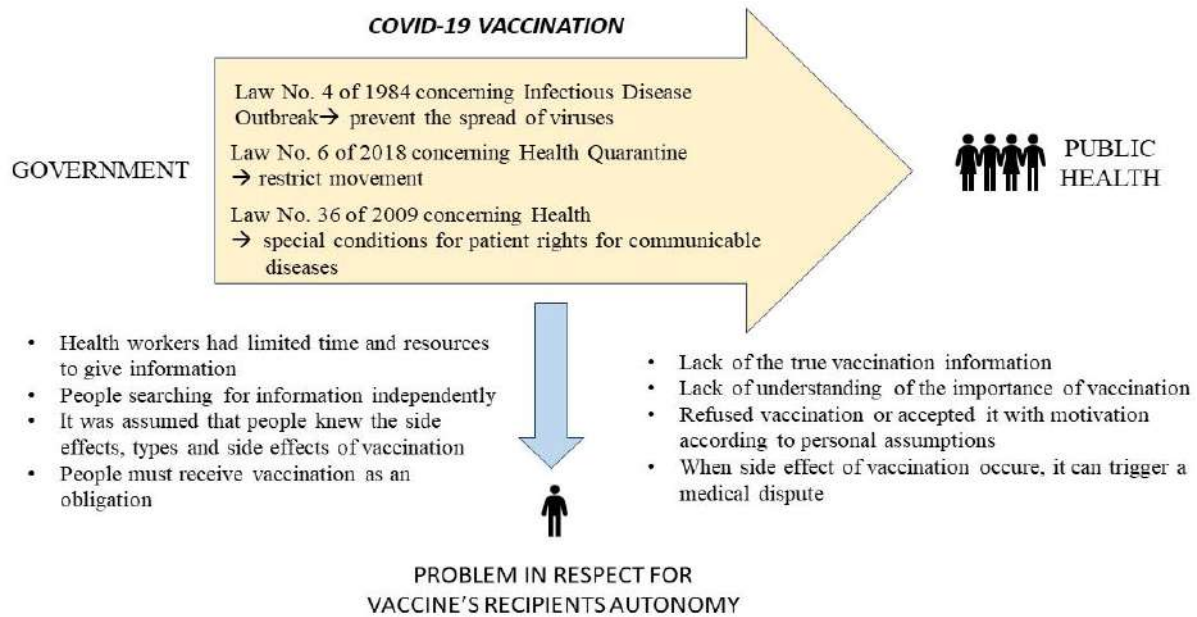


Figure 2. The Problematic of Informed Consent for COVID-19 Vaccination

obligation as written in Law No. 4 of 1984 concerning Infectious Diseases Outbreak and Law No. 6 of 2018 concerning Health Quarantine, citizens still have the right to know the benefits, side effects and effectiveness of vaccines, because vaccination is also a medical procedure. The problems in informed consent for COVID-19 vaccination discussed in this article are depicted in Figure 2.

### Completeness and correctness of information in informed consent for COVID-19 vaccination

With adequate explanation in the informed consent process, the approval of medical therapy can be an autonomous and responsible decision, not out of compulsion. Adequate information must not only be complete but also correct in its content. It has been mentioned that the completeness of medical information includes several things, namely indications, benefits of the procedure, risks/side effects and complications of the procedure, other alternative actions along with their benefits and risks ('Minister of Health regulations No. 290/Menkes/PER/III/2008 concerning Informed Consent').

Another study found that the patient's understanding of medical information was influenced by the completeness of the

information received by the patient (Dewi, 2021; Susanto, Pratama and Hariyanto, 2017). Based on Faden and Beauchamp's statement, incomplete information can be in the form of reducing or adding information content (Faden and Beauchamp, 1986). Information that is usually reduced or not mentioned is the risks or complications that can occur. If this information is clearly stated, health professionals are worried that patients are afraid and refuse medical therapy, so treatment efforts cannot be carried out. In addition to this fear, health professionals also think that information about the risks or complications of the procedure does not need to be fully known to the patient. However, if the risk occurs without the patient's knowledge, medical conflict can occur between health professionals and patients (Siregar and Ahmad, 2019).

From the results of this study, it was found that vaccinators did not inform the risk of vaccination before the COVID-19 vaccination was administered. Some even did not inform the type of vaccine given, for fear of causing conflict. This would be very risky if these uninformed side effects occurred. The addition of information material was often done, especially on the benefits of action. Health professionals exaggerated the benefits of the procedure

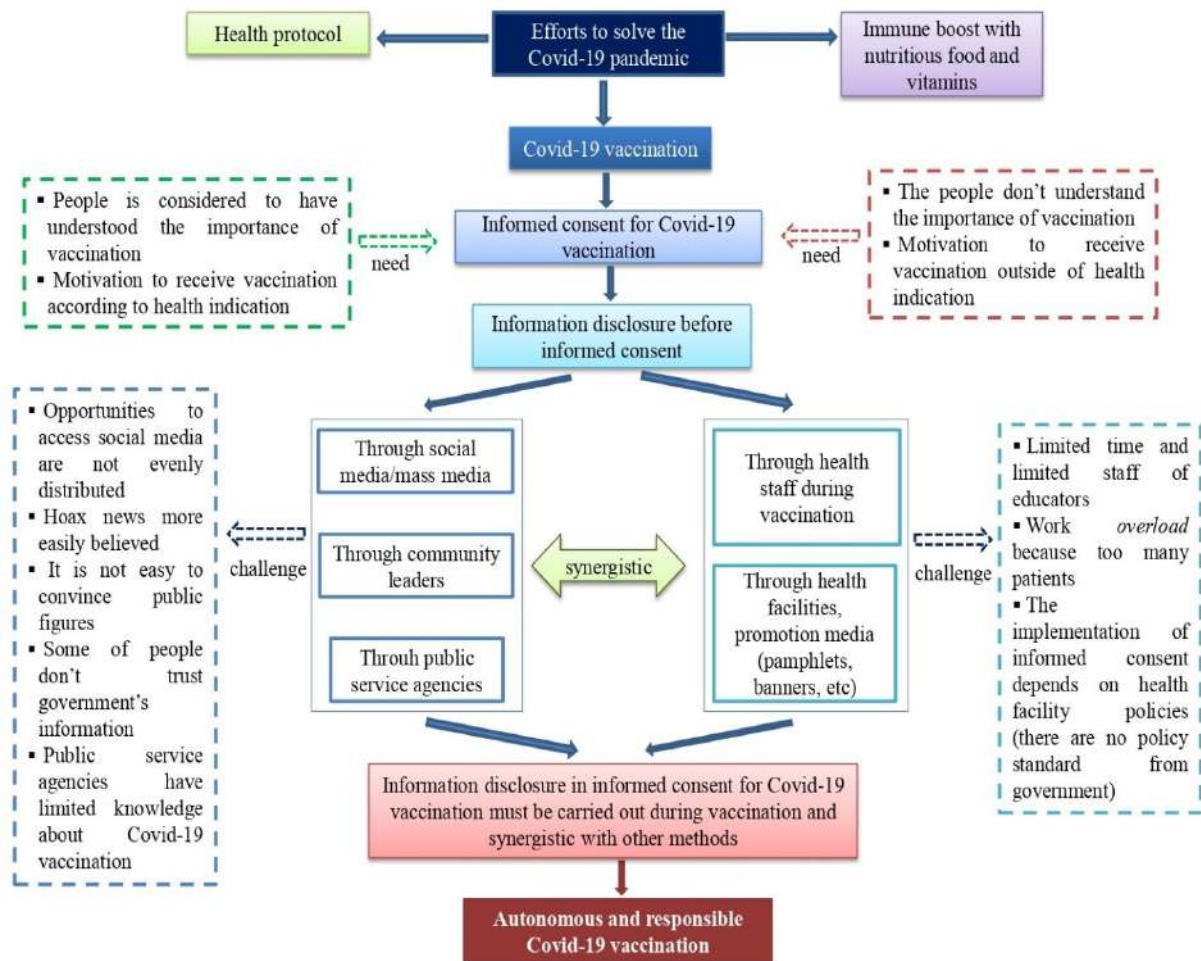


Figure 3. The Importance of Providing Information in COVID-19 Vaccination Implemented Synergistically

so that the patient agreed to the procedure. This was risky if the benefits or results of the action did not happen. The patient would be disappointed and medical conflicts can occur in the future.

Furthermore, according to Faden and Beauchamp, information can be incorrect if manipulated or associated with changing the patient's perception of the medical action so that the patient agrees to receive it (Faden and Beauchamp, 1986). In the case of the COVID-19 vaccination, the actual benefits of the vaccine from a medical point of view were sometimes obscured by information that COVID-19 vaccine certificate was a requirement to access public facilities.

This research showed that there was a lot of incompleteness of information. Health professionals were given a target for vaccination coverage, and they were doing everything to achieve it. There was a target

but there was limited time and resources, health professionals decided to ignore the consent to vaccination. From the research conducted by Hanif *et al.*, Wake, and Osuji, a cultural approach could help vaccination implementation because the obstacle in conveying information was the inappropriate approach to the community. In addition, an approach by earning the public trust model could also help the effectiveness of delivering medical information, especially in this COVID-19 vaccination. This effort was to explore and emphasize the public's understanding of the severity of COVID-19 so that prevention efforts were needed, one of which is vaccination (Hanif *et al.*, 2021; Wake, 2021; Osuji, 2018). An analysis of the importance of providing information related to vaccination that needs to be provided synergistically is illustrated in Figure 3.

## Conclusion

The problem of patient autonomy in providing COVID-19 vaccination lied in the lack of understanding of the importance of patient informed consent, which could be seen from the provision of information that was not yet optimal. Not all health facilities carried out adequate informed consent for COVID-19 vaccination. This condition is prone to medical conflicts in the future if there are side effects from administering the vaccine. This condition needs special attention from the management of health facilities and the government. The COVID-19 vaccination is indeed an obligation for citizens during this pandemic, but if the obligation is not accompanied by the provision of adequate information to provide a good understanding, it is considered a violation of respect for the autonomy of citizens. Thus, a strategy is needed so that within the limitations of health professionals in the implementation of the COVID-19 vaccination, information disclosure can still be carried out properly. Some strategies can be done by government. Information media can be used regularly during the implementation of the COVID-19 vaccination, either through print (pamphlets/brochures, banners), audio (recording explanations about vaccinations that are played during vaccination), or audio-visuals (showing videos explaining vaccinations). Government also can cooperate and coordinate with local government organizations (RT, RW, Kelurahan, Karang Taruna, PKK, etc.) or students (Student Executive Board of University) in the implementation of vaccination and use local cultural approaches and health belief behavior. The training of officers from the government/local organizations is related to providing vaccination information can also be carried out, so that information disclosure can be provided by these officers before signing the vaccination agreement. Finally, the government or health officer must carry out periodic supervision and procurement of SOPs (Standard Operational Procedures) for the implementation of informed consent for

COVID-19 vaccination. This study has limitations because the location of the research was only local in Surabaya even though Surabaya is the second largest city in Indonesia. It is hoped that the findings of this study can become the initial research for further research, with research subjects and research locations from various places in Indonesia. Thus, the data obtained is more diverse and more representative so the recommended solutions are also expected to be applied more broadly in Indonesia.

## Abbreviations

COVID-19: Corona Virus Disease of 2019; WHO: World Health Organization; UNICEF: United Nations International Children's Emergency Fund; BPJS: *Badan Penyelenggara Jaminan Sosial*; BLT: *Bantuan Langsung Tunai*; AEFI: Adverse Events Following Immunization; KIPI: *Kejadian Ikutan Pasca Imunisasi*; RT: *Rukun Tetangga*; RW: *Rukun Warga*; PKK: *Pembinaan Kesejahteraan Keluarga*.

## Declarations

### Ethics Approval and Consent Participant

This research has passed the ethics review from the Research Ethics Committee of the University of Surabaya with number 170/KE/VI/2021.

### Conflict of Interest

We declare that we do not conflict with anyone's interest.

### Availability of Data and Materials

The availability of data and materials are provided on request.

### Authors' Contribution

EDAMD contributed to the conceptualization of the study, created the methodology and collected data, analyzed data, made a manuscript, and finally approved the version to be published. HC contributed to the analysis of government policies and their relevance to respondent data.

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University of Surabaya.

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**References**

- Atalan, A. (2020) 'Is the lockdown important to prevent the COVID-19 pandemic? Effects on psychology, environment and economy-perspective', *Annals of Medicine and Surgery*, 56, pp. 38–42. Available at: <https://doi.org/10.1016/j.amsu.2020.06.010>.
- Beauchamp, T.L. and Childress, J.F. (2019) *Principles of biomedical ethics*. Eighth edition. New York Oxford: Oxford University Press.
- Dewi, E.D.A.M. (2021) 'Penilaian Pemahaman Pasien dalam Kaitan dengan Penghormatan Otonomi Pasien dalam Persetujuan Tindakan Kedokteran', *MEDIKA: Jurnal Kedokteran Indonesia*, 7(1), pp. 19–23.
- Dewi, E.D.A.M. (2022) 'Urgensi Penghormatan Otonomi dan Hak Menerima Informasi Vaksinasi Covid-19 dalam Konteks Kewajiban Vaksinasi', *Jurnal HAM*, 13(3), p. 445. Available at: <https://doi.org/10.30641/ham.2022.13.445-458>.
- Disemadi, H.S. and Pardede, T.S. (2021) 'Problematika Pemberian Sanksi Terhadap Penolakan Vaksinasi Covid-19: Suatu Kajian Perspektif HAM', *Jurnal Supremasi*, pp. 107–119. Available at: <https://doi.org/10.35457/supremasi.v11i2.1442>.
- Faden, R.R., Beauchamp, T.L. and King, N.M.P. (1986) *A history and theory of informed consent*. New York, NY: Oxford Univ. Press.
- Gilardino, R.E. (2020) 'Does "Flattening the Curve" Affect Critical Care Services Delivery for COVID-19? A Global Health Perspective', *International Journal of Health Policy and Management*, p. 1. Available at: <https://doi.org/10.34172/ijhpm.2020.117>.
- Green, J. and Thorogood, N. (2018) *Qualitative methods for health research*. 4th edition. Los Angeles London New Delhi: SAGE (Introducing qualitative methods).
- Hanif, W. et al. (2020) 'Cultural competence in covid-19 vaccine rollout', *BMJ*, p. m4845. Available at: <https://doi.org/10.1136/bmj.m4845>.
- Indikator (2022) *Rilis Survei Online: Sikap Publik Terhadap Omicron, Vaksin Booster, Pembelajaran Tatap Muka dan Protokol Kesehatan*. Jakarta: INDIKATOR. Available at: <https://indikator.co.id/rilis-survei-online-20-februari-2022/>.
- Indonesia, P.R. (2021) 'Presidential Regulation No.14 of 2021 concerning Amendments to Presidential Regulation Number 99 of 2020 concerning Procurement of Vaccines and Implementation of Vaccinations in the Context of Overcoming the 2019 Corona Virus Disease (COVID-19) Pandemic'. Jakarta.
- Kadam, R.A. (2017) 'Informed consent process: A step further towards making it meaningful', *Perspectives in Clinical Research*, 8(3), pp. 107–112. Available at: [https://doi.org/10.4103/picr.PICR\\_147\\_16](https://doi.org/10.4103/picr.PICR_147_16).
- Lazarus, J.V. et al. (2021) 'A global survey of potential acceptance of a COVID-19 vaccine', *Nature Medicine*, 27(2), pp. 225–228. Available at: <https://doi.org/10.1038/s41591-020-1124-9>.
- Lazarus, J.V. et al. (2023) 'A survey of COVID-19 vaccine acceptance across 23 countries in 2022', *Nature Medicine*, 29(2), pp. 366–375. Available at: <https://doi.org/10.1038/s41591-022-02185-4>.
- Marbella, H.N. et al. (2021) 'Analisis Pengaruh Berita Bohong di Sosial Media Terhadap Keputusan Masyarakat Indonesia Melakukan

- Vaksinasi Covid-19', *Jurnal Indonesia Sosial Teknologi*, 2(11), pp. 1951–1966. Available at: <https://doi.org/10.59141/jist.v2i11.267>.
- Martha, E. (2016) *Metodologi Penelitian Kualitatif*. Cet. 1. Jakarta: Rajawali Pers.
- Osuji, P.I. (2018) 'Relational autonomy in informed consent (RAIC) as an ethics of care approach to the concept of informed consent', *Medicine, Health Care, and Philosophy*, 21(1), pp. 101–111. Available at: <https://doi.org/10.1007/s11019-017-9789-7>.
- Paul, E., Steptoe, A. and Fancourt, D. (2021) 'Attitudes towards vaccines and intention to vaccinate against COVID-19: Implications for public health communications', *The Lancet Regional Health. Europe*, 1, p. 100012. Available at: <https://doi.org/10.1016/j.lanepe.2020.100012>.
- Puteri, K.E. et al. (2021) 'Kecemasan Masyarakat akan Vaksinasi Covid-19', *Jurnal Keperawatan Jiwa*, 9(3), pp. 539–548. Available at: <https://doi.org/10.26714/jkj.9.3.2021.539-548>.
- Satgas COVID-19 (2020) *COVID-19 Vaccine Acceptance Survey in Indonesia*. Jakarta: Satuan Tugas COVID-19, p. in. Available at: <https://covid19.go.id/storage/app/media/HasilKajian/2020/November/vaccine-acceptance-survey-en-12-11-2020final.pdf>.
- Satgas COVID-19 (2022) *Cakupan Vaksinasi Lengkap Nasional Capai 62% Total Populasi Indonesia, Satuan Tugas COVID-19*. Jakarta: Satuan Tugas COVID-19, p. in. Available at: <https://covid19.go.id/artikel/2022/06/07/cakupan-vaksinasi-lengkap-nasional-capai-62-total-populasi-indonesia>.
- Sinaga, N.A. (2021) 'Penyelesaian Sengketa Medis di Indonesia', *JURNAL ILMIAH HUKUM DIRGANTARA*, 11(2). Available at: <https://doi.org/10.35968/jjhd.v11i2.765>.
- Siregar, S. and Ahmad, A.H.B. (2019) 'Eksistensi Komunikasi Empati Dalam Pencegahan Penuntutan Hukum Pasien Kepada Dokter', *Legalitas: Jurnal Hukum*, 10(1), pp. 9–19. Available at: <https://doi.org/10.33087/legalitas.v10i1.154>.
- Sun, S., Lin, D. and Operario, D. (2021) 'Interest in COVID-19 vaccine trials participation among young adults in China: Willingness, reasons for hesitancy, and demographic and psychosocial determinants', *Preventive Medicine Reports*, 22, p. 101350. Available at: <https://doi.org/10.1016/j.pmedr.2021.101350>.
- Susanto, D.P., Pratama, B.S. and Hariyanto, T. (2017) 'Analisis Faktor - Faktor yang Mempengaruhi Pemahaman Pasien terhadap Informed Consent di Rumah Sakit', *Jurnal Manajemen Kesehatan Indonesia*, 5(2), pp. 73–81. Available at: <https://doi.org/10.14710/jmki.5.2.2017.73-81>.
- Wake, A.D. (2021) 'The Willingness to Receive COVID-19 Vaccine and Its Associated Factors: "Vaccination Refusal Could Prolong the War of This Pandemic" - A Systematic Review', *Risk Management and Healthcare Policy*, 14, pp. 2609–2623. Available at: <https://doi.org/10.2147/RMHP.S311074>.



# EARLY STRESS DETECTION DURING PREGNANCY USING E-HEALTH IN THE PANDEMIC

*Deteksi Dini Stres Selama Masa Kehamilan dengan E-Health pada Masa Pandemi*

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## Abstract

**Background:** Women are more prone to stress during pregnancy than during the postpartum period. Stress during pregnancy is correlated with pregnancy and birth outcomes. Early detection using the e-Health system is an alternative to health services during the pandemic.

**Aims:** The research objective was to produce innovation in early stress detection using an information system based on the e-Health system.

**Methods:** This study was conducted in the Ngaliyan Primary Healthcare Centre with 34 pregnant women. This study utilized both qualitative and quantitative research. Qualitative research was done using the System Development Life Cycle (SDLC), while quantitative research was done using an experimental design with a one-shot case study approach.

**Results:** The e-Health system could automatically identify stress during pregnancy with the TAM questionnaire yielding a very effective result of 85.4%. The average time needed to detect pregnant women's stress was 230.94 seconds. This system can analyze 374 pregnant women within one day (24 hours), provide services, and report pregnant women's stress detection results.

**Conclusions:** The e-Health system effectively in conserves time and can be used to record and report early stress in pregnant women.

**Keywords:** early detection, information system, pregnancy, smartphone, stress

## Abstrak

**Latar Belakang:** Stres rentan terjadi pada masa kehamilan dibandingkan selama masa postpartum. Stres selama kehamilan berhubungan dengan luaran kehamilan dan persalinan. Deteksi dini dengan sistem e-Health sebagai alternatif pelayanan kesehatan pada masa pandemi.

**Tujuan:** Penelitian ini bertujuan untuk menghasilkan inovasi upaya deteksi dini stres dengan sistem informasi menggunakan sistem e-Health yang dapat digunakan secara efektif dalam mengidentifikasi stres ibu hamil.

**Metode:** Jenis penelitian ini adalah penelitian kualitatif dan kuantitatif. Penelitian kualitatif menggunakan Sistem Development Life Cycle (SDLC) dan penelitian kuantitatif menggunakan rancangan experimental dengan pendekatan one-shot case study.

**Hasil:** Sistem e-Health secara otomatis dapat mengidentifikasi stress selama kehamilan dengan kuesioner Technology Acceptance Model (TAM) yang menunjukkan hasil yang sangat efektif 85.4%. Rerata kecepatan waktu yang dibutuhkan mendeteksi status stres ibu hamil adalah 230,94 detik. Sistem ini dapat menganalisis 374 orang ibu hamil dalam satu hari (24 jam) dan juga menyediakan layanan dan melaporkan hasil deteksi stress pada ibu hamil.

**Kesimpulan:** Sistem e-Health dapat mendeteksi stress dalam kehamilan secara efektif. Sistem informasi e-Health juga efektif secara waktu pengisian dan dapat digunakan sebagai pencatatan dan pelaporan terkait deteksi dini stress dalam kehamilan.

**Kata kunci:** kehamilan, stres, deteksi dini, sistem informasi, smartphone



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## Introduction

The gestation period is prone to stress. Stress is defined as an emotional experience that is uncomfortable and accompanied by physiological, biochemical and behavioral changes. Some situations in life that can trigger stress are social support, a low quality of life physical and psychological health, environment, and social relationships (Kashanian *et al.*, 2021). Pregnant women must be able to adapt to these physiological and psychological changes (Kharaghani *et al.*, 2020). Physiological and psychological adaptations are interrelated (Pangesti, 2018). Pregnancy causes women to become prone to stress. However, the overall prevalence of stress remains unclear. A study in the United States found that approximately 84% of pregnant women experienced stress, with 6% experiencing high levels of stress (Corbijn van Willenswaard *et al.*, 2017). A study in Indonesia found that 78% of pregnant women experienced low to moderate stress, and as many as 6% experienced severe stress. Women are more susceptible to stress during pregnancy than during the postpartum period (Runjati *et al.*, 2017).

The consequences of stress during pregnancy can lead to decreased cognitive development, autism, and schizophrenia, and have a negative effect on motor development, as well as greater difficulty in behavior (Huizink *et al.*, 2016; Corbijn van Willenswaard *et al.*, 2017). Stress during pregnancy is associated with the risk of postpartum depression and also has an impact on worse pregnancy outcomes such as fewer months and low birth weight (Urizar *et al.*, 2019). The results of a previous study proved that stress can affect delivery outcomes in pregnant women (Zijlmans *et al.*, 2017). Efforts have been made to maintain maternal health during pregnancy by providing antenatal care (ANC) (Ministry of Health, 2023) Researchers have suggested that ANC should be able to meet pregnant women's needs using strategies to deal with psychological health problems related to

anxiety and stress (Tsai *et al.*, 2018). However, psychological problems for pregnant women still exist in the absence of routine and standardized early detection/screening related to community-based services in health facilities. Previous studies have shown that 80% of psychological health issues during pregnancy go undetected and untreated (Kingston *et al.*, 2017).

There are many barriers pregnant women face in accessing healthcare and getting treatment, such as lack of time, cost, geographic distance to health services, and transportation (Loughnan *et al.*, 2018). It is recommended that the public reduce visits to hospitals or other health facilities during the pandemic. However, certain categories of patients, such as pregnant women, still have to go to the hospital regularly to monitor fetal growth (Chang, 2020). Thus, innovations are needed to modify health services using information technology. In recent years, the use of information systems technology in health services (e-Health) has grown rapidly. Information system technology allows flexible access to health services, which can be accessed anywhere and anytime. Additionally, it saves travel costs, facilitates care, minimizes stigmatization, is more anonymous, and is more private, thereby increasing honest answers. In addition, information system technology can support patients' decisions to seek health-related information, help them communicate more efficiently, and reduce the error rate in diagnosing (Livingston, 2019; Martinez-Borba *et al.*, 2018) The use of information system technology, especially smartphones, has been debated when it comes to overcoming obstacles in providing early detection of psychological health such as stress problems (Motosko *et al.*, 2017). Thus, it is necessary to research the early detection of maternal stress during pregnancy with a smartphone-based information system. The study aims to develop an information system to detect stress, analyzes effectiveness, and find out time consuming to detect stress in pregnant women.

**Method**

**Information system development method**

The stages of developing an information system using the Software Development Life Cycle (SDLC) waterfall were planning, analysis, design, implementation, testing, and maintenance. SDLC is a logical process to develop information systems involving requirements, validation, training and system owners (Raharjana, 2017). With TAM, user perceptions were evaluated from two variables, ease of use and usefulness, and thus TAM can explain and predict user acceptance of information technology. In terms of TAM score criteria, 0%–20% was categorized as ineffective;

21%–40% was categorized as less effective; 41–60% was categorized as quite effective; 61%–80% was categorized as effective; and 81%–100% was categorized as very effective.

**Information system design**

The main function of information is to increase knowledge. The information submitted to the recipient of the information is data that has been processed and decisions taken (Lukoff *et al.*, 2018). An information system is a unity of interconnected elements that can collect (input), manipulate (process), store, distribute (output) information and provide feedback to achieve goals. (Raharjana, 2017). The information system design is shown in Figure 1.

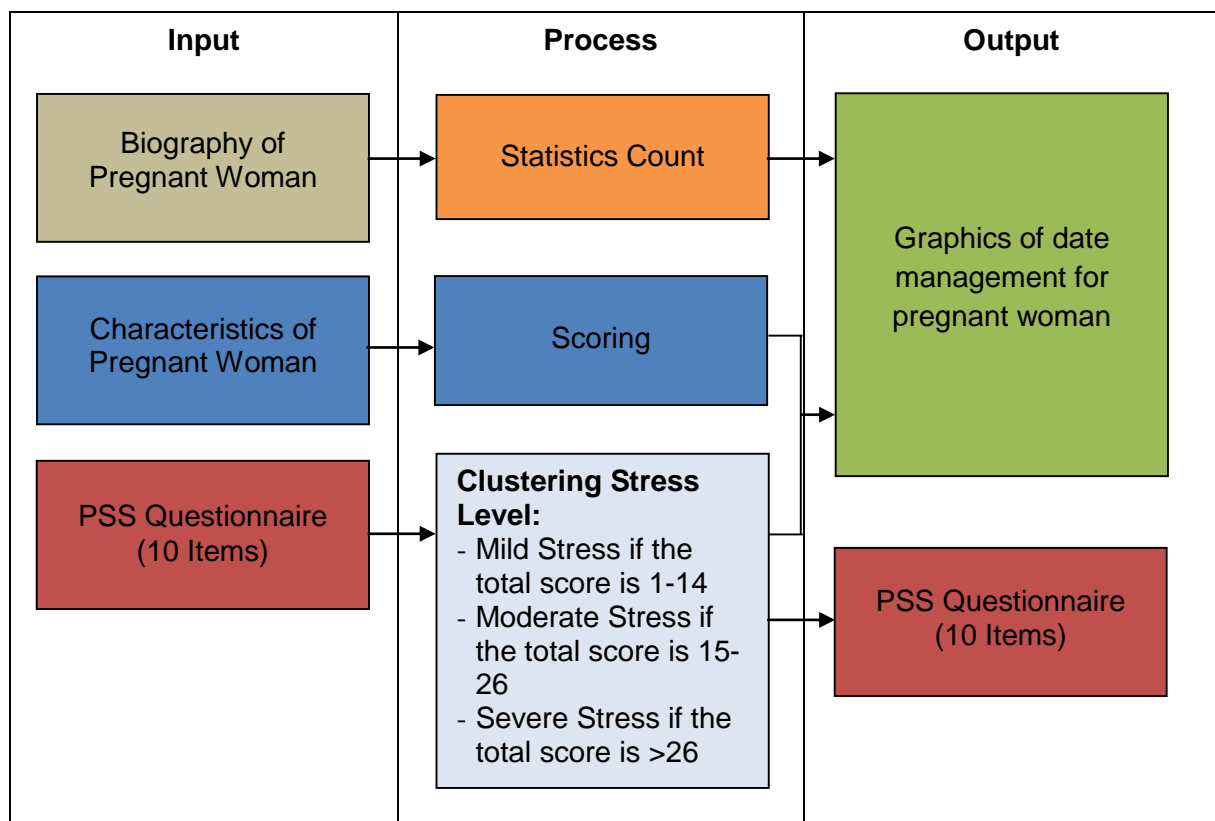


Figure 1. Information system design

## Research Methods

This study utilized quantitative research using the pre-scheduled design experiment with the one-shot case study approach. There was one intervention, followed by a post-test. The sample in this study was pregnant women in the working area of the Ngaliyan Primary Healthcare Centre between February and May 2021. The purposive sampling technique was used with a sample of 34 respondents. The instrument used in this study was the PSS (Perceived Stress Scale) questionnaire to measure stress. The stress level assessment scores were 1–14 categorized as mild stress; 15–26 categorized as moderate stress; and >26 categorized as severe stress. Pregnant women were asked to use a smartphone that had been installed for screening stress (Perceived stress scale) to detect stress during pregnancy. The implementation of an information system using smartphone tools to detect maternal stress during pregnancy is divided into two: the first is a website that will be accessed by the midwife as an admin and the second is an application link that can be accessed by pregnant women via a smartphone. Smartphone design developed and evaluated by experts. Data analysis used descriptive statistics to describe stress levels and TAM analysis to analyze the effectiveness of information systems to detect stress.

## Results and Discussion

### Maternal stress detection using smartphones

Maternal anxiety identification during pregnancy was established based on the results of the PSS questionnaire. The pregnant women's stress scores can be seen in Table 1.

Based on Table 1, 16.55 was the average PSS score for stress detection with the e-Health system with, a minimum score of 6 and a maximum score of 24. When viewed by stress category, the results show that ten mothers experienced mild stress

(29.4%), and the remaining 24 experienced moderate stress (70.6%). None of the respondents experienced severe stress. Stress in pregnant women can affect the development of the fetus in various channels. First exposure to stress hormones to the fetus through the placenta. In pregnancy, the placenta serves as a barrier to protect the baby from harmful substances, but the hormone cortisol (the hormone released during stress) can pass through it so that it can provide changes to intrauterine conditions (Glover, 2019; Berthelon *et al.*, 2018). Thus, it can result in premature birth and interfere with fetal development. In addition to exposure to stress hormones through the placenta, stress can also ingest the mother's immune system. Mothers who feel depressed are more susceptible to infections and complications during pregnancy. Mothers' behavior changes easily in response to stressful situations, particularly high-risk behaviors such as smoking, drinking, and poor diet (Berthelon *et al.*, 2018).

The e-Health system used in this study was able to process data and make a stress diagnosis based on pregnant women's characteristics as shown in Table 2.

Based on the data from Table 1 and Table 2, the e-Health system with smartphone tools was able to diagnose stress in pregnant women. It could be used as an innovation that makes it easier for users to detect stress in pregnant women independently. The use of e-Health has spread, making it possible to provide remote, low-cost, and easy-to-use services to a larger number of patients. The mobile application can process health problems, including mental health problems, with efficient services (Gomez de-Regil *et al.*, 2020). Information systems can provide more sources of data and more complete information. With a storage information system, the report will be more integrated. However, health workers must first understand how to access the information system properly according to the expected objectives (Simbolon *et al.*, 2019).

Table 1. Pregnant women's stress scores

Variable	PSS Score with Information System (n = 34)
<b>PSS Score</b>	
Mean±SD	16.55 ±4.53
Minimum	6
Maximum	24
<b>Stress Category</b>	
Mild stress	10 (29.4)
Moderate stress	24 (70.6)
Heavy stress	0 (0)

Table 2. Stress diagnosis results based on pregnant women's characteristics

Variable	Mild Stress n (%)	Moderate Stress n (%)
<b>Age</b>		
Teenagers (12-16 years)	0 (0)	0 (0)
Adolescents (17-25 years)	1 (2.9)	5 (14.7)
Young Adults (26-35 years)	6 (17.6)	18 (52.9)
Older Adults (36-45 years)	2 (5.9)	2 (5.9)
Elderly (46-55 years)	0 (0)	0 (0)
<b>Education</b>		
Elementary school	0 (0)	2 (5.9)
Junior high school	0 (0)	1 (2.9)
Senior high School	5 (14.7)	9 (26.5)
Higher education	4 (11.8)	13 (38.2)
<b>Profession</b>		
Employed	6 (17.6)	13 (38.2)
Unemployed	3 (8.8)	12 (35.3)
<b>Family support</b>		
Always	8 (23.5)	22 (64.7)
Often	1 (2.9)	3 (8.8)
Sometimes	0 (0)	0 (0)
Never	0 (0)	0 (0)
<b>Parity</b>		
Primipara	3 (8.8%)	11 (32.4)
Multipara	6 (17.6%)	14 (41.2)
<b>History of a past pregnancy, childbirth, postpartum</b>		
First-time pregnancy	3 (8.8)	11 (32.4)
Normal delivery history	6 (17.6)	6 (17.6)
Miscarriage history	0 (0)	1 (2.9)
History of premature delivery	0 (0)	1 (2.9)
History of delivery with surgery	0 (0)	6 (17.6)
History of complications	0 (0)	0 (0)
<b>Gestational age</b>		
First trimester (1-12 weeks)	1 (2.9)	0 (0)
Second trimester (13-28 weeks)	4 (11.8)	12 (35.3)
Third trimester (29-40 weeks)	4 (11.8)	13 (38.2)

Table 3 Information System TAM Score

Variable	Number of Respondents	Score Average	Presentation (%)
Perceived ease of use	34	4.24	84.8
Perceived usefulness	34	4.19	83.8
Attitude toward using	34	4.20	84
Behavioral intention	34	4.31	86
Actual usage	34	4.41	88.2
Overall average		4.27	85.4

### The Effectiveness of Smartphone

The system was tested using the technology acceptance model (TAM) questionnaire which were perceived ease to use, perceived usefulness, attitude toward using, behavioral intention and actual usage. The information system's TAM score is shown in Table 3.

In this study, the overall average value was 4.27 with a presentation of 85.4% for the five variables, which means it was very effective. The results showed that the respondents accepted the e-Health system on smartphones to detect maternal anxiety during pregnancy. During the COVID-19 pandemic, people have been encouraged to reduce visits to the hospital or other health facilities. However, patients such as pregnant women still have to go to the hospital regularly to monitor fetal growth (Chang, 2020). The acceptance of the use of information technology (TAM) has five concepts that can influence a person in the use of information technology, namely perceived usefulness, perceived ease of use, user attitude (Attitude Toward), behavior intention, and actual use (Wu *et al.*, 2017). The Technology Acceptance Model (TAM) questionnaire was used. TAM places user perceptions with two variables, namely ease of use (Perceived ease of use) and benefit (Perceived usefulness) so that TAM can explain and predict user acceptance of information technology. Adaptability and simplicity make TAM one of the most commonly used models for measuring Information Systems (Al-Emran *et al.*, 2018). The TAM concept explains that five concepts influence a person's use of information technology. The study found that the TAM of smartphone system information was proven to be effective

detecting stress in pregnant women. It is also useful to provide psychologically care for pregnant women during the pandemic. A meta-analysis shows that giving psychological interventions using smartphone aids can reduce stress. Smartphones offer a variety of novel self-management strategies for people with stress disorders both clinical and sub-clinical. Smartphones provide mobile services to millions of people around the world who need psychological support but struggle to access regular healthcare (Firth *et al.*, 2017; Linardon *et al.*, 2019).

### Service Speed with Smartphone Tools

The information system for early maternal stress detection during pregnancy with smartphone tools was able to detect stress in pregnant women automatically. The results showed that the average stress diagnosis could be done in 230.94 seconds using the information system. In just 230.94 seconds, pregnant women can find out the level of stress they are experiencing. Thus, e-Health can provide services quickly. This information system's detection speed is very dependent on an internet connection. The faster the internet connection, the faster it will take to detect. Conversely, the worse the internet connection, the longer it will take to evaluate pregnant women's anxiety. The development of information systems has reduced health workers' clinical decision-making time. In addition, the information system can provide convenience in accessing patient data, allowing this to be done more quickly as well. The duration of the detection process affects its handling and subsequent actions (Aini, Widyawati, and Santoso, 2019).

### Number of Services from Health Workers

This study's results indicate that early detection with an information system can be done within 230.94 seconds (3.849 minutes); thus, the number of pregnant women undergoing early anxiety detection in one day can be calculated as follows:

$$\begin{aligned} & \text{number of pregnant women} \\ &= \frac{60 \text{ minute}}{\text{time to detect (minute)}} \\ & \times 24 \text{ hour} \end{aligned}$$

$$\begin{aligned} & \text{number of pregnant women} \\ &= \frac{60 \text{ minute}}{3,849 \text{ minute}} \times 24 \text{ hour} \end{aligned}$$

$$\begin{aligned} & \text{number of pregnant women} \\ &= 15.59 \times 24 \text{ hour} \end{aligned}$$

$$\text{number of pregnant women} = 374.12$$

$$\begin{aligned} & \text{number of pregnant women} \\ &= 374 \text{ women} \end{aligned}$$

Based on these calculations, it is known that the e-Health system can detect 374 pregnant women in one day (24 hours) with the assumption that data is filled out at alternating times. This information system can be used for large amounts of data. Thus, this information system can increase the number of services provided by health workers. It can also help health workers overcome the obstacles in conducting early detection of anxiety. Information technology utilization can improve performance more quickly, precisely, and accurately, which in turn can increase productivity. This information system can also overcome obstacles in early detection of the stress status of pregnant women. This information system uses smartphone tools because smartphones can provide convenience to be used anytime and anywhere so as to increase the efficiency of use; lightweight and can be stored in bags or pockets, can optimize work to be more punctual, health workers can quickly and easily get references in the health sector.

### Recording and Reporting Early Stress Detection

The smartphone tool as a platform for e-Health has developed a new method to facilitate the report-making process. It provides real-time results displayed in the questionnaire menu. The screen displaying anxiety diagnosis results is shown in Figure 2.

Data on the prevalence and incidence of maternal stress during pregnancy can be seen in the dashboard menu. This dashboard menu displays a diagram showing the number of pregnant women who have received mild stress (green color), moderate stress (purple color), and heavy stress (blue color) diagnoses. The number of pregnant women diagnosed with stress is displayed based on the women's characteristics. This includes age, education, occupation, family support, parity, gestational age, past pregnancy history of parturition, and past/current illness history. The screen displaying the number of pregnant women with anxiety in terms of maternal age is shown in Figure 3.

Based on Figure 2 and Figure 3, the e-Health tool tested in this study could be used as a means of recording and reporting systems regarding pregnant women's anxiety. This can be useful for monitoring and evaluation activities. Based on the requirements analysis results, there was no system for recording and reporting stress in pregnant women. This was reported using the Maternal and Child Health Management Information System (MCH MIS). After completing data management, midwives must report daily and monthly to the local Health Office. However, in reality, there will be occasional delays in the timeliness of recording and reporting. This can happen when there is no internet connection and MIS user officers are on duty outside the public health center. The utilization of e-Health with this smartphone tool makes it easier for health workers to get information on pregnant women's anxiety incidence in one area.

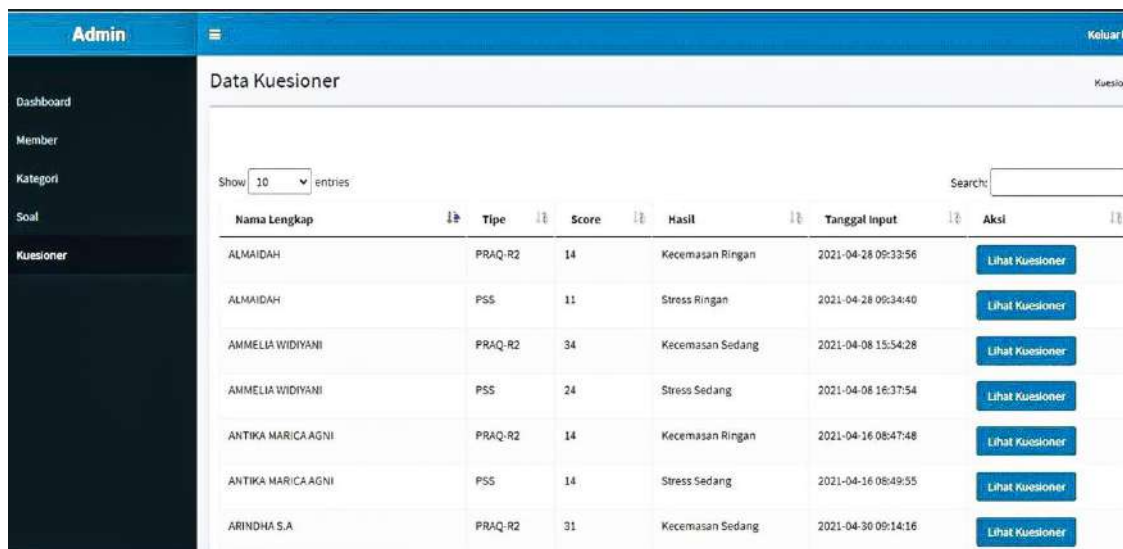


Figure 2. Display of stress diagnosis results

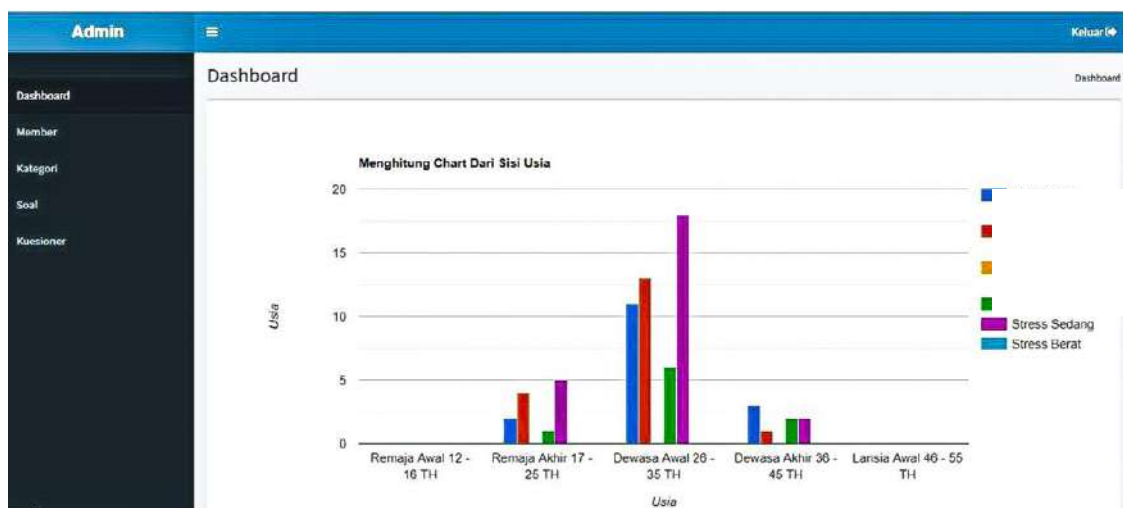


Figure 3. Number of anxiety cases based on maternal age

This is in accordance with previous research, which found that the information system allowed users to fill out questionnaires faster, more concretely, and accurately. Additionally, it provides a precise copy of the report as well (Simbolon *et al.*, 2019). The speed of the implementation of the examination results can affect the quality of the health service place. The speed of reporting will have an impact on faster decision-making changes. This information system can be a solution to the problem of the speed of reporting time. With a reporting information system, it becomes faster and can save transportation costs if reporting has to be

done with a manual system. Information systems are able to ease the work of health workers. Rapid reporting can make policymakers quick to act in making decisions to issue policies to address health concerns.

### Conclusion

The results showed that the e-Health information system was able to automatically identify stress during pregnancy with very effective acceptance. TAM analysis should be effective in detecting stress. The TAM score indicates a very effective e-health system at 85.4%;



thus, this system is recommended to evaluate the effectiveness of a system. This system can analyze 374 pregnant women in one day (24 hours). This system is also capable of providing services and reporting stress detection results for pregnant women. Based on these findings, this e-Health system can be beneficial as an early detection tool during pregnancy and prevent harmful stress effects during pregnancy. It is recommended that the information system for early detection of stress with smartphone tools is expected to be part of midwifery services as a choice in monitoring the psychological well-being of pregnant women.

### Abbreviations

MCH MIS: Maternal and Child Health Management Information System; TAM: Technology Acceptance Model; SDLC: Software Development Life Cycle.

### Declaration

#### Ethics Approval and Consent Participant

This study was conducted by all necessary ethical principles and approved by the Bioethics Commission for Medicine/Health Research, Faculty of Medicine, Sultan Agung Islamic University, Semarang, with number No. 125/IV/2021/Bioethics Commission. Respondents were informed of the survey's objectives and purposes, and verbal consent to participate in the study was taken from them before their involvement.

#### Conflict of Interest

The authors declare that there were no significant competing financial, professional, or personal interests that might have affected the study.

#### Availability of Data and Materials

Not applicable.

#### Authors' Contribution

R and SR conceptualized the study, created the methodology, and wrote, reviewed, and edited the manuscript and original draft.

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### References

- Aini, F.N., Widyawati, M.N. and Santoso, B. (2019) 'Diagnosa Preeklampsia pada Ibu Hamil Menggunakan Sistem Informasi Berbasis Web', *Jurnal Keperawatan Silampari*, 2(2), pp. 18–27. Available at: <https://doi.org/10.31539/jks.v2i2.508>.
- Al-Emran, M., Mezhyuev, V. and Kamaludin, A. (2018) 'Technology Acceptance Model in M-learning context: A systematic review', *Computers & Education*, 125, pp. 389–412. Available at: <https://doi.org/10.1016/j.compedu.2018.06.008>.
- Berthelon, M., Kruger, D.I. and Sánchez, R. (2018) 'Maternal Stress During Pregnancy and Early Childhood Development', *SSRN Electronic Journal* [Preprint]. Available at: <https://doi.org/10.2139/ssrn.3170241>.
- Chang, W.-H. (2020) 'COVID-19 pandemic's effects on the quality of pregnant women's emergency treatment: Review of two cases from a medical center in northern Taiwan', *Taiwanese Journal of Obstetrics and Gynecology*, 59(6), pp. 795–800. Available at: <https://doi.org/10.1016/j.tjog.2020.09.003>.
- Corbijn van Willenswaard, K. *et al.* (2017) 'Music interventions to reduce stress and anxiety in pregnancy: a systematic review and meta-analysis', *BMC Psychiatry*, 17(1). Available at: <https://doi.org/10.1186/s12888-017-1432-x>.

- Firth, J. *et al.* (2017) 'Can smartphone mental health interventions reduce symptoms of anxiety? A meta-analysis of randomized controlled trials', *Journal of Affective Disorders*, 218, pp. 15–22. Available at: <https://doi.org/10.1016/j.jad.2017.04.046>.
- Glover, V. (2020) 'Prenatal mental health and the effects of stress on the foetus and the child. Should psychiatrists look beyond mental disorders?', *World Psychiatry*, 19(3), pp. 331–332. Available at: <https://doi.org/10.1002/wps.20777>.
- Gómez-de-Regil, L. *et al.* (2020) 'Mobile Apps for the Management of Comorbid Overweight/Obesity and Depression/Anxiety: A Systematic Review', *Journal of Healthcare Engineering*, 2020, p. 9317179. Available at: <https://doi.org/10.1155/2020/9317179>.
- Huizink, A.C. *et al.* (2015) 'Adaption of pregnancy anxiety questionnaire—revised for all pregnant women regardless of parity: PRAQ-R2', *Archives of Women's Mental Health*, 19(1), pp. 125–132. Available at: <https://doi.org/10.1007/s00737-015-0531-2>.
- Kashanian, M. *et al.* (2019) 'Woman's perceived stress during pregnancy; stressors and pregnancy adverse outcomes', *The Journal of Maternal-Fetal & Neonatal Medicine*, 34(2), pp. 207–215. Available at: <https://doi.org/10.1080/14767058.2019.1602600>.
- Kharaghani, R., Arasteh, A. and zenoozian, saeedeh (2019) 'Pregnancy Adaptation and its Association with Attachment Styles in Wanted and Unwanted Pregnancies', *Preventive Care In Nursing and Midwifery Journal*, 8(4), pp. 32–42. Available at: <https://doi.org/10.29252/pcnm.8.4.32>
- Kingston, D. *et al.* (2017) 'Pregnant Women's Perceptions of the Risks and Benefits of Disclosure During Web-Based Mental Health E-Screening Versus Paper-Based Screening: Randomized Controlled Trial', *JMIR Mental Health*, 4(4), p. e42. Available at: <https://doi.org/10.2196/mental.6888>.
- Linardon, J. *et al.* (2019) 'The efficacy of app-supported smartphone interventions for mental health problems: a meta-analysis of randomized controlled trials', *World Psychiatry*, 18(3), pp. 325–336. Available at: <https://doi.org/10.1002/wps.20673>.
- Livingston, N.A. *et al.* (2019) 'Self-help Smartphone Applications for Alcohol Use, PTSD, Anxiety, and Depression: Addressing the New Research-Practice Gap', *Journal of Technology in Behavioral Science*, 4(2), pp. 139–151. Available at: <https://doi.org/10.1007/s41347-019-00099-6>.
- Loughnan, S.A. *et al.* (2018) 'Internet-based cognitive behavioural therapy (iCBT) for perinatal anxiety and depression versus treatment as usual: study protocol for two randomised controlled trials', *Trials*, 19(1). Available at: <https://doi.org/10.1186/s13063-017-2422-5>.
- Lukoff, K. *et al.* (2018) 'What Makes Smartphone Use Meaningful or Meaningless?', *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, 2(1), pp. 1–26. Available at: <https://doi.org/10.1145/3191754>.
- Martinez-Borba, V., Suso-Ribera, C. and Osma, J. (2018) 'The Use of Information and Communication Technologies in Perinatal Depression Screening: A Systematic Review', *Cyberpsychology, Behavior, and Social Networking*, 21(12), pp. 741–752. Available at: <https://doi.org/10.1089/cyber.2018.0416>.
- Ministry of Health, B.B. (2023) *Buku KIA: Kesehatan Ibu dan Anak*. Ministry of Health of Republic of Indonesia.
- Motosko, C.C. *et al.* (2017) 'Physiologic changes of pregnancy: A review of the literature', *International Journal of Women's Dermatology*, 3(4), pp.

- 219–224. Available at: <https://doi.org/10.1016/j.ijwd.2017.09.003>.
- Pangesti, W.D. (2018) 'Adaptasi Psikologis Ibu Hamil dalam Pencapaian Peran Sebagai Ibu di Puskesmas Kembaran Kabupaten Banyumas', *Viva Medika: Jurnal Kesehatan, Kebidanan dan Keperawatan*, 10(1), pp. 13–21. Available at: <https://doi.org/10.35960/vm.v10i1.395>.
- Raharjana, I.K. (2017) *Pengembangan sistem informasi menggunakan metodologi agile*. Yogyakarta: Deepublish.
- Runjati, . *et al.* (2017) 'The Effect of Antenatal Class Plus Coping Skill Training on the Level of Stress and Childbirth Self-Efficacy', *Advanced Science Letters*, 23(4), pp. 3329–3333. Available at: <https://doi.org/10.1166/asl.2017.9125>.
- Simbolon, N., Malini, H. and Muharni, S. (2019) 'Perbandingan Pengaruh Sistem Surveilans Berbasis Elektronik Dan Paper Based Terhadap Pencatatan Dan Kemampuan Deteksi Risiko Hais Oleh Perawat Di Rumah Sakit Awal Bros Batam', *NERS Jurnal Keperawatan*, 15(2), p. 74. Available at: <https://doi.org/10.25077/njk.15.2.74-83.2019>.
- Tsai, Y. *et al.* (2018) 'Effects of a Web-Based Antenatal Care System on Maternal Stress and Self-Efficacy During Pregnancy: A Study in Taiwan', *Journal of Midwifery & Women's Health*, 63(2), pp. 205–213. Available at: <https://doi.org/10.1111/jmwh.12685>.
- Urizar, G.G. *et al.* (2019) 'The SMART Moms Program: A Randomized Trial of the Impact of Stress Management on Perceived Stress and Cortisol in Low-Income Pregnant Women', *Psychoneuroendocrinology*, 104, pp. 174–184. Available at: <https://doi.org/10.1016/j.psyneuen.2019.02.022>.
- Wu, B. and Chen, X. (2017) 'Continuance intention to use MOOCs: Integrating the technology acceptance model (TAM) and task technology fit (TTF) model', *Computers in Human Behavior*, 67, pp. 221–232. Available at: <https://doi.org/10.1016/j.chb.2016.10.028>.
- Zijlmans, M.A.C. *et al.* (2017) 'Maternal late pregnancy anxiety and stress is associated with children's health: a longitudinal study', *Stress*, 20(5), pp. 495–504. Available at: <https://doi.org/10.1080/10253890.2017.1348497>.

# DETERMINE THE TARGET TO INCREASE PRIMARY HEALTHCARE UTILIZATION IN INDONESIA'S DISADVANTAGED AREAS

*Menentukan Target Peningkatan Pemanfaatan Puskesmas pada Daerah Tertinggal di Indonesia*

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## Abstract

**Background:** Primary health care (PHC) is the closest institution known to people in disadvantaged areas.

**Aims:** The study determines the policy target based on the demographic characteristics to increase PHC utilization in a disadvantaged area.

**Methods:** The cross-sectional research explored 42,644 respondents. In addition to PHC utilization, the study examined eight independent variables: residence, gender, marital, age, wealth, insurance, education, and travel time. We employed a binary logistic regression in the last stage.

**Results:** Live in urban areas had 1.967 more likely to utilize the PHC (95%CI 1.942-1.992). Males could be 1.412 higher than females (95%CI 1.402-1.421). All marital types had more chances than never married. All education was more likely than no education. The employed had 0.972 less likely than the unemployed (95%CI 0.965-0.980). All wealth groups had less possibility than the poorest. Those with government-run insurance were likelier than other types. The ≤10 minutes travel time was more likely than the >10 minutes.

**Conclusion:** There were seven policy target characteristics to increase PHC use in disadvantaged areas in Indonesia: live in a rural area, female, never married, have no education, employed, not the poorest, don't have government-run insurance, and have a travel time of more than ten minutes.

**Keywords:** disadvantaged area, healthcare evaluation, primary health care, public health

## Abstrak

**Latar belakang:** Puskesmas merupakan institusi terdekat yang dikenal masyarakat di daerah tertinggal.

**Tujuan:** Kajian ini menganalisis sasaran kebijakan berdasarkan karakteristik demografi untuk meningkatkan pemanfaatan Puskesmas di daerah tertinggal.

**Metode:** Penelitian cross-sectional ini menganalisis 42.644 responden. Selain pemanfaatan Puskesmas, penelitian ini menggunakan delapan variabel independen (tempat tinggal, usia, perkawinan, jenis kelamin, pendidikan, kekayaan, asuransi, waktu perjalanan). Penelitian ini menggunakan regresi logistik biner pada tahap terakhir.

**Hasil:** Tinggal di daerah perkotaan 1.967 kali lebih mungkin memanfaatkan Puskesmas (95% CI 1.942-1.992). Pria 1.412 kali lebih mungkin memanfaatkan Puskesmas dari wanita (95% CI 1.402-1.421). Semua jenis pernikahan memiliki lebih banyak peluang daripada tidak pernah menikah. Semua pendidikan memiliki kemungkinan lebih besar daripada tidak sekolah. Yang bekerja memiliki 0,972 kali lebih kecil kemungkinannya dibandingkan dengan yang menganggur (95% CI 0,965-0,980). Semua status kekayaan memiliki kemungkinan yang lebih kecil memanfaatkan Puskesmas daripada yang termiskin. Mereka yang memiliki asuransi yang dikelola pemerintah lebih mungkin memanfaatkan Puskesmas dibandingkan jenis lainnya. Waktu tempuh ≤10 menit lebih mungkin memanfaatkan Puskesmas dibandingkan dengan >10 menit.

**Kesimpulan:** Ada tujuh karakteristik sasaran kebijakan untuk meningkatkan pemanfaatan Puskesmas di daerah tertinggal: tinggal di pedesaan, perempuan, tidak pernah menikah, tidak berpendidikan, bekerja, bukan yang termiskin, tidak memiliki asuransi yang dikelola pemerintah, dan memiliki waktu tempuh lebih dari sepuluh menit.

**Kata kunci:** daerah tertinggal, evaluasi pelayanan kesehatan, pelayanan kesehatan dasar, kesehatan masyarakat



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## Introduction

Primary health care (PHC), sometimes called Puskesmas in Indonesia, is the primary level of treatment available to everyone and promotes good health and disease prevention while offering diagnostic, curative, rehabilitative, supporting, and palliative services. PHC is a unit that carries out operational and technical tasks and is responsible for health development in one or part of the sub-district area (Nantabah *et al.*, 2023). PHCs such as First Level Health Facilities (FLHF) are places where participants are registered for the first time, which are determined by the Health Social Security Administering Agency (HSSAA) (Misnaniarti *et al.*, 2017). The National Social Security System aims to provide all people who have paid or have had government-paid dues with the necessities of acceptable public health. The demand for health services, especially FLHF for the Indonesian people, is increasing daily (Wulandari, Laksono, Sillehu, *et al.*, 2022; Putri, Laksono and Rohmah, 2023). FLHF is the spearhead of health services for the community (Yuliyanti and Ratnawati, 2016).

PHC, as the first gateway, will be in direct contact with public health services. Primary health services benefit public health because they have greater access to needed services and focus on preventing and managing health problems (Yandrizal *et al.*, 2016). Primary care includes planning, implementation, evaluation, recording, and reporting (Yufrizal, Renaldi and Umbara, 2017). In addition to the PHC in health service facilities at FLHF, these include general practitioners, dentists, Pratama clinics or equivalent, and hospitals in D class. These five health service facilities are expected to meet the community services needs of FLHF. However, the study report in Bengkulu stated that the number of FLHF availability was still lacking. The availability of essential health services will affect the benefits provided by HSSAA (Yandrizal *et al.*, 2016).

Because of Indonesia's diverse geography, some regions are considered

undeveloped. On a national scale, districts with less developed regions and communities are considered underdeveloped areas (Based on Presidential Regulation of the Republic of Indonesia Number 63/ 2020 about Stipulation of Underdeveloped Regions for 2020-2024). Due to difficult-to-reach geographic conditions and a lack of human resources and necessary infrastructure and amenities, communities in underprivileged areas need help accessing health services (Wiyanti, Kusnanto and Hasanbasri, 2016). The potential exists for growing health disparities in numerous regions of Indonesia due to unequal access to healthcare facilities. In Indonesia, there still needs to be more health facilities available, and they are not dispersed equally across all districts and cities (Misnaniarti *et al.*, 2017). For example, community access to PHC in the Sumatra region reaches 3.781 times more than communities in Papua. Meanwhile, people in Sumatra have access to hospitals 1.079 times compared to those living in Papua (Laksono, Wulandari and Soedirham, 2019; Laksono, Wulandari, *et al.*, 2023).

The Government of Indonesia currently places much emphasis on developing undeveloped areas. The economy, infrastructure, human resources, regional financial capacities, accessibility, and community features all influence regional indicators. Presidential Regulation Number 63/2020 about Determining Disadvantaged Regions for 2020–2024 specifies the development priorities for undeveloped regions.

One of the significant issues in national health development is limited access to health services. Prior investigations have shown that the availability of the FLHF ratio per resident tends to be higher in areas outside Java/Bali. For example, in the Nusa Tenggara, Maluku, and Papua regions, the FLHF ratio per 10 thousand population averages 1.43. This figure is almost twice the Java-Bali region, with an average of 0.79 (Misnaniarti *et al.*, 2017). Of people in disadvantaged and remote regions, 50.5% use PHC (Wiyanti, Kusnanto and Hasanbasri, 2016). Older adults in Norfolk,

a rural part of the UK, report difficulty accessing primary care due to connected phone lines, appointment availability, and encounters with front desk personnel, all of which they feel break the social compact (Ford *et al.*, 2018). Poor and distant locations are the primary users of health center access points (Wenang *et al.*, 2021). Regarding the research, it can be said that people in remote and underdeveloped regions very much need PHCs.

Therefore, particular policies are needed to improve the service quality by providing facilities, resources, and infrastructure, as well as improving infrastructure and the availability of drugs (Wiyanti, Kusnanto and Hasanbasri, 2016). Local governments are expected to commit to fulfilling the supply side of health services so that sick residents can access health facilities easily (Misnaniarti *et al.*, 2017). FLHF, both government and non-government, still provides the best service so that the service quality increases. According to the background, the study determines the policy target based on the most appropriate demographic characteristics to increase PHC utilization in a disadvantaged area in Indonesia.

## Method

### Data Source

The research examines data from the 2018 Indonesian Basic Health Survey. The Indonesian MOH performed the cross-sectional survey nationally. From May to July 2018, data for the survey were gathered. The survey also made use of household and individual instruments.

All households in Indonesia make up the survey's population. The sample composition of the study is based on the March 2018 National Socioeconomic study. The Indonesian Statistics' 2018 Socioeconomic Study also visited a target of 300,000 residences from 30,000 census blocks (The Indonesian MOH, 2018).

The research's population consists of all Indonesian adults in underprivileged regions (aged 15 and over). Of 713,783 respondents, the study examined 42,644 adults, with a response rate of 93.2%.

## Setting

The research examines the use of PHC in Indonesia's less-developed regions. The borders of underdeveloped areas are outlined in Regulation of Presidential 63/ 2020 about the Determination of Underdeveloped Regions for 2020–2024. The rule lists 62 regencies in 11 provinces as Indonesia's impoverished areas, including West Sumatera, North Sumatera, Lampung, South Sumatera, West Nusa Tenggara, East Nusa Tenggara, Central Sulawesi, North Maluku, Maluku, West Papua, and Papua.

## Dependent Variable

We used PHC use as the independent factor in the study—Use of primary healthcare included outpatient and inpatient access to primary healthcare for adults. Inpatient care was limited to last year, while outpatient care was only available for the prior month. Respondents were prompted to recollect specific outpatient and inpatient incidents (The Indonesian MOH, 2018).

## Independent Variables

Age, marital status, gender, employment status, education level, wealth status, travel time to the hospital, and possession of health insurance were among the nine independent factors utilized in the study. There are two residence types: urban and rural. We employed the Indonesian Statistics guidelines for dividing the country into rural and urban regions.

The research used the respondents' most recent birthdays to determine their age (analyzed as a continuous variable) and included both male and female respondents. Additionally, the study split their marital status into never married, married/ cohabiting, and divorced or widowed.

Education is the acceptance of the most current respondents' degrees. The education comprises no primary, secondary, or higher education. Moreover, the employment group includes the employed and unemployed.

The poll used a formula for a wealth index to determine the respondents' wealth level. The 2018 Indonesian Basic Health Survey created a wealth index utilizing a family's overall performance weighted average survey spending. The poll used basic family expenses, including insurance, accommodation, and food, among other things, to generate the wealth index. Additionally, the survey divided respondents' wealth into poorest, poorer, middle, wealthier, and richest (Wulandari, Laksono, Prasetyo, *et al.*, 2022; Laksono *et al.*, 2023).

In addition, the poll divides health insurance ownership into didn't have insured, government-run insurance, private-run insurance, and having both insurances. Furthermore, the travel time to the health care facility is between  $\leq 10$  and  $> 10$  minutes.

### Data Analysis

In the first step, we used the Chi-Square analysis to compare two variables for the binary factor. Concurrently, the research employed a T-test for the study's continual variation (age). In addition, we utilized a collinearity analysis. The analysis's goal was to ensure that the independent factors in the finished equation weren't significantly correlated with one another. A binary logistic regression was employed in the study's last stage. The IBM SPSS 26 program was utilized throughout the investigation's statistical analysis phase. The authors employed this final analysis to assess the multivariate relation between all independent factors and PHC use.

### Result and Discussion

Despite several weaknesses, such as limited facilities, no specialists, long queues and waiting times, and lack of privacy, PHC in disadvantaged areas is crucial in enhancing health status, including maternal services, child health, and other essential health services. Previous studies have identified PHC limitations, including lack of

transportation access to health facilities, resources, infrastructure, and defects in health services patterns (Suharmiati, Laksono and Astuti, 2013). Cross-sectoral organizational relationships were also not optimal because of the lack of standard operating procedures, communication, and socialization (Winarsa, Noby; Suryoputro, 2020).

The *Nusantara Sehat* (healthy archipelago) program is a Ministry of Health breakthrough for team-based health workers in disadvantaged regions, borders, islands, and areas with health problems. They consisted of professions and were expected to have the competence to provide public health program services in remote places. After two years of placement, the program has increased the public health development index in remote regions (Sari, Hendarwan and Halim, 2019). The Ministry of Health Regulation concerning PHC stated one of the principles for PHC administration is equalization. PHC health service delivery must be accessible and affordable to everyone in the PHC working area (Wulandari, Ridlo, *et al.*, 2019). Therefore, it is crucial to identify the target for assuring equity in accessing PHC health care.

The result shows that Indonesia's average PHC utilization in a disadvantaged area in 2018 was 9.0%. This figure is higher than the national average of 5.3%. This situation is understandable because it is likely that only PHC is available in disadvantaged areas. On the other hand, Table 1 presents descriptive statistics on PHC utilization and respondent characteristics in Indonesia's impoverished areas in 2018.

Table 1 shows those who live in rural regions dominated by both types of PHC use. People who used the PHC are older than those who didn't use the PHC. Regarding gender, males dominated the unutilized PHC category, while females dominated the used PHC category. Additionally, people who are married or cohabiting with a spouse predominate in both types of PHC use.

Table 1. Descriptive statistics of adults in underdeveloped areas in Indonesia (n=42,644)

Demographic Characteristics	PHC utilization		p-value
	Unutilized (n=38,516)	Utilized (n=4,128)	
<b>Type of Residence</b>			< 0.001
Urban	12.6%	6.2%	
Rural	87.4%	93.8%	
<b>Age (mean)</b>	(36.78)	(42.96)	< 0.001
<b>Gender</b>			
Male	51.2%	42.7%	
Female	48.8%	57.3%	
<b>Marital</b>			< 0.001
Never married	23.3%	12.3%	
Married	69.9%	77.4%	
Divorced or Widowed	6.8%	10.3%	
<b>Education</b>			< 0.001
No formal education	15.7%	16.5%	
Primary	57.6%	64.8%	
Secondary	19.9%	14.2%	
Higher	6.8%	4.6%	
<b>Employment</b>			< 0.001
Unemployed	30.3%	27.3%	
Employed	69.7%	72.7%	
<b>Wealth</b>			< 0.001
Poorest	34.0%	40.2%	
Poorer	20.7%	19.3%	
Middle	16.9%	17.4%	
Richer	14.3%	12.3%	
Richest	14.1%	10.9%	
<b>Health Insurance</b>			< 0.001
Uninsured	29.1%	17.8%	
Government-run	70.1%	82.1%	
Private-run	0.6%	0.0%	
Government-run and Private-run	0.2%	0.1%	
<b>Travel Time</b>			< 0.001
≤10 minutes	34.8%	31.5%	
>10 minutes	65.2%	68.5%	

Regarding education, primary education dominated both groups of PHC utilization-while, the employed dominated both PHC utilization groups based on employment status. Moreover, the poorest led in both groups of PHC utilization according to wealth status. Table 1 indicates that those with government-run insurance dominated unutilized and utilized PHC groups. Furthermore, based on travel time to PHC, those with more than ten minutes dominated both PHC utilization categories.

The following analysis was a collinearity test. The findings show no significant association between the independent factors. Additionally, each variable's VIF (variance inflation factor) value is lower than 10.00, and the tolerance value for every element is more extensive than 0.10. The results found no multicollinearity in the model of regression. Moreover, the binary logistic regression findings are illustrated in Table 2.



Table 2. The binary logistic regression findings (n=42,644)

Predictor	p-value	PHC Utilization		
		AOR	95% CI	
			Lower Bound	Upper Bound
Residence: Urban	< 0.001	1.967	1.943	1.992
Residence: Rural	-	-	-	-
Age	< 0.001	1.025	1.024	1.025
Gender: Male	< 0.001	1.412	1.402	1.421
Gender: Female	-	-	-	-
Marital: Never married	-	-	-	-
Marital: Married	< 0.001	1.254	1.240	1.267
Marital: Divorced or Widowed	< 0.001	1.205	1.186	1.224
Education: No formal education	-	-	-	-
Education: Primary	< 0.001	1.418	1.406	1.430
Education: Secondary	< 0.001	1.254	1.239	1.268
Education: Higher	< 0.001	1.127	1.108	1.145
Employment: Unemployed	-	-	-	-
Employment: Employed	< 0.001	0.972	0.965	0.980
Wealth: Poorest	-	-	-	-
Wealth: Poorer	< 0.001	0.782	0.776	0.789
Wealth: Middle	< 0.001	0.869	0.861	0.876
Wealth: Richer	< 0.001	0.753	0.745	0.760
Wealth: Richest	< 0.001	0.714	0.707	0.722
Insurance: Uninsured	-	-	-	-
Insurance: Government-run	< 0.001	1.925	1.910	1.940
Insurance: Private-run	< 0.001	0.155	0.135	0.179
Insurance: Government-run & Private-run	< 0.001	0.615	0.544	0.695
Travel time: less than 10 minutes	< 0.001	1.067	1.060	1.074
Travel time: more than 10 minutes	-	-	-	-

Note: AOR: Adjusted Odds Ratio; CI: confidence interval.

Table 2 shows that those living in urban regions are 1.967 times more likely to utilize the PHC (AOR 1.967; 95% CI 1.942-1.992). The use of PHC is related to geographical characteristics and ease of population mobility; therefore, accessibility and utilization vary widely (Wulandari, Laksono and Rohmah, 2021). The more accessible geographic characterization and the higher population mobility could be why people living in urban regions had more PHC utilization than the rural population. The condition differs from a study in Mongolia that provided free access to PHC and stated that essential health services at PHC in urban areas were small, indicating that utilization was concentrated in rural regions (Dorjdagva *et al.*, 2017).

The research also indicated age to be associated with PHC utilization. The condition is similar to the previous study, showing higher age as a significant factor for PHC utilization (Panzai, Ahmad and Saqib, 2020). Several reasons could explain this result, including other demographic factors related to a higher age. Previous studies found that even age was associated with PHC utilization regarding chronic disease prevalence. The most decisive factor was a chronic disease experienced more frequently among older people (Wulandari and Laksono, 2019; Rukmini *et al.*, 2022). Besides the risk factors, higher age is related to higher screening behavior, better health beliefs and disease prevention, alleged

responsibility, and anticipative action for well-being (Megatsari, Nandini and Laksono, 2023). A better judgment could lead to better PHC utilization at a higher age.

Based on gender, males can be 1.412 higher than females using the PHC (1.412; 95% CI 1.402-1.421). The result indicates men have more possibilities than women to use the PHC. The services of PHC are crucial to offering medical, social, and emotional assistance; therefore, analyzing the PHC services used to identify the marginalized gender (Canuto *et al.*, 2018). This study differs from the previous study, which showed women accessing PHC more (Kim *et al.*, 2016). A closer health service alternative for women could cause the low utilization of PHC. In previous research in remote areas in Indonesia, many women choose more affordable women's health care options, namely village midwives and even traditional birth attendants (Suharmiati, Dwi Laksono and Wahyu Dwi Astuti, 2013). Previous research found women use PHC more frequently due to the supply-side policies, initiatives, and innovations that lead to increased utilization of PHC for maternity care (Wulandari, Ridlo, *et al.*, 2019). Village midwives could significantly fulfill primary maternity care for women in disadvantaged areas, lowering PHC utilization (Yesica *et al.*, 2021; Denny *et al.*, 2022).

Meanwhile, regarding marital status, all types have more chances than those who have never been in the union to utilize the PHC. Several studies discovered that more fabulous health-seeking activities were favorably associated with the mother and household head (Apuleni, Jacobs and Musonda, 2021). According to earlier research, marriage and partnerships have several beneficial impacts, including improved financial security, more accessible insurance access, and better kinds of social relationships and support (Stokes and Moorman, 2018). Better health-seeking behavior and protective factors could lead to better PHC utilization. To enhance health-seeking behavior and PHC utilization among unmarried, we must

strengthen protective factors such as insurance coverage and social connection.

According to education, all groups are likelier than those without formal education to utilize the PHC. This result is contrary to a study on women in rural Nigeria, which revealed that higher education level was significantly correlated to lower PHC utilization for antenatal care because of the perception of poor reproductive health service and preference to opt for service in private clinics and hospital (Okonofua *et al.*, 2018). Higher PHC utility is associated with higher education. The results align with a previous study, which showed that education and occupation were the most critical factors related to PHC utilization (Omonona, Obisesan and Aromolaran, 2015). Previous studies indicated that better education is related to better socioeconomic and better health education understanding of messages, especially in reading materials with various methods (Megatsari *et al.*, 2018; Rohmah *et al.*, 2020).

The employed are 0.972 less likely to utilize the PHC than the unemployed (AOR 0.972; 95% CI 0.965-0.980). Meanwhile, all wealth groups have less possibility than the lowest-income to utilize the PHC. Moreover, regarding owning health insurance, those with government-run insurance are 1.925 more likely to use the PHC than those uninsured (AOR 1.925; 95% CI 1.910-1.940). On the contrary, all other types are less likely than the uninsured to utilize the PHC.

Economic constraints were known as important factors related to limited healthcare access. PHC is usually the closest health service facility in the community, which gives essential health services at a low cost (Wulandari, Qomarrudin, *et al.*, 2019; Wulandari, Laksono, Prasetyo, *et al.*, 2022). This result is similar to research in Mongolia regarding free and universal PHC services with government insurance. Groups with lower incomes tended to utilize PHC more frequently than those with higher incomes (Dorjdagva *et al.*, 2017). The higher utilization of PHC among people with low incomes in underdeveloped regions of Indonesia could be related to the availability

of government insurance, which allows economic accessibility of PHC utilization. This study also showed that those with government-run insurance were likelier to use the PHC than those who are uninsured or have other types of health insurance. Economic barriers are the most frequent reason for not using primary healthcare services (Ekawati and Claramita, 2021). The PHC utilization by the poorest indicated that government-run insurance had overcome economic barriers (Laksono, Wulandari and Matahari, 2021).

The condition also could partially explain the higher PHC utilization among the unemployed when unemployment was related to lower financial resources. Several indicators of economic constraint related to higher PHC utilization indicate that universal coverage for health insurance had an excellent range among the poor and unemployed in disadvantaged areas in Indonesia (Agustina *et al.*, 2019). In the non-government insurance group, PHC utilization was also lower than those with government-run insurance. Previous surveys showed private clinics were generally the most popular source of primary care, while PHC is more widely used by poor households (Sinuraya *et al.*, 2017). The condition shows a possible tendency to choose treatment outside the PHC when there is a chance to choose various health service providers, like other health insurance groups in this study. One of the reasons for the decline in PHC utilization is the lack of optimal PHC health services. There is a need to optimize PHC utilization among the population above the poorest (poorer and middle) economic status and employed persons without insurance. The situation is in line with research on universal health coverage (UHC) in Indonesia, which identifies the missing-median level, a term used to define the lower percentage of people listed in UHC among Q2–Q3 quintiles of wealth compared to other quintiles (Laksono, Nugraheni, *et al.*, 2023; Suharmiati *et al.*, 2023).

Finally, based on travel time to the PHC, the  $\leq 10$  minutes are 1.067 more likely than the  $>10$  minutes to use the PHC. The result means the faster travel times to PHC,

the more likely it is to take advantage of PHC. The importance of travel time to PHC is also in line with previous studies. However, in this study, the travel span was shorter. This study's PHC utilization short travel time cut-off could also explain why people in urban areas in disadvantaged regions had higher PHC utilization. Geographical conditions in rural areas usually cause longer travel times. Access to health centers generally requires private/public transportation or walking (Ipa, Laksono and Wulandari, 2023).

### Strength and Limitation

The strength of this study is that it analyzes big data so that the information can be nationally representative. However, because the analysis only looks at secondary data, the factors that may be examined are limited by the accepted variables. Other factors connected to PHC use in prior research, like travel expenses and disease types, cannot be discussed in this study (Wei *et al.*, 2018). Some of these things are important, especially to understand costs outside the services cost that might affect people's access to primary health care.

### Conclusion

According to the findings, the research concluded that there are seven policy targets to increase PHC use in Indonesia's disadvantaged areas. The seven lived in a rural region, were female, never married, had no education, were employed, were not the poorest, didn't have government-run insurance, and had a travel time of more than ten minutes.

The government needs to understand these characteristics to identify which parts of society have low access to primary healthcare. The author recommends that the government make policies that are right on target according to the results of this study.

### Abbreviations

PHC: Primary Healthcare; AOR: Adjusted Odds Ratio; CI: Confidence Interval.

## Declarations

### Ethics approval and consent participant

The 2018 Indonesian Basic Health Survey was approved by the National Ethics Committee (LB.02.01/2/KE.024/2018). The study's participants have given their written informed consent to participate.

### Conflict of Interest

We clarify that the author has no competing interests.

### Availability of data and materials

We cannot publicly disclose the data since neither a third party nor the Indonesian MOH, the data's owner, is authorized. For researchers who meet the requirements, the data set is accessible online at <https://layanandata.kemkes.go.id/>.

### Authors' contributions

RDW created the proposal and conducted the patient data analysis and interpretation. ADL contributed substantially to the study's execution, data interpretation, and manuscript authoring. The research was carried out, and the text was written with assistance from NR, LL, and HA. The final manuscript was read and approved by all writers.

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## References

- Agustina, R. *et al.* (2019) 'Universal Health Coverage in Indonesia: Concept, Progress, and Challenges', *The Lancet*, 393(10166), pp. 75–102. Available at: [https://doi.org/10.1016/S0140-6736\(18\)31647-7](https://doi.org/10.1016/S0140-6736(18)31647-7).
- Apuleni, G., Jacobs, C. and Musonda, P. (2021) 'Predictors of Health Seeking Behaviours for Common Childhood Illnesses in Poor Resource Settings in Zambia, A Community Cross Sectional Study', *Frontiers in Public Health*, 9(May), pp. 1–9. Available at: <https://doi.org/10.3389/fpubh.2021.569569>.
- Canuto, K. *et al.* (2018) 'Understanding the Utilization of Primary Health Care Services by Indigenous Men: A Systematic Review', *BMC Public Health*, pp. 1–12. Available at: <https://doi.org/https://doi.org/10.1186/s12889-018-6093-2>.
- Denny, H.M. *et al.* (2022) 'The Determinants of Four or More Antenatal Care Visits Among Working Women in Indonesia', *Asia-Pacific Journal of Public Health*, 34(1), pp. 51–56. Available at: <https://doi.org/10.1177/10105395211051237>.
- Dorjdagva, J. *et al.* (2017) 'Free and universal, but unequal utilization of primary health care in the rural and urban areas of Mongolia', *International Journal for Equity in Health*, 16(1), pp. 1–9. Available at: <https://doi.org/10.1186/s12939-017-0572-4>.
- Ekawati, F.M. and Claramita, M. (2021) 'Indonesian General Practitioners' Experience of Practicing in Primary Care under the Implementation of Universal Health Coverage Scheme (JKN)', *Journal of Primary Care and Community Health*, 12, pp. 1–12. Available at: <https://doi.org/10.1177/21501327211023707>.
- Ford, J.A. *et al.* (2018) 'Access to primary care for socio-economically disadvantaged older people in rural areas: A qualitative study', *PLoS ONE*, 13(3), pp. 1–14. Available at: <https://doi.org/10.1371/journal.pone.0193952>.
- Ipa, M., Laksono, A.D. and Wulandari, R.D. (2023) 'The Role of Travel Time on Hospital Utilization in the Islands Area: A Cross-Sectional Study in the Maluku Region, Indonesia, in 2018', *Indian Journal of Community Medicine*, 48(2), pp. 269–273. Available at: [https://doi.org/10.4103/ijcm.ijcm\\_229\\_22](https://doi.org/10.4103/ijcm.ijcm_229_22).

- Kim, D. *et al.* (2016) 'Determinants of Primary Health Care Utilization in Ethiopia', *Institute for Poverty Alleviation and International Development*, 25s(May 2019), pp. 269–293. Available at: <https://doi.org/10.18350/ipaid.2016.25s.269>.
- Laksono, A. *et al.* (2023) 'Socioeconomic differences of intimate partner violence among married women in Indonesia: Does poverty matter?', *Indian Journal of Community Medicine*, 48(2), pp. 304–309. Available at: [https://doi.org/10.4103/ijcm.ijcm\\_254\\_22](https://doi.org/10.4103/ijcm.ijcm_254_22).
- Laksono, A.D., Wulandari, R.D., *et al.* (2023) 'Regional disparities in hospital utilisation in Indonesia: a cross-sectional analysis data from the 2018 Indonesian Basic Health Survey', *BMJ Open*, 13(1), p. e064532. Available at: <https://doi.org/10.1136/bmjopen-2022-064532>.
- Laksono, A.D., Nugraheni, W.P., *et al.* (2023) 'The Role of Government-run Insurance in Primary Health Care Utilization: A Cross-Sectional Study in Papua Region, Indonesia, in 2018', *International Journal of Health Services*, 53(1), pp. 85–93. Available at: <https://doi.org/10.1177/00207314221129055>.
- Laksono, A.D., Wulandari, R.D. and Matahari, R. (2021) 'The determinant of health insurance ownership among pregnant women in Indonesia', *BMC Public Health*, 21(1), p. 1538. Available at: <https://doi.org/10.1186/s12889-021-11577-z>.
- Laksono, A.D., Wulandari, R.D. and Soedirham, O. (2019) 'Regional Disparities of Health Center Utilization in Rural Indonesia', *Malaysian Journal of Public Health Medicine*, 19(1), pp. 158–166. Available at: <https://doi.org/10.37268/mjphm/vol.19/no.1/art.48>.
- Megatsari, H. *et al.* (2018) 'Community Perspective about Health Services Access', *Bulletin of Health Systems Research*, 21, pp. 247–253. Available at: <https://doi.org/10.22435/hsr.v21i4.231>.
- Megatsari, H., Nandini, N. and Laksono, A.D. (2023) 'Health Center Utilization among the Elderly in the East Java Province', *Jurnal PROMKES*, 11(1), pp. 26–35. Available at: <https://doi.org/10.20473/jpk.V11.1.2023.26-35>.
- Misnaniarti *et al.* (2017) 'Availability of Health Facilities and Personnel to Support Universal Coverage of National Health Insurance', *Jurnal Penelitian dan Pengembangan Pelayanan Kesehatan*, 1(1), pp. 6–16. Available at: <https://doi.org/10.22435/jpppk.v1i1.425>.
- Nantabah, Z.K. *et al.* (2023) 'Public satisfaction with the quality of First Health Facility Services in Indonesia: Does sociodemographic matter?', *Asian Pacific Journal of Tropical Medicine*, 16(9), pp. 409–417. Available at: <https://doi.org/10.4103/1995-7645.386257>.
- Okonofua, F. *et al.* (2018) 'Predictors of Women's Utilization of Primary Health Care for Skilled Pregnancy Care in Rural Nigeria', *BMC Pregnancy and Childbirth*, 18(106), pp. 1–15. Available at: <https://doi.org/https://doi.org/10.1186/s12884-018-1730-4> RESEARCH.
- Omonona, B.T., Obisesan, A.A. and Aromolaran, O.A. (2015) 'Health-care Access and Utilization Among Rural Households in Nigeria', *Journal of Development and Agricultural Economics*, 7(5), pp. 195–203. Available at: <https://doi.org/10.5897/jdae2014.0620>.
- Panezai, S., Ahmad, M.M. and Saqib, S.E. (2020) 'A Gender-Based Assessment of Utilization of Primary Health Care Services and Associated Factors in Pakistan', *PONTE International Scientific Research Journal*, 76(1).

- Available at:  
<https://doi.org/10.21506/j.ponte.2020.1.7>.
- Putri, N.K., Laksono, A.D. and Rohmah, N. (2023) 'Predictors of national health insurance membership among the poor with different education levels in Indonesia', *BMC Public Health*, 23(1), p. Article number 373. Available at: <https://doi.org/10.1186/s12889-023-15292-9>.
- Rohmah, N. et al. (2020) 'Determinants of teenage pregnancy in Indonesia', *Indian Journal of Forensic Medicine and Toxicology*, 14(3), pp. 2080–2085. Available at: <https://doi.org/https://doi.org/10.37506/ijfmt.v14i3.10736>.
- Rukmini, R. et al. (2022) 'Non-Communicable Diseases among the Elderly in Indonesia in 2018', *Indian Journal of Forensic Medicine and Toxicology*, 16(1), pp. 1026–1036.
- Sari, I.D., Hendarwan, H. and Halim, R. (2019) 'The evaluation of Nusantara Sehat program using Nusantara Sehat Public Health Index', *Health Science Journal of Indonesia*, 10(1), pp. 41–50. Available at: <https://doi.org/10.22435/hsji.v10i1.1265>.
- Sinuraya, R.K. et al. (2017) 'Satisfaction level of patients, physicians, and private primary health-care center managers with chronic disease management program in Indonesia', *Asian Journal of Pharmaceutical and Clinical Research*, 10, pp. 131–135. Available at: <https://doi.org/10.22159/ajpcr.2017.v10s2.20414>.
- Stokes, J.E. and Moorman, S.M. (2018) 'Influence of the Social Network on Married and Unmarried Older Adults' Mental Health', *Gerontologist*, 58(6), pp. 1109–1113. Available at: <https://doi.org/10.1093/geront/gnx151>.
- Suharmiati, Dwi Laksono, A. and Wahyu Dwi Astuti (2013) 'Review Kebijakan Tentang Pelayanan Kesehatan Puskesmas Di Daerah Terpencil Perbatasan (Policy Review on Health Services in Primary Health Center in the Border and Remote Area)', *Buletin Penelitian Sistem Kesehatan*, 16(2), pp. 109–116. Available at: [10.22435/bpsk.v16i2Apr.3299](https://doi.org/10.22435/bpsk.v16i2Apr.3299).
- Suharmiati, S. et al. (2023) 'Traditional health services utilization in rural Indonesia: does socioeconomic status matter?', *Rural and Remote Health*, 23(3), p. 7701. Available at: <https://doi.org/10.22605/RRH7701>.
- The Indonesian MOH (2018) *The 2018 Indonesian Basic Health Survey*. Jakarta.
- Wei, Y. et al. (2018) 'Hospital efficiency and utilization of high-technology medical equipment: A panel data analysis', *Health Policy and Technology*, 7(1), pp. 65–72. Available at: <https://doi.org/10.1016/j.hlpt.2018.01.001>.
- Wenang, S. et al. (2021) 'Availability and Accessibility of Primary Care for the Remote, Rural, and Poor Population of Indonesia', *Frontiers in Public Health*, 9(September), pp. 1–11. Available at: <https://doi.org/10.3389/fpubh.2021.721886>.
- Winarsa, Noby; Suryoputro, A.W. (2020) 'Analysis of Local Government Policy Implementation Regarding Health Services at Health Centers in Remote Border and Archipelago Regions, Sambas Regency, West Kalimantan', *Visikes*, 19(1), pp. 128–151.
- Wiyanti, S., Kusnanto, H. and Hasanbasri, M. (2016) *Patterns of Utilization of Health Services for Disadvantaged Regions, Borders, Islands and Remote Areas in Indonesia*, Thesis. Universitas Gajah Mada Yogyakarta.
- Wulandari, R.D., Qomarrudin, M.B., et al. (2019) 'Socioeconomic Disparities in Hospital Utilization among Elderly People in Indonesia', *Indian Journal of Public Health Research and Development*, 10(11), pp. 1800–1804. Available at: <https://doi.org/10.5958/0976-5506.2019.03885.3>.
- Wulandari, R.D., Ridlo, I.A., et al. (2019) 'The Influence of Primary Health Care Accreditation on Patient Satisfaction (Pengaruh Pelaksanaan Akreditasi

- Puskesmas terhadap Kepuasan Pasien)', *Media Kesehatan Masyarakat Indonesia*, 15(3), pp. 228–236. Available at: <https://doi.org/10.30597/mkmi.v15i3.6195>.
- Wulandari, R.D., Laksono, A.D., Siliehu, S., et al. (2022) 'Health Insurance Ownership among Moluccans in Indonesia', *Indian Journal of Community Medicine*, 47(3), pp. 332–335. Available at: [https://doi.org/10.4103/ijcm.ijcm\\_593\\_21](https://doi.org/10.4103/ijcm.ijcm_593_21).
- Wulandari, R.D., Laksono, A.D., Prasetyo, Y.B., et al. (2022) 'Socioeconomic Disparities in Hospital Utilization Among Female Workers in Indonesia: A Cross-Sectional Study', *Journal of Primary Care & Community Health*, 13(2), pp. 1–7. Available at: <https://doi.org/10.1177/21501319211072679>.
- Wulandari, R.D. and Laksono, A.D. (2019) 'Urban-Rural Disparity: The Utilization of Primary Health Care Center Among Elderly in East Java, Indonesia', *Indonesian Journal of Health Administration*, 7(2), pp. 147–154. Available at: <https://doi.org/10.20473/jaki.v7i2.2019.147-154>.
- Wulandari, R.D., Laksono, A.D. and Rohmah, N. (2021) 'Urban-rural disparities of antenatal care in South East Asia: a case study in the Philippines and Indonesia', *BMC Public Health*, 21(1), p. 1221. Available at: <https://doi.org/10.1186/s12889-021-11318-2>.
- Yandrizar, Y. et al. (2016) 'Analysis of Availability of Health Facilities and Achievement of Universal Health Coverage of National Health Insurance in Bengkulu Province', *Jurnal Kebijakan Kesehatan Indonesia*, 5(3), pp. 143–150.
- Yesica, D. et al. (2021) 'Ecological Analysis of Maternity Care in Indonesia in 2018', *Indian Journal of Forensic Medicine and Toxicology*, 15(2), pp. 2261–2267. Available at: <https://doi.org/10.37506/ijfmt.v15i2.14708>.
- Yufrizal, M.R.N., Renaldi, F. and Umbara, F.R. (2017) 'Integrated Level 1 Health Facility Service Information System (Puskesmas) Cimahi City (Sistem Informasi Pelayanan Fasilitas Kesehatan Tingkat 1 (Puskesmas) Terintegrasi Kota Cimahi)', in *Proceedings of the National Computer and Informatics Seminar*, pp. 163–168. Available at: <https://ojs.unikom.ac.id/index.php/senaski/article/view/943>.
- Yuliyanti, S. and Ratnawati, R. (2016) 'Overview of the Implementation of BPJS Health Services at First Level Health Facilities in Semarang City', *Jurnal Kebijakan Kesehatan Indonesia: JKKI*, 5(1), pp. 9–13. Available at: <https://doi.org/10.22146/jkki.v5i1.36079>.

# HAS INCLUSIVE HEALTH ACCESS IN JAKARTA'S PUBLIC HEALTH CENTER BEEN FULFILLED?

*Sudahkah Akses Kesehatan Inklusif pada Puskesmas di Jakarta Terpenuhi?*

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## Abstract

**Background:** Each individual, including persons with disabilities, has a guaranteed right to access healthcare services. Indonesia has ratified the United Nations Convention on the Rights of Persons with Disabilities (CRPD) through Law No. 19 of 2011. However, Persons with Disabilities (PWD) still experience difficulties and restrictions in accessing health services.

**Aims:** Examine the fulfillment of inclusive health access for PWD in the Public Health Center (PHC) as a form of inclusivity in health development in Jakarta. This research will finally analyze whether local regulations have accommodated the fulfillment of health rights for PWD.

**Method:** Using qualitative and descriptive methods by raising case studies that are used in-depth and thoroughly. This study was conducted in three PHCs in South Jakarta. The reason for choosing the location is because Jakarta is an area that has regional regulations on PWD, and the proportion of PWD is 22.1% nationally. The informants in this study were selected by purposive sampling techniques involving 15 informants who conducted in-depth interviews.

**Results:** The mandate of local regulations has not realized inclusive health services for PWD. Marked by lack of information, the absence of health services specifically even though there has been social assistance in the form of KPDJ (Jakarta Disability Card), accessibility that is not yet disability-friendly, and commitment from local governments that are lacking because there is no evaluation, especially in the health sector so that the environment is not inclusive.

**Conclusion:** Providing access to health services for PWD in South Jakarta PHC is still not inclusive. Policy evaluation is needed, considering that local regulations on PWD have been revised in 2022. Data collection on the number of PWD in the PHC work area needs to be carried out to meet their health needs.

**Keywords:** access, disability, health, inclusive, public health center

## Abstrak

**Latar Belakang:** Setiap orang telah dijamin haknya termasuk penyandang disabilitas untuk mengakses pelayanan kesehatan. Indonesia telah meratifikasi Konvensi PBB tentang Hak Penyandang Disabilitas (CRPD) melalui Undang-Undang Nomor 19 tahun 2011. Namun, faktanya mereka masih terbatas ketika mengakses layanan kesehatan.

**Tujuan:** Bertujuan untuk mengkaji pemenuhan akses kesehatan inklusif bagi penyandang disabilitas di puskesmas sebagai bentuk inklusivitas dalam pembangunan kesehatan di Jakarta.

**Metode:** Menggunakan metode kualitatif dan deskriptif dengan mengangkat studi kasus yang digunakan secara mendalam dan menyeluruh. Penelitian ini dilakukan di tiga Puskesmas di Jakarta Selatan. Alasan pemilihan lokasi tersebut karena Jakarta sebagai daerah yang memiliki peraturan daerah tentang penyandang disabilitas dan proporsi penyandang disabilitas berada di angka 22,1% secara nasional. Informan dalam penelitian ini dipilih dengan teknik purposive sampling yang melibatkan 15 informan yang dilakukan wawancara indept

**Hasil:** Pelayanan kesehatan inklusif bagi penyandang disabilitas belum terwujud sesuai dengan amanat peraturan daerah. Ditandai dengan minimnya informasi, belum adanya pelayanan kesehatan secara khusus meskipun telah ada bantuan sosial berupa KPDJ (Kartu Disabilitas Jakarta), aksesibilitas yang belum ramah disabilitas, dan komitmen dari pemerintah daerah yang kurang karena belum ada evaluasi terutama di bidang kesehatan sehingga lingkungan tidak inklusif.

**Kesimpulan:** Pemenuhan akses pelayanan kesehatan bagi penyandang disabilitas di Puskesmas Jakarta Selatan masih belum inklusif. Evaluasi kebijakan diperlukan mengingat peraturan daerah tentang penyandang disabilitas telah direvisi pada tahun 2022. Pendataan jumlah penyandang disabilitas di wilayah kerja puskesmas perlu dilakukan untuk memenuhi kebutuhan kesehatannya.

**Kata kunci:** akses, disabilitas, inklusif, kesehatan, puskesmas



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## Introduction

Health is a fundamental human right that is required for the fulfillment of all other human rights. This is the foundation for the state's responsibility as an obligation holder to see health as necessary for everyone, including persons with disabilities (PWD). The most common issues that PWD face while seeking health care are their inability to fund treatments and trouble in transportation to health facilities (Maart *et al.*, 2019). The complexities surrounding the provision of health services for PWD have been exacerbated by the ongoing pandemic. PWD face a significantly higher susceptibility to contracting COVID-19 and experiencing mortality, with a risk that is four times more compared to those without disability (Aguilar, 2017).

Based on the findings of a study by the Global Burden of Disease, it is indicated that PWD constitute 15.3% of the global population (Husain, 2022). The data pertaining to PWD in Indonesia is derived from two comprehensive surveys, namely Basic Health Research (RISKESDAS) conducted by the Ministry of Health and Nasional Socio-Economic Survey (SUSENAS) conducted by the Central Statistics Agency (BPS) (Table 1).

Table 1. Percentage of PWD in Indonesia based on *Susen* and *Riskesdas* 2018

Age Groups (year)	Person with Disabilities	
	SUSENAS 2018	RISKESDAS 2018
5 – 17	0.98%	3.3%
15 – 59	1.75%	22%
≥ 60	15.85%	22% (Mild Disability) 1.1% (Moderate Disability) 1% (Severe Disability)

The Government acknowledges the international dedication to the Sustainable Development Goals (SDGs) in ensuring inclusivity for all individuals, as evidenced by its endorsement of various agreements, including the United Nations Convention on the Rights of PWD (CRPD) through the enactment of Law Number 19 of 2011 on the Convention on the Rights of Persons

with Disabilities. Then, the Government implemented modifications to the legal framework and regulatory provisions outlined in Law No. 8 of 2016. Jakarta is a region that has implemented the Jakarta Provincial Regional Regulation Number 4 of 2022. According to the Jakarta branch of the Central Bureau of Statistics (BPS) data, the total count of PWD in 2022 amounted to 44,456 individuals. The percentage of those aged 18-59 with disability in Jakarta constitutes 22.1% of the total national figure. This numerical value serves as a representation of the population of PWD who are of productive age (18-59 years old). The Jakarta Disability Person's Card (KPDJ) program was initiated by Jakarta in 2019. The intended audience of this KPDJ comprises PWD who belong to the socioeconomically disadvantaged and are allocated a budget of Rp. 300,000 per PWD. Subsequently, in August 2023, the number of beneficiaries increased to 21,172 PWD. However, it does not cover supplementary expenses incurred while utilizing healthcare services.

After the ratification of the CRPD, the issue of 'inclusive' became massive. An essential characteristic of an inclusive urban environment is its commitment to being. The presence of infrastructure designed to accommodate PWD has the potential to enhance their skills, specifically in relation to the realization of accessing inclusive health services. According to a research conducted by Ndaumanu (2020), there were reports from families with disability stating that they had not received any efforts toward health services. This is also inconsistent with the requirements of relevant legal regulations pertaining to the comprehensive range of health services.

According to an alternative approach, the provision of health services and care for PWD should address the constraints associated with disability by considering five key dimensions: affordability, availability, accessibility, accommodation, and acceptability (Meade *et al.*, 2014). These components consist of (1) the participation of PWD, (2) the availability of disability rights services, (3) the fulfillment of accessibility, and (4) an inclusive attitude (Maftuhin, 2017).

This paper presents a comprehensive picture of access to health services that can answer the needs and rights of PWD. The complexity of the problem of inclusive health access for PWD is often only answered with social assistance. This answer cannot yet be a solution that can accommodate the needs of PWD for basic health services that are ideal for them. Problems such as lack of participation of PWD, lack of support for physical facilities in PHC, lack of PHC personnel in communicating with them, and the absence of special health programs for them often become obstacles in fulfilling the accessibility of inclusive basic health services for PWD.

### The Objectives

This study aims to provide a complete overview of the accessibility of inclusive PHC capable of meeting the healthcare needs and rights of PWD. This research is focused on examining the fulfillment of inclusive health access for PWD in basic health services as a form of inclusivity in health development in Jakarta. The final stage of this study will analyze whether local regulations have accommodated the fulfillment of their right to health.

### Method

The study was conducted in Jakarta for four months, from July to November 2021. The research was conducted at several specific healthcare facilities located in the South Jakarta region, including the Pasar Minggu District Health Center, East Pejaten Village Health Center, and Jagakarsa Village Health Center. The selection of the place that Jakarta has local regulations for PWD. The objective of this study is to elucidate the optimal provision of healthcare services for PWD. The conceptual framework is illustrated in Figure 1.

Within the conceptual framework, researchers have identified four key factors that have the potential to influence the establishment of an inclusive health service system for PWD. This study used qualitative research methods, utilizing case studies and in-depth interview of the research subject. The selection of

informants was conducted using purposive sampling approaches. The study engaged a total of 15 informants, with limitations imposed by the COVID-19 pandemic preventing the recruitment of a larger sample size. These informants are 1) The Head of PHC; 2) Health professionals, including doctors, nurses, and administrative officers; 3) The comparison of disability and its impact on the individual and their family; 4) Non-governmental Organization (NGO) observers and their role in monitoring and assessing various situations. The data collected from informants in this study have been gathered with their informed consent.



Figure 1. Concept Framework.

### Results and Discussion

#### Participation of PWD

The concept refers to the comprehensive involvement of PWD in decision-making and the implementation of policies. While Jakarta has implemented legal disability laws, its health services have not been exclusively focused on PWD. Furthermore, PHC in Jakarta including the research location, does not have data on PWD in their community. The availability of comprehensive data regarding PWD, including their names, addresses, and specific types of disabilities, will greatly assist PHC in effectively mapping out health programs for PWD. The lack of data also makes it difficult to meet their health needs. This was also acknowledged by PHC officers.

*"...there is no disability health program and there are no home visit programs. We know that they are more vulnerable but our resources are limited..."* (YH, 45 years old)

Another issue that arises is the lack of Disability Committee in Jakarta, resulting in suboptimal implementation of disability protection and rights fulfillment. The presence of the Disability Committee in Jakarta serves to facilitate the examination and monitoring of the fulfillment of rights for persons with disabilities, ensuring that no citizen of Jakarta is marginalized.

Regrettably, the durability of derivative rules pertaining to the realization of health rights is lacking up to the present day. In Jakarta, unlike the disability program in Jogjakarta, there is a lack of specialized health insurance coverage specifically tailored for PWD. According to RK, a 27 years old PWD, the process of obtaining assistance was too long.

*"... They said JKN can get crutches, but I am very difficult to get it. This is all I got from the NGO. Even though I regularly pay JKN dues, not the free ones...."* (RK, 27 years old).

Prior to the onset of the COVID-19 pandemic, individuals encountered challenges in obtaining healthcare treatments as a result of prevailing societal obstacles in their surroundings. The lack of prior focus on PWD in health programs at PHC was exacerbated during the pandemic, resulting in additional marginalization and limited access to essential healthcare services. According to the AZ, 35 years old with visual problems sought medical assistance during the COVID-19 pandemic.

*"..The situation was quite crowded. We don't know what covid is. There is no information to those of us with disabilities. Before the pandemic, there were no health activities for us, especially during the pandemic..."* (AZ, 35 years old).

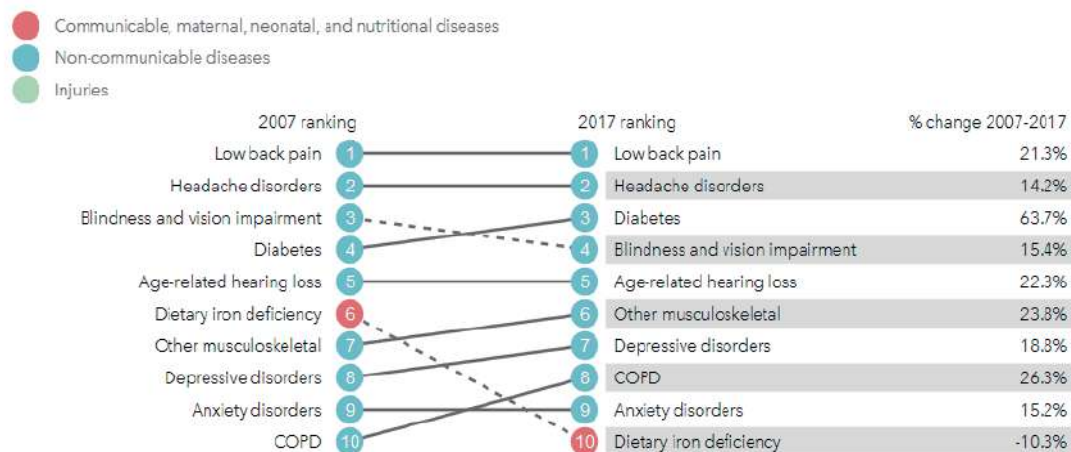
The experiences encountered by PWD throughout the COVID-19 pandemic align with the sentiments of Aguilar (2017), which highlighted that a significant number of PWD perceive a sense of exclusion and marginalization. The implementation of measures such as social or physical separation and self-isolation presents significant challenges for those who rely on external help and assistance for basic activities such as eating, dressing, and bathing.

The study's findings about participation align with (Rosdianti, 2016) assertion that an effective affirmative action strategy involves the provision of reasonable accommodations, which serve to eliminate obstacles and enable individuals to engage in their social activities. The social model of disability perceives impediments as resulting from deficiencies in public policy rather than inherent limits of individuals (Jackson *et al.*, 2020).

As indicated, the presence of inadequate infrastructure in PHC of Jakarta can be categorized as a failure in design, policy, and urban planning since it fails to ensure equitable access for those with disabilities. The collection of data by the PHC is currently deemed insignificant. The assertion that data collection is unnecessary at the PHC is an incorrect assumption. The effective integration of participation indicators for PWD to express their health-related demands has not been adequately addressed.

### Availability of Rights Services

This statement encompasses the concept of endeavors aimed at delivering services, facilities, programs, or infrastructures, which encompass the provision of social rehabilitation and social protection. Multiple research has indicated that PWD is identified as a demographic with obstacles in accessing healthcare services (Siti and Roosiermatie, 2019). Furthermore, as a result of their limited understanding and awareness regarding the articulation of their rights as members of society, these individuals experience marginalization across all domains of life.



Source: IHME (2018)

Figure 2. Changes in 10 Diseases that cause disability 2007-2017

The primary measures to address diseases involve preventive and promotive interventions. These interventions aim to mitigate the occurrence of additional functional disabilities. Figure 2 presents information regarding the alterations observed in ten disorders that contribute to disability, as reported by the Institute for Health Metrics and Evaluation (IHME, 2018).

The prevalence of diseases leading to disability has given rise to corresponding shifts in the landscape of health issues. The data pertaining to the three primary disorders that contribute to disability reveals that diabetes accounts for the highest proportion at 63.7%. The occurrence of disability in individuals is not solely attributed to sickness but can also arise from accidents and natural calamities. Below are several quotes pertaining to health programs.

*"...It must be admitted that during COVID-19, have no information. Including for vaccine, there is no such thing as home visit. Disability has been difficult to live plus COVID-19."* (VM, 54 years old).

According to the findings from the interview, the PHC has implemented a comprehensive vaccination program. It is important to acknowledge that the administration of immunizations in home care settings is not implemented. In line

with a declaration by the Ministry of Health in 2021, it is imperative to prioritize the vaccination of PWD as a preventive measure during the COVID-19 pandemic.

However, this endeavor necessitates the enhancement of vaccine-related information dissemination. PWD are at an elevated risk of contracting COVID-19 because of various factors. It is imperative to maintain a balance between preventive health service initiatives and promotive health service initiatives.

*"...in PHC, there is also no special counseling program for disability. Usually it is also one of the same counseling activities to the elderly, school children, pregnant women.."* (DA, 46 years old).

The aforementioned remark indicates the absence of information supply or promotional initiatives explicitly targeting PWD within the three PHC locations. According to a study conducted by (Propiona, JK, 2019), it has been observed that preventative and promotive interventions for PWD have not yet been widely implemented inside primary healthcare centers.

In the context of health conditions, both routine circumstances and crises such as the COVID-19 pandemic, it is of utmost significance to enhance consciousness regarding the rights of individuals and communities. Moreover, it is imperative to

guarantee that those with disabilities are accorded equitable treatment and are treated with due regard for their inherent worth and value (Schiariti, 2020). Additional research undertaken by Schuengel *et al.* (2020) further emphasizes the significance of adopting an inclusive approach in implementing sustainable measures to mitigate the spread of COVID-19 or any future pandemics.

The provision of PHC rights services ensures the availability of assistive equipment and physiotherapy to enable individuals to perform their everyday activities. The presence of physiotherapy health workers might be described as negligible. In order to access advanced health facilities, PWD are need to obtain a reference letter from the PHC. Here is a stated by PWD during the in-depth interview.

*"Disability should no longer need to go to the PHC to take care of referrals. Just come to Hospital. It's a waste of money "* (EA,39 years old)

There are Health Aids for Disability According to Article 24 of Minister of Health Regulation No.52/2016 (Table 2), the majority of PWD expressed a lack of awareness of the availability of assistive devices such as crutches or prostheses. The results of the assessment on the indicators pertaining to the provision of rights services have not been effectively implemented.

Additionally, the implementation of physical distancing measures has proven difficult for PWD. The lack of proficiency in sign language or physiotherapy among healthcare professionals further exacerbates the challenges associated with the accessibility to rights services. There is discrimination against PWD in terms of their access to health services.

In the context of community and non-governmental organization (NGO), the establishment of their presence within the PHC environment has not yet been realized. In relation to indicators pertaining to assistive equipment for PWD, it is

noteworthy that excessive waiting times and the limited price coverage by the National Health Insurance Scheme (JKN) are also prevalent concerns. A further discovery suggests that the implementation of tiered referrals for those with a disability is unnecessary, as they can be directed to healthcare facilities without intermediaries.

Respondents with disabilities expressed a need for enhanced accessibility and inclusivity in the physical infrastructure of PHC, highlighting the necessity for improvements in disability-friendly facilities to their health service requirements.

### Economic Aspects

PWD who have economic disadvantages encounter challenges in generating sufficient cash to cover their healthcare expenses. The restricted availability of healthcare services resulting from the limited mobility of individuals with disabilities hinders their capacity to access and utilize healthcare facilities.

According to Susenas 2020, PWD in Jakarta have additional monthly expenditure of Rp.264,125. The supplementary expenses in Jakarta are the most elevated in Indonesia. The findings of (Yulaswati *et al.*, 2021) align, indicating that households with disabilities have an average out-of-pocket health expenditure that exceeds the national average of Rp.150,947. In relation to the preceding table pertaining to assistive devices, as an illustration, it is worth noting that adaptable wheelchair aids are characterized by a high cost. Certain items are required to be imported and are subject to customs entry fees due to their classification as luxury goods.

### Physical Access

The significance of accessibility for PWD cannot be overstated, as it is imperative to have facilities that can adequately accommodate their specific requirements. The provision of accessible facilities enables those with impairments to effectively engage in their mobility. According to (Dahlan and Anggoro, 2021), the lack of available public amenities leads to the marginalization of PWD.

Table 2. Health Aids for Disability According to Article 24 of Minister of Health Regulation No.52/2016

Medical	Rate (IDR)	Conditions
Glasses	PBI-Institutional/ Government Aid Beneficiaries Class 3 Care Rights: IDR 150,000 Class 2 Care Rights: IDR 200,000 Class 1 Care Rights: IDR 300,000	Given at the earliest every two years Minimum Medical Indications: spherical 0,50 and astigmatism 0,250 Given at the earliest once every 5 years on medical indication
Hearing Aids	Maximum IDR 1,000,000	The Gesture of the moving device is Prosthetic leg, and a prostetic hand
Motion tools Protheses	Maximum IDR 2,500,000	Given as early as once every 5 years on medical indications
Stretched Teeth	Maximum IDR 1,000,000	Given as early as once every 2 years on indication Medical for the same teeth Full Dental prosthesis maximum IDR 1.000.000 Each jaw is a maximum of IDR 500,000
Spinal girdle	Maximum IDR 350,000	Given at the earliest once every 2 years on medical indications
Collarneck	Maximum IDR 150,000	Given at the earliest once every 2 years on medical indications
Crutch	Maximum IDR 150,000	Given at the earliest once every 5 years on medical indications

Subsequently, the aforementioned policy was supplemented by a more practical directive in the shape of Regulation of the Minister of Public Works Number 29/PRT/M/2006. These provisions encompass various elements, including parking areas, pedestrian lanes with guiding blocks, clear signage, accommodating toilets with handrails, spacious elevators equipped with buttons for individuals with visual impairments, building furniture, and essential equipment and tools such as alarms, emergency buttons, and lighting. Additionally, entrances and ramps are required to have

a specific slope to replace steps (Irwanto and Thohari, 2017).

Regrettably, the implementation of these regulations has not been extended to PHC facilities. It was observed that the three PHCs did not comply with disability-friendly facilities. The availability of modern physical infrastructure is restricted to the inclusion of ramps and railings, which is also a recent addition at the Pasar Minggu District Health Center. The installation of handrails at specific locations within PHC proves to be highly beneficial in facilitating the accessibility to health facilities for those with disabilities. Ramps and handrails are present in front of the entrance of the Pasar

Minggu District Health Center. No additional physical accessibility features catering to those with disabilities were identified. Currently, the presence of the PHC is non-existent due to the dismantling of its infrastructure. Based on the data, it may be inferred that the state of the remaining two PHCs is characterized by a higher degree of dehumanization toward PWD. The two health centers lack physical accessibility. The study's findings revealed a lack of essential amenities, including ramps, handrails, and wide toilet doors, within the PHC. Consequently, individuals using wheelchairs encounter difficulties accessing these facilities. Additionally, the absence of disabled parking spaces and guide blocks further exacerbates the accessibility challenges faced by PWD. In the case of individuals who are deaf, the number shown by the calling machine is not visible in PHC. The physical infrastructure of the PHC building is characterized by its unwelcoming ambiance, comprising two distinct levels. The upper floors of the facility are specifically designated to cater to the healthcare needs of marginalized and disadvantaged populations.

*".. the facilities at PHC are not suitable for disability. That's why PWD who come to the PHC are very rare. Most of his family only takes care of referral letters.."*(EA, 39 years old)

The next stage that needs to be done is procuring accessible physical facilities for PWD, such as guiding blocks, ramps, running text, disability toilets, and parking areas. However, whether in a modern urban area, an inclusive-claimed city and a human rights city, all city residents have access to quality health services. Health service disparities also occur in urban areas that, in this study site, still bear the status of the national capital.

### Inclusive Attitude

The inclusive approach is characterized by its non-discriminatory nature and ability to provide fulfillment and protection. The lack of inclusivity PHC in Jakarta is evident through the absence of physical accessibility amenities. The use of

a community-based rehabilitation method has the potential to foster inclusive attitudes towards disability. Social workers engage in collaborative efforts and interpersonal interactions with PWD.

*"...We actually also realize that our health services for PWD are far from perfect. Starting from buildings that are not feasible, our health workers who do not have sign language competence and no physiotherapy..."*(IS, 40 years old)

Moreover, based on the study's findings, the aspirations for an inclusive environment have not been effectively fulfilled, both by the Jakarta government officials and the community.

### Study Limitation

The present investigation was carried out during the initial stages of the COVID-19 epidemic, coinciding with the implementation of societal restrictions. The scope of the study has been restricted to South Jakarta, thereby excluding other regions within Jakarta. It is imperative for the long-term viability of this study to possess comprehensive knowledge and serve as a valuable resource for policymakers.

### Conclusion

Based on the findings and subsequent analysis, it can be inferred that the adequate provision of comprehensive healthcare services for PWD has not been effectively implemented in compliance with local regulations. PWD possess an equal entitlement to avail themselves of comprehensive healthcare services at PHC, ensuring inclusivity. Based on the empirical evidence, it can be deduced that the adequacy of fulfilling the right to health is lacking, both in the pre-pandemic era and during the ongoing COVID-19 crisis. One of the defining features of this phenomenon is the limited availability of health information and services for PWD.

Additionally, it is marked by a lack of accessibility to such resources. The effectiveness of local governments and

authorities in the health sector, with regard to safeguarding and ensuring the realization of the right to health, has been suboptimal. This can be attributed, in part, to a limited understanding of the imperative nature of prioritizing the well-being of those with disabilities as an integral component of the Jakarta populace. In order to surmount these challenges, a number of suggestions might be proposed to the province administration of Jakarta.

### Suggestions

The accessibility of data pertaining to PWD will give insight into the prevalence of PWD and their unique situations and facilitate the elimination of obstacles. Based on the available statistics, the PHC can effectively implement health promotion initiatives.

Policies promoting inclusivity in healthcare. The provision of health services to PWD necessitates the utilization of an established healthcare system that is tailored to accommodate the specific needs associated with their respective disabilities. It is imperative to construct additional PHC facilities that adhere to standardized designs, ensuring accessibility for individuals with a disability. The incorporation of inclusive health care plays a significant role in endeavors to enhance health outcomes, encompassing the expansion of accessibility and alleviation of financial burdens associated with preventative, promotive, curative, and rehabilitative components. Researchers have indicated that PWD require specialized health insurance, particularly with regard to assistive devices.

Hence, it is imperative for the Jakarta government to exert ongoing endeavors in order to establish a city that is both accommodating and accessible for PWD. Maximizing the involvement of the respective actors throughout the implementation stage is crucial. It is imperative to conduct socialization efforts among policymakers to address the issue of accessibility in inclusive urban development.

### Abbreviations

PWD: Persons with Disabilities; CRPD: Convention on The Rights of Persons with Disabilities; (KPDJ): Jakarta PWD-Card; BDT: Unified Database; *Nasional Sosio-Economic Survey (SUSENAS)*: Socio-Economic Survey; Basic Health Research (*RISKESDAS*); Public Health Center (PHC).

### Declarations

#### Ethics Approval and Consent to Participate

The database was purged of all respondent identities. The participants in this study have provided written agreement to partake in the research and have been approved by the Institutional Review Board of the Indonesian Institute of Sciences (IPSK-LIPI) to ensure ethical considerations are met.

#### Conflict of Interest

The authors assert that there are no significant financial, professional, or personal conflicts of interest that could potentially impact the findings of the study.

#### Availability of Data and Materials

Secondary data on PWD can be found in the *Susenas and Riskesdas* datasets.

#### Authors' Contribution

JKP develops, creates, analyzes the study's concept, and evaluates the manuscript.

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## References

- Aguilar, C.D. (2017) 'Social protection and persons with disabilities', *International Social Security Review*, 70(4), pp. 45–65. Available at: <https://doi.org/10.1111/issr.12152>.
- Dahlan, M. and Anggoro, S.A. (2021) 'Hak atas Pekerjaan bagi Penyandang Disabilitas di Sektor Publik: Antara Model Disabilitas Sosial dan Medis', *Undang: Jurnal Hukum*, 4(1), pp. 1–48. Available at: <https://doi.org/10.22437/ujh.4.1.1-48>.
- Husain, Muh.N. *et al.* (2022) 'Kegiatan Trauma Healing Anak Yatim dan Disabilitas bagi Korban Covid-19 di Kabupaten Bombana', *Indonesian Journal of Community Services*, 1(2), pp. 108–113. Available at: <https://doi.org/10.47540/ijcs.v1i2.699>
- IHME (2018) *Findings from the Global Burden of Disease Study 2017*. Seattle: Institute for Health Metrics and Evaluation. Available at: [https://www.healthdata.org/sites/default/files/files/policy\\_report/2019/GBD\\_2017\\_Booklet.pdf](https://www.healthdata.org/sites/default/files/files/policy_report/2019/GBD_2017_Booklet.pdf).
- Irwanto and Tohari, S. (2017) 'Understanding National Implementation of the CRPD in Indonesia', in D.L. Cogburn and T.K. Reuter (eds) *Making disability rights real in Southeast Asia: implementing the UN Convention on the rights of persons with disabilities in ASEAN*. Lanham Boulder New York London: Lexington Books.
- Jackson, J. *et al.* (2020) 'COVID-19: The regional impact of COVID-19 on the certification of vision impairment in Northern Ireland', *Ophthalmic and Physiological Optics*, 41(1), pp. 136–143. Available at: <https://doi.org/10.1111/opo.12757>.
- Maart, S., Amosun, S. and Jelsma, J. (2019) 'Disability prevalence-context matters: A descriptive community-based survey', *African Journal of Disability*, 8. Available at: <https://doi.org/10.4102/ajod.v8i0.512>
- Maftuhin, A. (2017) 'Mendefinisikan Kota Inklusif: Asal-Usul, Teori Dan Indikator', *Tataloka*, 19(2), p. 93. Available at: <https://doi.org/10.14710/tataloka.19.2.93>.
- Meade, M.A., Mahmoudi, E. and Lee, S.-Y. (2014) 'The intersection of disability and healthcare disparities: a conceptual framework', *Disability and Rehabilitation*, 37(7), pp. 632–641. Available at: <https://doi.org/10.3109/09638288.2014.938176>.
- Ndaumanu, F. (2020) 'Hak Penyandang Disabilitas: Antara Tanggung Jawab dan Pelaksanaan oleh Pemerintah Daerah', *Jurnal HAM*, 11(1), p. 131. Available at: <https://doi.org/10.30641/ham.2020.11.131-150>.
- Propiona, J.K. (2021) 'Implementasi Aksesibilitas Fasilitas Publik Bagi Penyandang Disabilitas', *Jurnal Analisa Sosiologi*, 10. Available at: <https://doi.org/10.20961/jas.v10i0.47635>.
- Rosdianti, Y. (2016) 'Understanding Positive Measures in an Equality Framework on the Ground of Disability', *Jurnal Masyarakat dan Budaya*, 18(2), pp. 136–153. Available at: <https://doi.org/10.14203/jmb.v18i2.417>.
- Schiariti, V. (2020) 'The human rights of children with disabilities during health emergencies: the challenge of COVID-19', *Developmental Medicine & Child Neurology*, 62(6), pp. 661–661. Available at: <https://doi.org/10.1111/dmcn.14526>.
- Schuengel, C. *et al.* (2020) 'Impact of the initial response to COVID-19 on long-term care for people with intellectual disability: an interrupted time series analysis of incident reports', *Journal of Intellectual Disability Research*, 64(11), pp. 817–824. Available at: <https://doi.org/10.1111/jir.12778>.
- Siti, I. and Roosierhermatie, B. (2019) 'Meningkatnya Risiko Disabilitas Pada Penduduk Dengan Penyakit Tidak Menular: Analisa Lanjut Risesdas 2013', *Buletin Penelitian Sistem Kesehatan*, 21(4). Available at: <https://doi.org/10.24060/bpsk.v21i4.1901>.

<https://doi.org/10.22435/hsr.v21i4.22>

1.

Yulaswati, V. *et al.* (2021) Tinjauan Peningkatan Akses dan Taraf Hidup Penyandang Disabilitas Indonesia : Aspek Sosioekonomi dan Yuridis. Jakarta: Staf Ahli Menteri Bidang Sosial dan Penanggulangan Kemiskinan, Kementerian PPN/Bappenas. Available at: <https://perpustakaan.bappenas.go.id>

# VACCINATION ATTITUDE AMONG HEALTHCARE WORKERS AT THE EARLY PHASE OF COVID-19 IN MALAYSIA

*Sikap Tenaga Kesehatan Terhadap Vaksinasi Pada Fase Awal COVID-19 di Malaysia*

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## Abstract

**Background:** Healthcare workers' (HCWs) vaccination hesitancy during a pandemic can be problematic for the health system as these workers need to be fully vaccinated.

**Aims:** This study aimed to determine the level of attitude vaccine hesitancy and its associated factors among HCW at the beginning of the COVID-19 pandemic.

**Methods:** A cross-sectional study was conducted among randomly selected HCWs of a tertiary hospital in the state of Selangor, Malaysia, using an online questionnaire. The questions were designed to collect information on HCWs' sociodemographic and health status, and attitude towards vaccination. Higher scores for the four scales on attitude towards vaccination denote a higher level of vaccine hesitancy.

**Results:** Of the 380 respondents (98% response rate), the overall score depicted low vaccine hesitancy despite the scores being slightly higher on worrying over unforeseen future effects, and concerns about commercial profiteering. Women demonstrated a lower preference for natural immunity compared to men.

**Conclusion:** In the context of this study, vaccine hesitancy among HCWs was low, which indicate good attitude towards vaccine. However, concerns on unforeseen future effects and commercial profiteering need to be addressed; and health education and promotion activities on the male workers in terms of preference for natural immunity need to be enhanced.

**Keywords:** attitude, COVID-19, healthcare workers, vaccine hesitancy

## Abstrak

**Latar Belakang:** Keraguan terhadap vaksin oleh petugas kesehatan (HCW) selama pandemi dapat menjadi masalah bagi sistem kesehatan karena petugas tersebut perlu divaksinasi secara lengkap.

**Tujuan:** Penelitian ini bertujuan untuk mengetahui tingkat sikap keragu-raguan vaksin dan faktor-faktor terkaitnya pada petugas kesehatan saat awal pandemi COVID-19.

**Metode:** Sebuah studi cross-sectional dilakukan pada petugas kesehatan yang dipilih secara acak dari sebuah rumah sakit tersier di negara bagian Selangor, Malaysia. Pengambilan data menggunakan kuesioner online. Pertanyaannya adalah tentang karakteristik sosiodemografi dan status kesehatan saat ini pada empat subskala tentang sikap terhadap vaksinasi dengan skor skala yang lebih tinggi menunjukkan tingkat keragu-raguan vaksin yang lebih tinggi.

**Hasil:** Dari 380 responden (tingkat respons 98%), nilai keseluruhan menunjukkan keragu-raguan vaksin yang rendah, meskipun nilainya sedikit lebih tinggi karena mengkhawatirkan efek masa depan yang tidak terduga, dan kekhawatiran tentang keuntungan komersial. Perempuan memiliki preferensi kekebalan alami yang lebih rendah dibandingkan dengan laki-laki.

**Kesimpulan:** Dalam konteks penelitian ini, keragu-raguan vaksin di kalangan petugas kesehatan rendah, mengindikasikan sikap yang baik terhadap vaksin. Namun, kekhawatiran tentang efek masa depan yang tak terduga dan keuntungan komersial perlu penanganan yang lebih, selain meningkatkan pendidikan kesehatan dan kegiatan promosi pada pekerja laki-laki dalam hal preferensi untuk kekebalan alami.

**Kata kunci:** COVID-19, keragu-raguan vaksin, petugas kesehatan, sikap



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## Introduction

One of the strategies in curbing the COVID-19 pandemic was vaccination against the SARS CoV-2 virus. However, during the initial stages of COVID-19 vaccine distribution, there were reports of some HCWs expressing hesitancy towards getting vaccinated. A review article found that in 2020, 22.51% out of 76,471 HCWs worldwide reported COVID-19 vaccination hesitancy (Biswas *et al.*, 2021). Across several systematic reviews, the acceptance rates of vaccines among HCWs were observed to fluctuate between 27.7% and 78.1%, with the primary concerns centered around safety issues and potential side effects (Sallam, 2021).

Certain vaccine-related concerns (safety and effectiveness), the need for additional data or knowledge, anti-vaccine sentiments, and a lack of institutional trust are some of the drivers of vaccine reluctance (Wallace, 2020). In addition, factors such as the rapid development of the vaccines, concerns about potential side effects, and the novelty of the disease contributed to COVID-19 vaccine hesitancy (Pogue *et al.*, 2020).

Negative attitudes among HCWs can lead to lower vaccination coverage within the healthcare workforce itself. This not only puts individual HCWs at risk but also hinders the creation of a resilient and protected healthcare environment. Moreover, unvaccinated HCWs may serve as vectors for the transmission of infectious diseases, potentially exposing vulnerable patients to preventable illnesses.

Studies depict that recommendations by healthcare providers are associated with lower odds for COVID-19 vaccination hesitancy (Fu *et al.*, 2022; Verger *et al.*, 2021; Desveaux *et al.*, 2021). Nevertheless, if HCWs continue to remain hesitant towards this important preventive measure, it is unlikely that they would recommend these vaccines to the general public and ensure mass vaccinations with the available COVID-19 vaccines. Negative attitudes toward vaccination among HCWs can erode public trust in vaccines and the healthcare system more broadly, leading to

decreased vaccine uptake in the community.

In Malaysia, COVID-19 vaccination was provided free of charge to citizens and non-citizens beginning February 2021, and government aimed to inoculate at least 80% of Malaysia's population by the following year.

Given the novelty of the pandemic, guidelines for Malaysia's COVID-19 immunization program were developed at the early stages of the pandemic with the available data at that time, and the initial strategy of the National COVID-19 Immunization Program was to vaccinate frontliners, especially in the healthcare industry.

Between February and April of 2021, 500,000 persons were the focus of the first immunization phase. This phase was centered on two key groups of frontliners: Group 1 consisted of frontliners from the public and private healthcare sectors, whereas Group 2 consisted of frontliners from critical services, defense, and security.

As HCWs are at increased risk of exposure due to the nature of their work, and therefore achieving high vaccination rates in this group is critical. They are also the most trusted advisors; improving knowledge and confidence in vaccines have been shown to increase willingness to recommend vaccines and influence their patient's decision. Thus, understanding vaccine acceptance and hesitancy among HCW is necessary.

The objective of this study was to determine the attitude on vaccine hesitancy among HCWs of a tertiary hospital in Malaysia at the early phase of a pandemic and determine the associated factors.

## Method

This was a cross-sectional study, conducted in a 400-bedded tertiary level hospital located in a highly populated district in the state of Selangor. The hospital consists of about 1,500 HCWs who were eligible for the vaccine against COVID-19 in the first phase of the National COVID-19 Immunization Program.

The study population was all HCWs employed in this hospital during the data collection period. The sampling frame comprised the HCW names obtained from the hospital administration.

Simple random sampling technique was used based on random number generator. The required sample size was calculated using OpenEpi software version 3.0. The assumed proportion of HCWs with COVID-19 vaccine hesitancy was set at 50%, considering the absence of available literature on this specific population at the time the study was conducted. The minimum sample size was 384, with a 95% confidence interval and an absolute precision of 5%. To account for potential non-response rate of 40%, the final sample size was adjusted to 615 (De Koning *et al.*, 2021). All clinical and non-clinical staff members of the hospital were eligible respondents, while medical students and staff members who were on leave during the study period were excluded.

Respondents were contacted via email, as there were restrictions for physical interaction. The use of online questionnaire was preferred as it was conveniently accessible even via their mobile phones, anywhere and at any time of the day. Upon the HCW's voluntary consent to participate in the study, a hyperlink in the e-mail provided access to the online Information and Consent Form (ICF). Following the participant's affirmative consent, the individual progressed to completing the questionnaire. Subsequently, participant responses were securely stored in the researcher's cloud-based storage system. Ample time of two weeks was given to the respondents to answer the questions, after which gentle reminders were sent for them to complete the questionnaire.

The questionnaire consisted of questions on sociodemographic characteristics, as well as attitude (vaccine hesitancy) towards COVID-19 vaccination. The questions on attitude towards vaccination were adapted from Vaccination Attitudes Examination (VAX) Scale (Martin and Petrie, 2017) At the time of writing, the VAX Scale had been cited by 140 different publications according to Google Scholar

and had been translated into several languages (Huza, 2020; Yildiz, Gungormus and Dayapoglu, 2021; Bruno *et al.*, 2022). The VAX Scale has four subscales, with three items for each. The first subscale is "Mistrust of Vaccine Benefit", the second is "Worries about Unforeseen Future Effects", the third is "Concerns about Commercial Profiteering", and the fourth is "Preference for Natural Immunity". Each of the item in this VAX Scale is assessed using a 5-point Likert-like scale (1) = strongly disagree and (5) = strongly agree. Scale and subscale scores are created by averaging the relevant. Higher scores indicate stronger anti-vaccination attitudes (Espejo, Checa, Martín-Carbonell, 2022; Martin and Petrie, 2017).

The initial version of the questionnaire was in English and was subjected to back-to-back translation into Bahasa Malaysia by local language experts. Face validity was conducted among postgraduate medical students, while subject matter experts (Public Health) performed content validity. The reliability of the questionnaire was also evaluated in the form of internal consistency, among postgraduate medical students, and HCWs of two private hospitals. Cronbach alpha value was 0.7, after minor corrections were made based on the face validity assessment and pre-testing the questionnaire.

All relevant data were analysed using computer software Statistical Package for Social Sciences (SPSS) version 27. Independent t-test was used to compare between two means, while one-way Analysis of Variance (One-way ANOVA) was used to compare means between more than two means of normally distributed data. Kruskal-Wallis test was employed to compare means when the data was not normally distributed. Linear regression was conducted to determine the predictors of vaccine hesitancy.

This study was part of a larger study funded by the Ministry of Higher Education Malaysia's research grant (Fundamental Research Grant Scheme (FRGS) entitled *The Determination of Knowledge, Attitude and Practice (KAP), Genetic Factors Using Transcriptomics Analysis and Potential Use*

of Pre-Corneal Tear Film as the Non-Invasive Screening Method”.

## Result and Discussion

Of the 700 questionnaires distributed via email, a total of 380 completed questionnaires were returned (98% of minimum sample size required)

As shown in Table 1, the majority of the respondents were in the younger age groups, where 189 (49.7%) were aged between 30 and 39 years, followed by 140 (36%) of them aged 20-29 years, with the median age being 31 years (IQR 7, range 21-58 years old). Most of them were females (76.1%), Malay ethnicity (90.5%), and had education level higher than high school (92.9%) and worked in the clinical service at the hospital (69.7%). In terms of health status, 87.1% had not suffered from COVID-19 and 79.7% did not have any underlying chronic diseases.

As shown in Table 2., the overall vaccine hesitancy score based on the VAX scale was normally distributed (skewness 0.432, kurtosis 0.354) and the mean score was 2.73 (SD 0.626).

The distribution of scores for the subscale “mistrust of vaccine benefit” and “concerns about commercial profiteering” were skewed, hence the results are reported as median (IQR) as shown in

Table 2. Meanwhile, the scores for the subscales, “worries over unforeseen future effect” and “preference for natural immunity” were normally distributed, hence reported as mean (SD).

The average scores for subscales 2 and 3 were either equal to or greater 3.0, indicating slightly higher hesitancy in these scales (worries over unforeseen future effects, concerns about commercial profiteering) compared to the remaining two. The distribution of scores for each question for each subscale is summarized in Table 2.

The factors associated with each subscale were determined. Given that the scores for subscales 1 and 3 were skewed and the dependent variables were categorical, the Kruskal-Wallis test was conducted. While for subscales 2 and 4, independent samples t-test was conducted. ANOVA was performed for the dependent variable that was normally distributed and having more than two categories of independent variables.

The results revealed that age was significantly associated with subscale 1, “mistrust of vaccine benefit”, while education level was significantly associated with subscale 4, “preference for natural immunity.” As for the other subscales and factors, there was no statistically significant association (Table 3).

Table 1. Socio-demographic distribution of the respondents (n = 380)

Socio-demographic factors		Frequency (f)	Percentage (%)
Age (years)	20-29	140	36.8
	30-39	189	49.7
	40-49	38	10.0
	≥50	13	3.4
Gender	Male	91	23.9
	Female	289	76.1
Ethnicity	Malay	344	90.5
	Chinese	11	2.9
	Indian	14	3.7
	Others	11	2.9
Highest education	Lower education (High school)	27	7.1
	Higher education (Higher than high school)	353	92.9
Occupation	Clinical	265	
	Non-clinical	12	
	Clinical Support	102	
Ever had COVID-19 infection	Yes		
	No	331	87.1
Health status	No underlying chronic disease	303	79.7
	Have underlying chronic disease	77	20.3

Table 2. Distribution of scores for each question for each subscale.

Subscale	No.	Question	1		2		3		4		5		Mean (SD)	Median (IQR)
			Strongly Disagree	n (%)	Disagree	n (%)	Neutral	n (%)	Agree	n (%)	Strongly Agree	n (%)		
(1) Mistrust of vaccine benefit	1.	By getting the COVID-19 vaccine I can protect the people who I live and work with from getting COVID-19.	258(67.9)	87(22.9)	20(5.3)	12(3.2)	3(0.8)						1.00 (1.00)	
	2.	Being fully vaccinated with the COVID-19 vaccine makes me feel safer when handling COVID-19 patients.	206(54.2)	124(32.6)	44(11.6)	5(1.3)	1(0.3)						1.00 (1.00)	
	3.	I feel more protected against COVID-19 after completing my vaccination against COVID-19	225(59.2)	115(30.3)	36(9.5)	2(0.5)	2(0.5)						1.00 (1.00)	
(2) Worries over unforeseen future effects	4.	Although the COVID-19 vaccines appear to be safe, there may be problems that we haven't discovered yet.	3(0.8)	10(2.6)	103(27.1)	133(35.9)	131(34.5)						4.00 (0.891)	
	5.	COVID-19 vaccines can cause unexpected problems in children.	0(0)	4(1.1)	14(3.7)	64(16.8)	298(78.4)						3.73 (1.007)	
(3) Concerns about commercial profiteering	6.	I worry about the unforeseen effects of the COVID-19 vaccines in the future	13(33.)	40(10.5)	128(33.7)	111(29.2)	88(23.2)						3.58 (1.081)	
	7.	COVID-19 vaccines make a lot of money for pharmaceutical companies but do not do much for regular people	62(18.3)	76(20.0)	13(35.3)	56(1.7)	52(13.7)						3.00 (2.00)	
(4) Preference for natural immunity	8.	Authorities promote vaccinations for financial gain, not for people's health	185(8.7)	88(23.2)	80(21.1)	14(3.7)	13(3.4)						2.00 (2.00)	
	9.	Vaccination programs are a big scam.	262(68.9)	74(19.5)	30(7.9)	9(2.4)	5(1.3)						1.00 (1.00)	
	10.	Natural immunity lasts longer than vaccination.	84(22.1)	83(21.8)	132(3.7)	47(12.4)	3(8.9)						2.64 (1.208)	
(4) Preference for natural immunity	11.	Natural exposure to viruses and germs gives the safest protection.	111(29.2)	92(24.2)	112(29.5)	36(9.5)	29(7.6)						2.42 (1.216)	
	12.	Being exposed to diseases naturally is safer for the immune system than being exposed through vaccination.	113(29.7)	105(27.6)	106(27.9)	33(8.7)	23(6.1)						2.34 (1.166)	

Table 3: Factors associated with vaccine hesitancy subscales.

Variable	N	Mistrust of vaccine benefit			Worries over unforeseen future effects			Concerns about commercial profiteering			Preference for natural immunity			
		Mean of Ranks	Statistic	p	t	df	p	t	Statistic	p	t	df	p	
Age (years)	< 32	215	175.43	10.454 <sup>†</sup>	0.001	0.600 <sup>§</sup>	378	0.549	185.82	0.914 <sup>†</sup>	0.339	-0.486 <sup>§</sup>	378	0.627
	≥ 32	165	210.13					195.59						
Gender	Male	91	205.30	2.436 <sup>†</sup>	0.119	0.281 <sup>§</sup>	378	0.779	193.21	0.074 <sup>†</sup>	0.786	1.850 <sup>§</sup>	378	0.065
	Female	289	185.84					189.65						
Race	Malay	344	191.05	0.381 <sup>†</sup>	0.537	1.662 <sup>§</sup>	378	0.97	191.34	0.565 <sup>†</sup>	0.452	0.952 <sup>§</sup>	378	0.175
	Non-Malay	36	179.73					176.86						
Education level	Lower	26	210.81	1.070 <sup>†</sup>	0.301	-0.699 <sup>§</sup>	378	0.485	199.08	0.173 <sup>†</sup>	0.677	2.533 <sup>§</sup>	378	0.012
	Higher	354	189.01					189.87						
Occupation	Clinical	265		0.365 <sup>†</sup>	0.694	0.282 <sup>†</sup>	0.755			1.214 <sup>†</sup>	0.298	0.955 <sup>†</sup>	0.386	
	Non-clinical	12												
Ever infected	Yes	45	200.74	0.498 <sup>†</sup>	0.480	0.072 <sup>§</sup>	378	0.943	214.34	2.448 <sup>†</sup>	0.118	-1.721 <sup>§</sup>	378	0.086
	No	335	189.12					187.30						
NCD	Has NCD	68	193.49	0.069 <sup>†</sup>	0.793	-2.430 <sup>§</sup>	378	0.016	191.50	0.007 <sup>†</sup>	0.933	0.551 <sup>§</sup>	378	0.582
	No NCD	312	189.85					190.28						

Note: † = Kruskal-Wallis; ‡ = One way ANOVA; § = Independent t-test



Linear regression was conducted for the overall VAX scale and each of the subscales. All regression models are not statistically significant except for subscale 4 (Preference for natural immunity;  $R^2=0.039$ ,  $F(7, 370) = 2.172$ ,  $p=0.03$ ). In the model for subscale 4, the model estimates were as follows for female gender ( $B = -10$ ,  $p < 0.05$ ). In other words, a statistically significant negative relationship was observed between being women (compared to men) and the preference for natural immunity.

## Discussion

This study aimed to determine the level of vaccination hesitancy towards COVID-19 vaccine among HCWs at a hospital in Malaysia. Using the VAX scale, the overall vaccination hesitancy level among the study population was low, which is consistent with other studies (Nomhwange *et al.*, 2022). The subscales of the VAX scale had slightly higher scores, thereby reflecting higher hesitancy in terms of worrying over unforeseen future effects, and concerns about commercial profiteering. However, these results were not statistically significant.

Worry about unforeseen future consequences is understandable given that the COVID-19 vaccine is a novel vaccination with no prior information on its efficacy or potential risks based on global and actual data. Similar findings were reported in many countries worldwide (Rezaeipour, 2021, Phillips *et al.*, 2022, Taylor *et al.*, 2020). Although the vaccines have undergone stage 4 clinical trial prior to being approved for use, the long-term effects of the vaccines were unknown.

Concerns about commercial profiteering is also an understandable as demonstrated in several other studies (Gallant *et al.*, 2021, Zimmerman *et al.*, 2023). This was due to the possibility that vaccine producers might raise prices as a result of the increasing demand and limited availability of the vaccines. The fear of corporate profiting has also been linked to conspiracy theories, such as claiming that COVID-19 was invented so that vaccine producers could produce large quantities of the vaccine and sell them for a profit.

The regression analyses depicted that none of the models were statistically significant except for subscale 4 (Preference for natural immunity). In the model for subscale 4, gender (being female) recorded a negative value. This suggested that women, on average, have a lower preference for natural immunity compared to men. In the context of this study, it was not clear why this is so.

However, other studies found that as a general trend, women often demonstrate a proactive approach in seeking healthcare services and engaging in preventive measures (Lim, Lim, Tong, Sivasampu, 2019). In a multicounty study conducted by prominent researchers, it was determined that women exhibit a higher likelihood of perceiving COVID-19 as a highly serious health issue. Additionally, they are more inclined to support and adhere to restrictive public policy measures compared to men. (Todorovic and Verheyden, 2022). Nonetheless, other studies have shown mixed results with regards to vaccination and gender (Nassiri-Ansari *et al.*, 2022,) Zintel *et al.*, 2022).

Several factors could have contributed to this low vaccine hesitancy among healthcare workers. For example, HCWs often have access to accurate and up-to-date information about vaccines and their benefits. Once they receive reliable information, their concerns may be alleviated, leading them to opt for vaccination. Secondly, HCWs have a responsibility to protect themselves, their patients, and the community from preventable diseases. As they gain a better understanding of the potential consequences of not being vaccinated, they may choose to prioritize public health and get vaccinated. Third, colleagues and peers who are vaccinated can have a positive influence on those who are hesitant. Seeing others in the healthcare field getting vaccinated can help dispel myths and misconceptions (Toth-Manikowski *et al.*, 2022). Fourth, strong leadership from healthcare institutions and organizations can encourage HCWs to get vaccinated. Institutions often implement policies or campaigns that promote vaccination among their staff (Elliott *et al.*,

2022). In addition, the perceived risks of vaccination might be initially overestimated. As more information becomes available and the actual risks of vaccination are put into context, individuals may adjust their risk perceptions. Additionally, HCWs who witness outbreaks of vaccine-preventable diseases in their workplaces or communities can have a firsthand understanding of the importance of vaccination in preventing such outbreaks (Rief, 2021).

Nonetheless, this study has some limitations. The sample was taken at the early stage of the pandemic. Information about COVID-19 was rapidly evolving, and healthcare guidelines were frequently updated. Hence, the findings are limited to this time period. As attitude towards vaccines have been shown to change over time, ideally repeated studies should be done to better observe the evolution of this attitude throughout the course of the pandemic. Secondly, the variables included in this study were limited to basic sociodemography and health status. These limitations may impact the generalizability of the findings.

Longitudinal studies with repeated observation of the same groups to analyze changes on the attitude towards vaccines over time, is recommended in the case of future novel pandemics. Researchers should also explore cultural and religious factors relating to negative attitudes towards new vaccines.

Nevertheless, although our study focused on the early phase of the COVID-19 pandemic, the novelty lies in capturing the initial sentiments and factors influencing vaccine hesitancy among healthcare workers in a tertiary hospital at a crucial time, when vaccination campaigns were just beginning.

## Conclusion

In conclusion, this study revealed that vaccine hesitancy among HCWs at a tertiary hospital in Malaysia was in general low, indicating good attitude and high acceptance of the vaccine, and women have a lower preference for natural immunity compared to men. Concerns on

unforeseen future effects and commercial profiteering need to be addressed; and health education and promotion activities on the male workers in terms of preference for natural immunity need to be enhanced.

## Abbreviations

ICF: Information and Consent Form;  
VAX: Vaccination Attitudes Examination;  
SPSS: Statistical Package for Social Sciences; KAP: Knowledge, Attitude and Practice; HCWs: Health Care Workers; MOHE : Ministry of Higher Education; FRGS: Malaysia's Fundamental Research Grant Scheme;

## Declarations

### Ethics Approval and Consent Participant

Ethical approvals were obtained from the Ethics Committee for Research Involving Human Subject (JKEUPM-2021-197), from the university where the researchers are affiliated and the hospital where the study was conducted (UPM/HPUPM/800-8 PENYELIDIKAN KLINIKAL). Informed consent was obtained from the HCWs who were invited to participate in this study. No personal identifying information were collected. All data will be disposed of according to current guidelines.

### Conflict of Interest

The authors declare there is no conflict of interest in this study.

### Availability of Data and Materials

Contact the researchers. Data and material research can be provided upon request.

### Authors' Contribution

Handling manuscript and data collection: AM, LAA, NMT, CYQ, and MA. Review and improvement: MMI and AM. All authors participated in the manuscript's preparation and agreed on the final version.

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## References:

- Biswas, N. *et al.* (2021) 'The Nature and Extent of COVID-19 Vaccination Hesitancy in Healthcare Workers', *Journal of Community Health*, 46(6), pp. 1244–1251. Available at: <https://doi.org/10.1007/s10900-021-00984-3>.
- Bruno, F. *et al.* (2023) 'Validation and psychometric properties of the Italian Vaccination Attitudes Examination (VAX-I) scale', *Current Psychology*, 42(25), pp. 21287–21297. Available at: <https://doi.org/10.1007/s12144-022-03209-5>.
- De Koning, R. *et al.* (2021) 'Survey Fatigue During the COVID-19 Pandemic: An Analysis of Neurosurgery Survey Response Rates', *Frontiers in Surgery*, 8, p. 690680. Available at: <https://doi.org/10.3389/fsurg.2021.690680>.
- Desveaux, L. *et al.* (2021) *Beliefs associated with Intentions of Non-Physician Healthcare Workers to Receive the COVID-19 Vaccine in Ontario, Canada*. preprint. *Infectious Diseases (except HIV/AIDS)*. Available at: <https://doi.org/10.1101/2021.02.19.21251936>.
- Elliott, T. *et al.* (2022) 'Enhanced immune responses following heterologous vaccination with self-amplifying RNA and mRNA COVID-19 vaccines', *PLOS Pathogens*. Edited by S.-R. Shih, 18(10), p. e1010885. Available at: <https://doi.org/10.1371/journal.ppat.1010885>.
- Espejo, B., Checa, I. and Martín-Carbonell, M. (2022) 'Psychometric properties and measurement invariance of the Vaccination Attitudes Examination Scale (VAX) in a Spanish sample', *BMC Psychology*, 10(1), p. 221. Available at: <https://doi.org/10.1186/s40359-022-00929-y>.
- Fu, C. *et al.* (2020) *Acceptance of and preference for COVID-19 vaccination in healthcare workers: a comparative analysis and discrete choice experiment*. preprint. *Public and Global Health*. Available at: <https://doi.org/10.1101/2020.04.09.20060103>.
- Gallant, A.J. *et al.* (2021) 'Changes in attitudes to vaccination as a result of the COVID-19 pandemic: A longitudinal study of older adults in the UK', *PLOS ONE*. Edited by A. Gesser-Edelsburg, 16(12), p. e0261844. Available at: <https://doi.org/10.1371/journal.pone.0261844>.
- Huza, G. (2020) 'The Psychometric Properties of a Romanian Version of the Vaccination Attitudes Examination (VAX) Scale', *International Journal of HIV/AIDS Prevention, Education and Behavioural Science*, 6(1), p. 25. Available at: <https://doi.org/10.11648/j.ijhpebs.20200601.14>.
- Lim, M.T. *et al.* (2019) 'Age, sex and primary care setting differences in patients' perception of community healthcare seeking behaviour towards health services', *PLoS ONE*, 14(10), p. e0224260. Available at: <https://doi.org/10.1371/journal.pone.0224260>.
- Martin, L.R. and Petrie, K.J. (2017) 'Understanding the Dimensions of Anti-Vaccination Attitudes: the Vaccination Attitudes Examination (VAX) Scale', *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine*, 51(5), pp. 652–660. Available at: <https://doi.org/10.1007/s12160-017-9888-y>.
- Nassiri-Ansari, T. *et al.* (2022) 'Shifting gender barriers in immunisation in the COVID-19 pandemic response and beyond', *The Lancet*, 400(10345), p. 24. Available at:

- [https://doi.org/10.1016/S0140-6736\(22\)01189-8](https://doi.org/10.1016/S0140-6736(22)01189-8).
- Nomhwange, T. *et al.* (2022) 'COVID-19 vaccine hesitancy amongst healthcare workers: An assessment of its magnitude and determinants during the initial phase of national vaccine deployment in Nigeria', *eClinicalMedicine*, 50, p. 101499. Available at: <https://doi.org/10.1016/j.eclinm.2022.101499>.
- Phillips, R. *et al.* (2022) 'Perceived threat of COVID -19, attitudes towards vaccination, and vaccine hesitancy: A prospective longitudinal study in the UK', *British Journal of Health Psychology*, 27(4), pp. 1354–1381. Available at: <https://doi.org/10.1111/bjhp.12606>.
- Pogue, K. *et al.* (2020) 'Influences on Attitudes Regarding Potential COVID-19 Vaccination in the United States', *Vaccines*, 8(4), p. 582. Available at: <https://doi.org/10.3390/vaccines8040582>.
- Rezaeipour, M. (2021) 'Rejection of vaccination against the COVID-19 virus will increase morbidity and mortality', *International Journal of Endocrinology: Diabetes and Metabolism*, 1(1), pp. 1–2. Available at: <https://doi.org/10.55124/ijde.v1i1.134>.
- Rief, W. (2021) 'Fear of Adverse Effects and COVID-19 Vaccine Hesitancy: Recommendations of the Treatment Expectation Expert Group', *JAMA Health Forum*, 2(4), p. e210804. Available at: <https://doi.org/10.1001/jamahealthforum.2021.0804>.
- Sallam, M. (2021) 'COVID-19 Vaccine Hesitancy Worldwide: A Concise Systematic Review of Vaccine Acceptance Rates', *Vaccines*, 9(2), p. 160. Available at: <https://doi.org/10.3390/vaccines9020160>.
- Taylor, S. *et al.* (2020) 'A Proactive Approach for Managing COVID-19: The Importance of Understanding the Motivational Roots of Vaccination Hesitancy for SARS-CoV2', *Frontiers in Psychology*, 11, p. 575950. Available at: <https://doi.org/10.3389/fpsyg.2020.575950>.
- Todorovic, J. and Verheyden, B. (2022) 'Gender differences in attitudes towards COVID-19 and sanitary measures'. Available at: <https://liser.elsevierpure.com/en/publications/gender-differences-in-attitudes-towards-covid-19-and-sanitary-mea>.
- Toth-Manikowski, S.M. *et al.* (2022) 'COVID-19 vaccination hesitancy among health care workers, communication, and policy-making', *American Journal of Infection Control*, 50(1), pp. 20–25. Available at: <https://doi.org/10.1016/j.ajic.2021.10.004>.
- Verger, P. *et al.* (2021) 'Attitudes of healthcare workers towards COVID-19 vaccination: a survey in France and French-speaking parts of Belgium and Canada, 2020', *Euro Surveillance: Bulletin European Sur Les Maladies Transmissibles = European Communicable Disease Bulletin*, 26(3), p. 2002047. Available at: <https://doi.org/10.2807/1560-7917.ES.2021.26.3.2002047>.
- Wallace, M. *et al.* (2020) 'COVID-19 in Correctional and Detention Facilities — United States, February–April 2020', *MMWR. Morbidity and Mortality Weekly Report*, 69(19), pp. 587–590. Available at: <https://doi.org/10.15585/mmwr.mm6919e1>.
- Yıldız, E., Güngörmüş, Z. and Dayapoğlu, N. (2021) 'Assessment of Validity and Reliability of the Turkish Version of the Vaccination Attitudes Examination (VAX) Scale', *International Journal of Caring Sciences*, 14(1), pp. 261–268.
- Zimmerman, T. *et al.* (2023) 'Misinformation and COVID-19 vaccine hesitancy', *Vaccine*, 41(1), pp. 136–144. Available at:

<https://doi.org/10.1016/j.vaccine.2022.11.014>.

Zintel, S. *et al.* (2023) 'Gender differences in the intention to get vaccinated against COVID-19: a systematic review and meta-analysis', *Journal of Public Health*, 31(8), pp. 1303–1327. Available at: <https://doi.org/10.1007/s10389-021-01677-w>.

# HUMAN RIGHTS-BASED LEGAL PROTECTION FOR HEALTH WORKERS IN CONFLICT ZONES

## Perlindungan Hukum Berbasis HAM bagi Tenaga Kesehatan di Wilayah Konflik

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### Abstract

**Background:** One of the human rights issues in the health sector is legal protection for Health Workers in conflict areas. The obstacles include the limited number of security personnel on guard and the considerable distance between the location of the security post and the location of the conflict.

**Aims:** This study aims to determine the extent of legal protection for health workers in conflict areas.

**Methods:** The method employed in this study is a literature review. The nature of this study is descriptive. The data collection method used is the literature study method, involving the collection of secondary data related to the issues raised.

**Results:** The results of this study reveal that both the central and regional governments have not been maximally effective in protecting health workers in conflict areas.

**Conclusion:** Based on the results and discussion of this study, the recommendations are to create a comprehensive plan for the security and occupational safety of health workers, particularly in conflict areas, and to establish standard operating procedures for handling cases of attacks on health workers in conflict areas.

**Keywords:** human rights, legal protection, health workers.

### Abstrak

**Latar Belakang:** Salah satu permasalahan HAM di bidang kesehatan yaitu terkait perlindungan hukum bagi Tenaga Kesehatan di wilayah konflik. Kendala yang dihadapi adalah terbatasnya aparat keamanan yang berjaga, jauhnya jarak antara lokasi pos keamanan dengan lokasi konflik, dan belum adanya SOP penanganan kasus di wilayah konflik.

**Tujuan:** Tujuan kajian ini untuk mengetahui bagaimana perlindungan hukum bagi tenaga kesehatan di wilayah konflik.

**Metode:** Metode dalam tulisan yaitu dengan melakukan tinjauan literatur. Sifat kajian ini adalah deskriptif. Metode pengumpulan data yang digunakan yaitu metode studi kepustakaan, dengan mengumpulkan data sekunder terkait permasalahan yang diajukan.

**Hasil:** Hasil kajian ini menunjukkan bahwa pemerintah pusat dan daerah belum maksimal dalam melakukan perlindungan bagi tenaga kesehatan yang berada di wilayah konflik.

**Kesimpulan:** Berdasarkan hasil dan pembahasan kajian ini, rekomendasi yang diberikan yaitu sebagai berikut: Menyusun grand design kesehatan, keamanan, dan keselamatan kerja tenaga kesehatan dan membuat SOP terkait penanganan kasus penyerangan terhadap tenaga kesehatan di wilayah konflik dengan bekerja sama bersama TNI/Polri. Langkah-langkah tersebut perlu dilakukan untuk meningkatkan keamanan dengan SOP yang jelas bagi tenaga kesehatan maupun aparat keamanan.

**Kata kunci:** HAM, perlindungan hukum, tenaga kesehatan.



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## Introduction

Health workers have the right to receive legal protection from the state, especially those serving in special areas, such as conflict zones. The government determines the deployment of health workers to remote or conflict-prone areas to ensure equitable healthcare services throughout Indonesia. Legal protection for health workers is governed by Health Law Number 36 of 2014, which is specific to health workers. One of the primary objectives of this law is to provide legal certainty to health workers, and it mandates the government and local authorities to ensure the protection of health workers during their practice.

A sense of security is a fundamental requirement for all health workers while performing their duties in conflict areas. This security encompasses the need for protection from physical and non-physical threats, as articulated in Article 28G of the 1945 Constitution. Moreover, legal protection and human rights are inherently interconnected; they cannot be separated. The existence of legal protection is a crucial function of the law, as it directly benefits legal subjects and demonstrates the state's commitment to providing legal protection for its citizens.

Numerous regulations have addressed the protection of health workers. However, violations of these protections continue to occur each year, primarily due to the inadequate implementation of existing regulations. Discriminatory acts against these human rights constitute human rights violations, with some even classified as gross human rights violations.

Health workers, like all citizens, possess human rights that must be safeguarded during the fulfillment of their professional duties. Article 57 of Law Number 36 of 2014 regarding Health Workers explicitly states that health workers are entitled to legal protection while performing their duties. In practice, the implementation of legal protection for health workers has fallen short of the desired standard. Health workers, as legal entities seeking protection in the execution of their duties, still encounter significant

obstacles, especially in conflict areas of Indonesia.

An example of such a case occurred at the Kiwirok Health Center in Papua, which was targeted by the Papua Armed Criminal Group (KKB). The Kiwirok Health Center, established in 2019, houses an inpatient facility, making its infrastructure and medical equipment vital. During the KKB attack in Kiwirok, at least five health workers became victims. Gabriella Meilani, one of the health workers, tragically lost her life after being assaulted and thrown into a ravine, while others sustained injuries (Detikcom, 2021).

These incidents underscore the challenges faced by health workers in the course of their healthcare responsibilities. The state, as the guardian of its citizens' well-being, is obligated to uphold, protect, and fulfill their human rights.

Some of the obstacles encountered in providing legal protection to health workers in conflict areas include the limited number of security forces stationed at each conflict point, the considerable distance between the security posts and conflict zones, making response times longer, the absence of dedicated communication channels for security forces accessible to health workers, and suboptimal Standard Operating Procedures (SOPs) for handling cases of attacks on health workers in conflict areas (tvone, 2021).

Research conducted by Ramuttulah, titled "Protection of Voluntary Health Workers in Armed Conflict Areas According to International Law," has found that security measures and facilities for health workers have not been optimally implemented in accordance with humanitarian law due to ongoing violations by conflict parties (Rahmatullah, Wattimena, and Anwar, 2022). Another study, titled "Protection of Medical Volunteers in Conflict Countries Based on Humanitarian Law," concluded that medical volunteers in conflict zones are neutral parties and have civilian status. The conflict parties are obligated to respect and provide protection to medical volunteers carrying out their duties, as stipulated in the Geneva Convention I of 1949, Article 24 (Wardani, Anzward, and Aprina, 2020).

This paper seeks to identify practical guidelines that foster collaboration between healthcare agencies and security forces in ensuring the protection of health workers in conflict areas, given Indonesia's adherence to the 1949 Geneva Convention I.

Based on the context provided above, the research questions are: "How is the legal protection of health workers in conflict areas viewed from a human rights perspective?" and "How do security facilities in Papua contribute to the protection of health workers?"

## Methods

The chosen methodology for this study is a literature review. The nature of this study is descriptive, as defined by Prof. Djwandono and Yulianto, which describes the characteristics of an object in detail (Djwandono and Yulianto, 2023). Data collection was accomplished through a literature study method, specifically by gathering secondary data related to the identified issues. The literature review process for this study was conducted in a focused and targeted manner, involving digital searches on platforms such as Google Base, Google Scholar, e-journals, and the websites of accredited government and non-government organizations.

The primary objective of this paper is twofold: firstly, to examine the legal protection extended to health workers in conflict areas, specifically in Papua, from a human rights perspective, and secondly, to assess the security facilities available for health workers in Papua. The theoretical foundation for this study is grounded in the relevant regulations pertaining to health workers, including those that will be expounded upon in the subsequent discussion: Law Number 29 of 2004 on Medical Practice (Medical Practice Law), Law Number 36 of 2009 concerning Health Workers, and Law Number 36 of 2014 concerning Health Workers, and Human Rights.

## Results and Discussion

### Health Workers in Papua

Papua Province continues to grapple with challenges in the distribution of health workers, resulting in a notably high workload for those in the region. The shortage of health workers in Papua Province is a significant concern, with data from the Papua Provincial Health Office indicating that approximately 60% of the needed health workers are absent. This leaves only 40% of health workers to serve across the 270 health centers located in districts and cities within Papua Province, leaving approximately 100 health centers without a doctor's presence (Afrida and Wulandari, 2022).

According to data from the Papua Central Statistics Agency (BPS) in 2021, the number of health workers in Papua Province is outlined in Table 1.

### Security Conditions in the Papua Region

The available data from BPS Papua reveals fluctuations in crime statistics in Papua. In 2017, there were 85 reported cases, which decreased to 43 cases in 2018. However, the numbers rose again in 2019, reaching 53 cases, before declining to 31 cases in 2020. An essential element of security in any region involves the accessibility of facilities and the presence of an adequate number of security forces. When these resources are not proportionate to the population and area size, the effectiveness of the security system can be compromised. The data from BPS Papua concerning security facilities in Papua Province during the last four years is as follows:

Over the last four years, only 46 police posts were established in Papua. Furthermore, there has been no change in the number of Polsek/Polsekta (local police offices) in Papua over the past three years, with a consistent count of 126 Polsek/Polsekta offices, despite there being 576 sub-districts in Papua. The number of Polsek/Polsekta offices showed a slight increase in 2019, with 28 such offices, compared to 24 in 2017 and 2018 (BPS Papua, 2022).



Table 1: Amount of Health Workers in Papua Province 2020

District/ City	Number of Health Workers (Personnel)				
	Doctor	Nurse	Midwife	Pharmacy	Nutritionist
Merauke	42	202	54	24	3
Jayawijaya	51	214	132	30	24
Jayapura	65	363	168	39	51
Nabire	23	436	152	31	19
Kepulauan Yapen	12	183	91	11	13
Biak	36	418	191	42	29
Paniai	17	159	37	4	2
Puncak	19	105	31	29	11
Mimika	114	868	389	97	49
Boven	15	99	95	8	11
Mappi	16	172	90	16	9
Asmat	8	80	70	10	7
Yahukimo	21	119	40	3	3
Pegunungan Bintang	17	145	69	19	5
Tolikara	32	97	81	11	2
Sarmi	19	171	118	16	11
Keerom	16	128	73	10	22
Waropen	4	72	43	10	8
Supiori	13	119	42	11	9
Mamberamo Raya	20	129	55	13	8
Nduga	5	32	9	6	1
Lanny Jaya	8	115	71	9	5
Mamberamo Tengah	1	19	20	1	1
Yalimo	10	74	31	4	4
Puncak	11	74	40	5	-
Dogiyai	1	-	-	-	-
Intan Jaya	11	66	22	10	-
Deiyai	2	20	6	-	-
Kota	195	833	201	117	81
Provinsi Papua	804	6	2	586	388

Source: BPS Papua, 2021

The necessity for police posts must, of course, be adjusted to the available number of human resources within the police force. If Papua has an adequate number of human resources, it would be feasible to accommodate the required number of police posts. However, according to data from the Papua Regional Police (Polda), over the past two years, there has still been a shortage of 12,855 personnel to be deployed across 28 police stations (Evarukdijati, 2021). The placement of personnel in these 28 police stations is essential to meet the demand for police posts, considering the total number of districts and cities in Papua, which stands at 29 in Papua Province.

Based on BPS Papua data, the number of police personnel in Papua

Province from 2017 to 2020 is as follows: The count of police personnel on duty in the Papua region consistently increased from 2017 to 2019 but experienced a decline in 2020. In 2020, the number of police serving in the Papua region decreased by 2.61 percent compared to 2019, with male police officers being particularly affected (BPS Papua, 2022).

### Legal Protection of Health Workers

Indonesia has implemented various policies related to legal protection for health workers, including Law Number 29 of 2004 concerning Medical Practices (Medical Practices Law), Law Number 36 of 2009 concerning Health (Health Law), and Law Number 36 of 2014 concerning Health Workers (Health Workers Law). The

conflicts in the Papua region, from Manokwari to Wamena, in 2019 resulted in casualties, including both civilians and medical personnel. The incident in Wamena tragically claimed the life of Dr. Soeko Marsetiyo, a dedicated healthcare professional who had served in Papua for many years (Indira, 2019).

In September 2021, there was another attack in the Papua region, specifically at the Kiwirok Health Center in Pegunungan Bintang, Papua Province. This attack left nine health workers from the Kiwirok district in need of medical and psychological treatment to address the trauma they experienced. One of the victims, Dr. Restu Pamanggi, sustained a hand fracture and required medical attention and psychological support. Tragically, one nurse lost her life during the incident.

As a result of this incident, health services in the Kriyok, Oksibil, and Pegunungan Bintang areas were temporarily halted until the government could guarantee the safety of health workers (Syambudi, 2021).

Harif Fhadillah, the Chairman of the Indonesian National Nurses Association (PPNI), stressed the importance of the central and regional governments, along with the TNI and Polri, collaborating to establish a comprehensive security system for health workers in conflict areas. This system should ensure both their physical and psychological well-being (Puspa, 2021).

One specific form of protection provided for health workers who were victims of the KKB attack was the direct protection offered to eight health workers. This protection was administered by the Witness and Victim Protection Agency (LPSK), which had been monitoring the situation from the beginning. The LPSK collaborated with various stakeholders, including the Papua Police, Komnas HAM Representative of Papua, LBH Papua, and others, to assess the protection needs of witnesses and victims. The LPSK team also devised effective measures to enable witnesses and victims to provide testimony with a sense of security and comfort (Antara, 2021).

Furthermore, the Papua government, being one of the conflict areas, has made efforts to ensure the protection of health workers through Papua Regional Regulation No. 7/2010 on Health Services. Article 6 of this regulation establishes that "the Provincial Government is responsible for providing legal protection to health workers in the performance of their duties." Article 10 specifies that health workers have the right to receive protection while carrying out their health service responsibilities, obtain legal protection from the local government, and receive compensation for grievances. The regulation underscores the prioritization of health services in Papua Province (Papua Regional Regulation No. 7/2010 on Health Services).

Based on these regulations, the Papua Regional Government possesses the authority to coordinate with the TNI/Polri to provide protection for health workers assigned to conflict areas. This coordination is particularly significant given the frequency of KKB attacks in the region. However, the number of security forces (TNI/Polri) stationed in Papua's conflict areas is limited, which makes it challenging to secure all 28 districts and cities effectively. Additionally, the considerable distance between police stations or security force locations and the positions of health workers poses a significant logistical obstacle in the event of an attack, hindering the prompt response to safeguard health workers (tvone, 2021).

In conclusion, the government, through both governmental and community institutions, has provided protection for health worker victims. Nevertheless, sustainable protection, encompassing both physical and psychological aspects, remains lacking. Protection in the form of prevention in Papua's conflict areas is mainly governed by Papua Regional Regulation Number 7 of 2010 concerning Health Services, which, currently, does not comprehensively address all the protection requirements of health workers in conflict areas. Given the high vulnerability to violence in conflict areas, there is a compelling need for technical regulations to

ensure the protection of health workers from all forms of violence.

The legal protection for health workers is enshrined in several Indonesian laws, including the Medical Practice Law, the Health Law, and the Health Workers Law. These laws grant health workers the right to legal protection while they perform their duties in accordance with professional standards and standard operational procedures (Medical Practice Law). Health workers are also entitled to compensation and legal protection for fulfilling their professional responsibilities (Health Law). Furthermore, the Health Workers Law stipulates that health workers have the right to legal protection as long as they adhere to professional standards, professional service standards, and standard operational procedures. They are also entitled to protection for occupational safety and health and treatment that upholds human dignity, morals, decency, and religious values.

The rights of health workers are clearly outlined in Article 57 of the Health Workers Law. These rights include the right to legal protection in accordance with professional standards, professional service standards, and SOPs. They also have the right to access information from recipients of health services or their families, receive compensation for their services, and enjoy protection for their occupational safety and health while being treated in a manner consistent with human dignity, morals, decency, and religious values. Additionally, health workers have the opportunity to develop their profession, refuse involvement in activities that conflict with professional standards, codes of ethics, service standards, or laws and regulations, and obtain any other rights as provided by applicable laws and regulations.

The existence of legal protection and legal certainty for health workers, especially in conflict areas, offers an opportunity and motivation to deliver the highest quality healthcare services to communities across the Republic of Indonesia. The role of these legal standards is to ensure that they are followed and implemented, thereby

guaranteeing the utmost dedication of health workers (Sundoyo, 2019). Health workers, in their daily responsibilities, require government support to ensure access to healthcare facilities. As such, both the central government and local governments must actively fulfill their responsibilities to realize the highest possible standards of healthcare (Pesulima and Hetharie, 2020).

Legal protection for health workers can be categorized into two main types: preventive measures, which enable health workers to practice their profession freely, professionally, and without threats of violence or intimidation, as long as they adhere to professional standards and SOPs; and repressive measures, which provide legal assistance and the opportunity to defend themselves if they are suspected of making mistakes (tvone, 2021).

### **Human Rights Perspective**

In the context of human rights, the Universal Declaration of Human Rights emphasizes the fundamental rights of all individuals to attain freedom, justice, and global peace (United Nations, 2021). From a human rights perspective, the state assumes a key role in ensuring compliance with human rights obligations. Human rights constitute an inherent set of rights that stem from the nature and existence of individuals as creatures created by a higher power. These rights are gifts that must be respected, upheld, and protected by the state, the law, the government, and every individual for the sake of human dignity and honor (Jasin, 2019). Traditionally, the state serves as the primary subject of international law and human rights law. As such, the state bears the primary responsibility for protecting, upholding, and promoting human rights for all its citizens without exception (Dewi and Widyaningsih, 2021)

The government, in its role as a legislative body, is responsible for ensuring that the laws it formulates are consistent with human rights values. Judicial responsibility, on the other hand, entails delivering fair and just decisions (Dewi and Widyaningsih, 2021). The government has

a duty to combat human rights violations against health workers, as such violations can result from various factors, including social disparities, low tolerance among individuals, a lack of understanding and enforcement of human rights, and inadequate law enforcement agencies investigating human rights violations (United Nations, 2021).

From a human rights perspective, human rights violations come in different forms, including gross human rights violations and minor human rights violations. Gross human rights violations encompass acts such as genocide and crimes against humanity. Genocide involves actions by individuals or groups with the aim of eliminating an ethnicity, race, or group, while crimes against humanity pertain to offenses against civil society. The form of legal protection for health workers in conflict areas, from a human rights perspective, extends beyond physical security to include medical protection, psychosocial and psychological rehabilitation, and compensation for being victims of attacks or violations of the law.

International law sources on the protection of health workers include the Universal Declaration of Human Rights, the Geneva Convention, and International Humanitarian Law. With reference to international regulations and the specific context in Indonesia, health workers performing services in conflict areas should receive optimal protection due to the challenging nature of their work and the threats they face.

### Stakeholder Mapping

The stakeholders involved in this study include the Indonesian Doctors Association (IDI), Health Workers, the Papua Regional Government, TNI/Polri, the Ministry of Health, the Community, and the Media.



Figure 1. Stakeholder Mapping (LAN-RI, 2022)

The stakeholder map depicts four categories: Crowd (low in power and interest), Context Setter (high power but low direct interest), Subject (high interest with low power), and Player (high interest and high power) (LAN-RI, 2022).

IDI Indonesia and IDI Papua, along with health workers, fall into the category of stakeholders with high interest but limited power. IDI plays a significant role in providing feedback, expressing aspirations, and consulting with the Papua Regional Government, TNI/Polri, and the Ministry of Health to address the issue of legal protection for health workers in the Papua conflict area.

On the other hand, the local government, in collaboration with the TNI/Police and the Ministry of Health, are stakeholders with both high power and high interest. They are the central decision-makers and key actors in crafting appropriate policies regarding legal protection for health workers in conflict areas. Their responsibility involves designing programs and formulating policies that can effectively address the prevailing issues.

The community also plays a role in supporting IDI and health workers in advocating for improved legal protection for health workers. However, the community's power and interest levels are relatively low due to certain constraints. Similarly, the media has a role similar to that of the community but holds greater influence compared to the community in advocating for legal protection for health workers.

Building upon the preceding discussion, there is a need for several alternative policy recommendations. These recommendations are geared towards addressing the issue of legal protection for health workers in conflict areas and encompass four primary alternatives:

Alternative 1: Develop a comprehensive framework for the occupational health, security, and safety of health workers, specifically tailored to conflict areas.

Alternative 2: Collaborate with the local government and TNI/Polri to consolidate data concerning the number of security

Table 2. Gryd Analysis

Alternative	Acceptability (15%)	Effectiveness (30%)	Accessibility (15%)	Legal Suitability (40%)	Total
Develop a comprehensive plan for occupational health, security, and safety tailored to health workers, especially in conflict areas.	9 (1.35) All stakeholders are likely to accept the implementation of this policy.	7 (2.1) It will require time, effort, and financial resources.	9 (1.35) Accessible to health workers, local government, military, or police.	9 (3.6) - Law No. 1 of 1970 on Occupational Safety - Minister of Manpower Regulation No. 5 of 1996 on Occupational Health and Safety Management System - Government Regulation No. 50 of 2012 on the Implementation of an Occupational Safety and Health Management System - OHSAS 18001 is an international standard for implementing the OHS Management System.	8.4
Consolidate data on the number of security forces with the local government and TNI/Polri to reinforce the requirement for an adequate number of security personnel manning police posts.	9 (1.35) All stakeholders are likely to accept the implementation of this policy.	8 (2.4) It will require time, effort, and financial resources.	8 (1.2) Data related to the number and needs of security forces can be accessed to a limited extent by health workers, local governments, and communities.	8 (3.2) There are no specific rules for consolidating data, but it can be done without contradicting existing regulations.	8.15
Provide dedicated contact channels with security forces for health workers in conflict areas.	8 (1.2) This alternative is acceptable to all stakeholders, but precautions must be taken to ensure that the special contact is not misused.	7 (2.1) Requires budget planning.	9 (1.35) Easily accessible to health workers and security personnel.	7 (2.8) There is a need for robust data protection.	7.45
Develop SOPs concerning the handling of cases involving attacks on health workers in conflict areas in coordination with the TNI/Polri.	8 (1.2) This alternative is acceptable to stakeholders.	7 (2.1) It necessitates planning in terms of time, budget, and human resources but is achievable.	9 (1.35) Accessible to all stakeholders.	9 (3.6) - Health Law Number 36 of 2014 on Health Workers - Law No. 1 of 1970 on Occupational Safety	8.25

forces responsible for staffing police posts. This effort aims to reinforce the necessity for an adequate number of security personnels to effectively man these posts. Alternative 3: Establish specialized security contacts for health workers operating in conflict areas.

Alternative 4: Formulate Standard Operating Procedures (SOPs) relevant to handling cases of attacks on health workers in conflict areas.

To determine the most suitable alternative, certain criteria are required. The chosen criteria from the aforementioned alternative recommendations include acceptability, effectiveness, accessibility, and legal suitability. The analysis of these alternatives and criteria was conducted using Grydal analysis (Table 2).

The Grydal Analysis results suggest that out of the four policy alternatives considered, creating a Grand Design for the Occupational Health, Security, and Safety of Health Workers, specifically in conflict areas, and developing Standard Operating Procedures (SOPs) for handling cases of attacks on health workers in conflict areas in coordination with the TNI/Polri are the most likely alternatives to be implemented. These alternatives stand out due to their strong legal foundation, acceptability, and accessibility, even though they may necessitate careful budget planning, allocation of human resources, and time during the implementation process.

## Conclusion

One crucial aspect of upholding human rights for health workers is ensuring their protection when performing their duties in conflict areas. As part of the efforts to uphold these rights, the state has enacted various laws and regulations. Nevertheless, real-world incidents, such as the recent attacks on health workers by the KKB in Papua, indicate that both central and local governments have not maximized their endeavors to safeguard health workers, particularly in conflict areas. Challenges encountered in the field include

a shortage of security personnel in conflict areas, considerable distances between safety posts and health facilities, and the absence of dedicated security contacts for health workers.

Based on the results and discussion presented in this study, the following recommendations are offered: Develop a comprehensive Grand Design for the occupational health, security, and safety of health workers, specifically tailored to conflict areas and create SOPs concerning the handling of cases involving attacks on health workers in conflict areas in close coordination with the TNI and Polri. The establishment of the Grand Design and SOPs related to health worker protection in conflict areas should be followed by further research to ensure their proper formulation and direct involvement of relevant stakeholders.

## Abbreviations

Human Rights; KKB: Armed Criminal Group; SOP: Standard Operating Procedure; Health Worker; PPNI: Indonesian National Nurses Association; LPSK: Witness and Victim Protection Agency; LBH: Legal Aid Organization.

## Declarations

**Ethics Approval and Consent Participant**  
Not applicable.

## Conflict of Interest

The authors declare no conflicts of interest with any party in this paper.

## Availability of Data and Materials

The data used in this study is sourced from journals available at relevant institutions.

## Author's Contribution

MLBG was responsible for drafting the entire manuscript, conceptualizing the article, conducting literature searches, and editing the manuscript until it was accepted.

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## References

- Afrida, N.D. and Wulandari, S.P. (2022) 'Pemetaan Fasilitas Tenaga Kesehatan Berdasarkan Kabupaten/Kota di Provinsi Papua', *Jurnal Teknik ITS*, 11(1), pp. 57–63.
- Antara (2021) *LPSK Lindungi 8 Tenaga Kesehatan Korban Penyerangan KKB - Nasional Tempo.co*. Available at: <https://nasional.tempo.co/read/1521676/lpsk-lindungi-8-tenaga-kesehatan-korban-penyerangan-kkb> (Accessed: 20 November 2023).
- BPS Papua (2022) *Statistik Politik dan Keamanan Provinsi Papua Tahun 2020*. Badan Pusat Statistik Papua, pp. 1–57.
- detikcom (2021) *Tragis Nasib Nakes di Papua Jadi Korban Aksi Bengis KKB Teroris*, *detiknews*. Available at: <https://news.detik.com/berita/d-5725830/tragis-nasib-nakes-di-papua-jadi-korban-aksi-bengis-kkb-teroris> (Accessed: 20 November 2023).
- Dewi, A.U. and Widyaningsih, E. (2021) *Kewajiban dan Tanggung Jawab Negara*. Edited by F. Arly. Pusat Pengembangan Diklat Fungsional Dan HAM Badan Pengembangan Sumber Daya Manusia Hukum Dan HAM. Available at: [https://e-learning.kemenkumham.go.id/pluginfile.php/376326/mod\\_resource/content/2/Modul\\_4\\_Kewajiban\\_dan\\_Tanggung\\_Jawab\\_Negara.pdf](https://e-learning.kemenkumham.go.id/pluginfile.php/376326/mod_resource/content/2/Modul_4_Kewajiban_dan_Tanggung_Jawab_Negara.pdf).
- Djiwandono, P. and Yulianto, W. (2023) *Penelitian Kualitatif*. Edited by M. Kika. ANDI.
- Evarukdijati (2021) *Polda Papua kekurangan 12.855 personel Polisi*, *Antara News Papua*. Available at: <https://papua.antaranews.com/berita/638958/polda-papua-kekurangan-12855-personel-polisi> (Accessed: 20 November 2023).
- Indira, N. (2019) *Perlindungan Tenaga Medis di Wilayah Konflik*, *detiknews*. Available at: <https://news.detik.com/kolom/d-4730950/perlindungan-tenaga-medis-di-wilayah-konflik> (Accessed: 20 November 2023).
- Jasin, J. (2019) *Penegakan Hukum dan Hak Asasi Manusia di Era Otonomi Daerah*. Deepublish.
- LAN-RI (2015) *Modul 3: Pemetaan Pemangku Kepentingan (Stakeholders Mapping)*. Jakarta: Lembaga Administrasi Negara Republik Indonesia.
- Pesulima, T.L. and Hetharie, Y. (2020) 'Perlindungan Hukum Terhadap Keselamatan Kerja Bagi Tenaga Kesehatan Akibat Pandemi Covid-19', *Jurnal SASI*, 26(2), pp. 280–285.
- Puspa, A. (2021) *PPNI Minta Pemerintah Lindungi Nakes di Wilayah Rawan Konflik*. Available at: <https://mediaindonesia.com/humaniora/433583/ppni-minta-pemerintah-lindungi-nakes-di-wilayah-rawan-konflik> (Accessed: 20 November 2023).
- Rahmatullah, Z., Wattimena, J.A. and Anwar, A. (2022) 'Perlindungan Tenaga Kesehatan Sukarela di Daerah Konflik Bersenjata Menurut Hukum Internasional', *Jurnal Ilmu Hukum*, 1(12), pp. 1186–1195.
- Sundoyo (2019) *Pembentukan Regulasi dalam Perspektif Kesehatan*. Kementerian Kesehatan. Available at: <https://bahasan.id/wp-content/uploads/2019/07/4.-kemenkes-Paparan-Seminar-Univ-Pancasila-17-Juli-2019.pptx>.
- Syambudi, I. (2021) *Konflik Bersenjata Papua Merembet ke Nakes, IDI Minta Perlindungan*, *tirto.id*. Available at: <https://tirto.id/konflik-bersenjata-papua-merembet-ke-nakes-idi-minta-perlindungan-gjEI> (Accessed: 20 November 2023).
- tvone (2021) *Nakes Harus Mendapat Perlindungan Penuh, Ketua PPNI: Penjahat Aja Mereka yang Rawat*. Available at: <https://www.tvonenews.com/channel/news/45320-nakes-harus-mendapat->

perlindungan-penuh-ketua-ppni-  
penjahat-aja-mereka-yang-rawat  
(Accessed: 20 November 2023).  
United Nations (2021) *Human Rights*,  
*United Nations*. United Nations.  
Available at:  
<https://www.un.org/en/global->

issues/human-rights (Accessed: 20  
November 2023).

Wardani, L.K., Anzward, B. and Aprina, E.  
(2020) 'Perlindungan terhadap  
Sukarelawan Medis di Negara Konflik  
berdasarkan Hukum Humaniter',  
*Jurnal Lex Suprema*, 2(2), pp. 97–  
116.



# PHYSICIANS AND DISRUPTION ON TELEMEDICINE: A SYSTEMATIC LITERATURE REVIEW

## *Dokter dan Disrupsi dalam Telemedisin: Tinjauan Literatur Sistematis*

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### Abstract

**Background:** Telemedicine has developed rapidly since the COVID-19 pandemic. Telemedicine applications have marked significant transformations in healthcare. Rapid changes in healthcare services inevitably affect health service providers, specifically physicians.

**Aims:** This study examines physicians' responses to a disruptive era in the healthcare industry.

**Methods:** This paper applies a systematic literature review approach to characterize physicians' experiences, challenges, and obstacles in managing disruption in the health service delivery context. A comprehensive literature review was conducted using the Scopus database and borrowing PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method. There were 78 articles included in the analysis.

**Results:** This study found that doctors who use telemedicine experience several types of disruption. The studies that examine physicians' experience in health service disruption tend to be dominant in 4 (four) out of 5 (five) disruption types. First, disruption to the current delivery mode. Second, disruption to clinical practice role and responsibility. Third, disruption to clinical practice role and responsibility. Fourth, disruption to the work environment. Meanwhile, the disruption in personal life becomes less elaborated in the telemedicine studies debate.

**Conclusion:** It is essential to pay close attention to the disruptions that have an effect on physicians' personal lives. Personal life is essential because it benefits physicians and directly supports the quality and sustainability of telemedicine services.

**Keywords:** disruption, physician, and telemedicine.

### Abstrak

**Latar Belakang:** Telemedisin berkembang pesat sejak pandemi COVID-19. Implementasi telemedicine menjadi tanda transformasi yang signifikan dibidang pelayanan kesehatan. Perubahan cepat tersebut tidak terelakkan dan mempengaruhi penyedia layanan kesehatan, khususnya dokter.

**Tujuan:** Studi ini mengkaji pengalaman dan anggapan dokter terhadap era disrupsi dalam industri perawatan kesehatan.

**Metode:** Makalah ini menggunakan pendekatan tinjauan literatur sistematis untuk mengkarakterisasi pengalaman, tantangan dan hambatan, serta tanggapan dokter dalam menghadapi disrupsi dalam konteks pemberian layanan kesehatan. Tinjauan literatur dilakukan dengan menggunakan database Scopus dan meminjam metode PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). Ada total 78 artikel termasuk dalam analisis.

**Hasil:** Studi ini menemukan bahwa dokter yang menggunakan telemedicine mengalami beberapa jenis disrupsi. Studi yang mempelajari pengalaman dokter dalam disrupsi pelayanan kesehatan cenderung dominan pada 4 (empat) dari 5 (lima) tipe disrupsi. Pertama, disrupsi pada aspek pengalaman dokter. Kedua, disrupsi dalam cara penyelenggaraan pelayanan. Ketiga, disrupsi tata kelola klinis. Keempat, disrupsi lingkungan kerja. Sementara itu, disrupsi pada kehidupan pribadi menjadi studi yang paling sedikit dielaborasi dalam perbedatan akademik pada studi-studi yang membahas telemedisin.

**Kesimpulan:** Perhatian dalam mengelaborasi disrupsi pada kehidupan pribadi pada penerapan telemedisin menjadi penting. Terlebih kehidupan pribadi merupakan faktor penting dalam penyelenggaraan pelayanan kesehatan, karena bermanfaat bagi dokter dan mendukung kualitas dan keberlanjutan layanan telemedisin.

**Kata kunci:** disrupsi, dokter, dan telemedisin.



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## Introduction

The disruption in the delivery of health services is inevitable. Especially when entering the era of the COVID-19 pandemic, endorse the rapid change of conventional health service to settle up with the significant role of technology usage (Chen *et al.*, 2022). Breakthrough conditions that interrupt the existing delivery service approach show the disruptions in health services, one of them is telemedicine usage. Telemedicine increasingly plays a vital role during a pandemic (Valentino, Skinner and Pipe, 2020; Sharaf and Muthayya, 2021). Telemedicine is becoming increasingly popular as a method of providing health care.

On the side of the recipient of health services, the patient, the benefits of telemedicine are felt. Telemedicine enables people, as patients, to access health services without being limited by space and time (Singla *et al.*, 2021). Or at least people now have additional options in choosing health services.

On the provider side, telemedicine encourages rapid changes, called disruption in health service patterns. As providers of health services, disruption forced physicians to adapt a relatively new method of providing health services in short period (Bagot *et al.*, 2015). Moreover, the world of medical education in developing countries must be comprehensively equipped with debriefing to deliver health services to technological developments adopted in telemedicine and its infrastructure (Suzuki *et al.*, 2020).

In the development of telemedicine, there are several areas for improvement in its implementation. Several legal and ethical issues remain a big question mark in delivering health services through telemedicine (Fields, 2020). For example, in Indonesia, there are no specific rules that manage patient-physician interactions, which are not only social but also have legal and ethical aspects (Kuntardjo, 2020). Even in a country like Ethiopia, there is still resistance to the existence of telemedicine (Sagaro, Battineni and Amenta, 2020).

The development of telemedicine in the world then became diverse. Some have begun to adapt; others are still experiencing obstacles and challenges. Not only facilities and infrastructure but the environment has been unable to support full implementation optimally. There needs to be more clarity between developing telemedicine technology and managing existing health services.

The gap between existing developments and the inadequate healthcare management system raises questions. How does the physician, as one of the service implementers, perceive, respond, and adapt to the disruption that occurs? In telemedicine services, not only are physicians confronted with rapid changes, but they also require more support for expertise and protection for the practice of health services.

In the Bagot study on swift transformations necessitating the adoption of telemedicine or other technological applications in healthcare, five categories of disruption were identified (Bagot *et al.*, 2015). First, disruption to the circle of influence. Second, disruption to the work environment. Third, disruption to clinical practice role and responsibility. Fourth, disruption to personal life. Fifth, disruption to the current delivery mode. Borrowing terms and classifications on disruption in telemedicine implementation in health care, this systematic literature review elaborates on the study that attempts to elaborate on physicians' perspectives on the disruption they are currently experiencing. Through previous studies related to the experience of physicians in telemedicine, this paper intended to look further not only at the challenges and obstacles experienced but also at the context of developing health care delivery.

## Method

This systematic literature study was administered adopt PRISMA in screening method. The literature search is based on Scopus the data base source. Applied search query TITLE-ABS-KEY ( ( physician ) OR ( doctor ) AND ( perspective ) AND ( telemedicine ) ) AND ( LIMIT-TO (

PUBYEAR , 2022 ) OR LIMIT-TO ( PUBYEAR , 2021 ) OR LIMIT-TO ( PUBYEAR , 2020 ) OR LIMIT-TO ( PUBYEAR , 2019 ) OR LIMIT-TO ( PUBYEAR , 2018 ) OR LIMIT-TO ( PUBYEAR , 2017 ) OR LIMIT-TO ( PUBYEAR , 2016 ) OR LIMIT-TO ( PUBYEAR , 2015 ) OR LIMIT-TO ( PUBYEAR , 2014 ) OR LIMIT-TO ( PUBYEAR , 2013 ) OR LIMIT-TO ( PUBYEAR , 2012 ) OR LIMIT-TO ( PUBYEAR , 2011 ) OR LIMIT-TO ( PUBYEAR , 2010 ) ) AND ( LIMIT-TO ( PUBSTAGE , "final" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) ) AND ( LIMIT-TO ( SRCTYPE , "j" ) ). Search was enrolled on April 14th, 2022.

Table 1. Eligibility criteria

Inclusion criteria	Exclusion criteria
Peer review	Not elaborating physician experiences/ perspective in telemedicine
Journal article	

Using the query and automation tools provided by the Scopus web, the results of a database search were eliminated. In addition, this investigation utilized a manual screening procedure to identify eligible articles. Initially, filtering consisted of determining double article and topic suitability. Second, authors use inclusion and exclusion criteria to scan titles and abstracts for eligible articles (Table 1). The third and final screening procedure was designed to identify full-text access. Each author independently performs the screening phase, which is then discussed to determine the selected article. In the end, 78 articles passed the screening procedure and were included in the study (Figure 1).

This paper is divided into two analysis sections to clarify disruption responses and physician perspectives. First, based on the abstract and using the Vozviewer tools, we elucidate the physician's experience with telemedicine concerns.

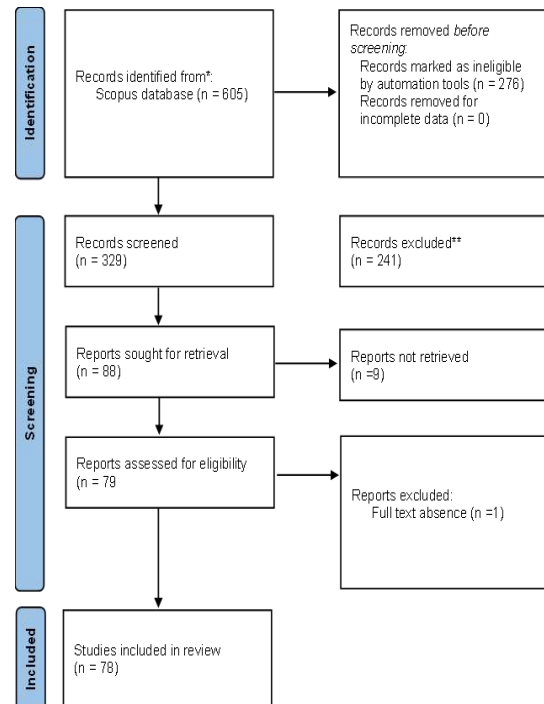


Figure 1. Identification of studies via Scopus database using PRISMA (Page et al., 2021)

Second, this study is doing comprehensive reading forms each piece of literature, and to classify the result, this study does double analysis feedback. It is, furthermore, conducting web surface searching about the same issue worldwide to reduce bias and simple comparison analysis.

## Result and Discussion

### Trend in Telemedicine Study: Physician Perspective

Over a decade, telemedicine has shown significant growth, especially after the pandemic conditions that enable leverage telemedicine utilization (Hussain, 2021). This study found that telemedicine also demonstrates its expansion. The amount of study in the last two years significantly doubled.

The pandemic is the main reason for increasing the use and study of telemedicine (Lubis, 2021). The need to reduce physical encounters to prevent transmission is the main reason. The developing pandemic condition invites academics to study telemedicine. Studies

related to experiences in implementing telemedicine photographing conditions, challenges, obstacles, opportunities, and responses from health service actors are the central elaboration. This study shows how the issue of the pandemic, experience, and covid has become the latest issue elaborated by academics (Figure 2). This development shifted from discussing urgency to the types of services and the application of technology in telemedicine.

The pandemic has driven a shared awareness of the need for telemedicine. The development of study trends annually shows that telemedicine has begun to have a somewhat important role. The discussion on telemedicine has yet to discuss how the reception of its services will be. Telemedicine has been crucial in the healthcare system (Stavroulaki, 2019).

This research identifies several dominant issues in the keyword tracking of

these telemedicine studies. The research focuses on the physician's point of view in implementing health services via telemedicine. Elaboration regarding patients, the technology applied, types of services, and patterns of use are central issues in implementing telemedicine. These findings show that the focus of existing studies is more emphasis on the implementation of telemedicine.

The implementation of telemedicine is a challenging task, especially when faced with disruptive changes that physicians must navigate under various conditions. Some of these conditions include patients with knowledge (Chandwani and De', 2017) and background, as well as the use of tools and supporting infrastructure conditions (Pollack *et al.*, 2021). Physicians providing health services via telemedicine must adapt to these dynamic conditions.

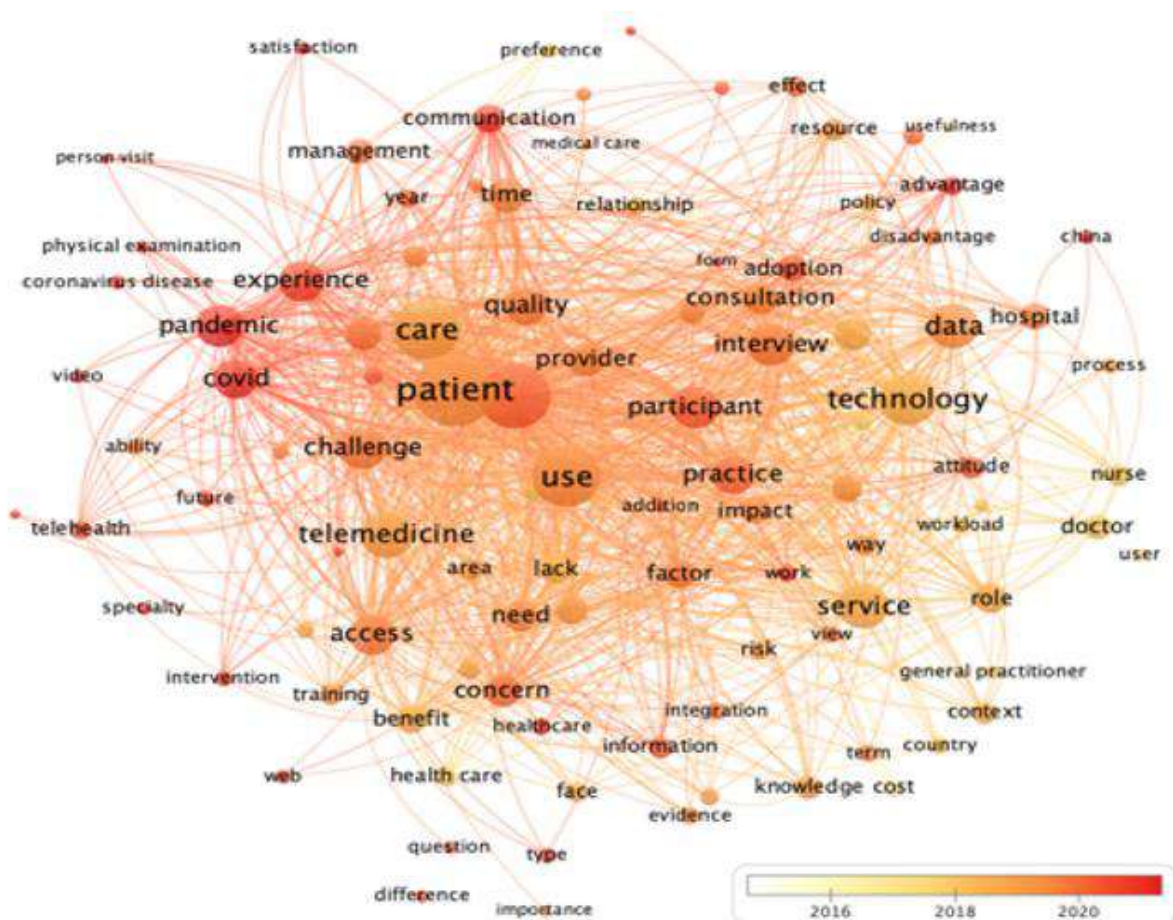


Figure 2. Study trend discussing physician perspective on telemedicine.

Source:  $\Sigma$  included study = 78 (Scopus database). VosViewer tools, binary count, 2658 terms, occurrence 5. Association strength. items 104, cluster 4, link 4395, total link strength 13438.

### The Diverse Context of Telemedicine Advance

The rapid development of the use of telemedicine varies in each region. This variation arises due to several factors. This study finds at least the main issues that become the context of variations in the use of telemedicine. Not everyone has sufficient access to current information and technology. There needs to be more information technology growth, known as the digital divide. This gap is not only a matter of the existence of access but also related to the skills of the public in accessing available information technology.

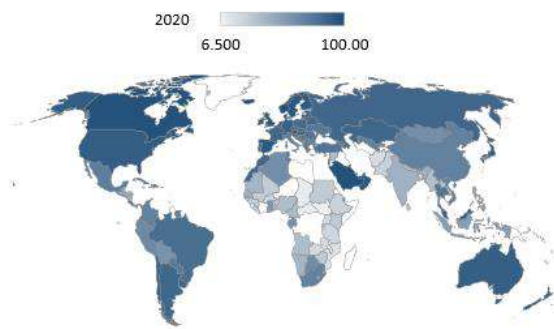


Figure 3. Individuals Using the Internet 2020 (% of Population). (World Bank, 2020)

In this study (Table 2), the digital divide emerges two issues: infrastructure related to information technology and its supporting facilities. Telemedicine is undoubtedly very dependent on facilities and infrastructure. In addition to equipment, an internet connection or telephone is essential for telemedicine. Globally, individual access to the internet still has a fairly wide gap (Figure 3).

Second is the human resource condition, not only people who use health services but also health service providers themselves. There are various types of health workers, including a doctor. The number of human resources that utilize information still needs to be competent and accept the new patterns presented.

This study found that some doctors needed to fully accept or could apply telemedicine properly. There is some

background to the condition of acceptability and the application of telemedicine. In addition to information technology literacy issues, and medical ethics issues, there are issues with the acceptability of telemedicine for doctors. Telemedicine presents new facilities for providing health services and changes the pattern of interaction and skills required by health service providers.

The challenges doctors face are pretty varied in applying telemedicine, as seen from the studies studied in this study. In the context of developing countries, where the level of information technology literacy is relatively more adequate, showing elaboration not only on implementation, but several studies have also even discussed how improvement could create and encourage the sustainability of services via telemedicine. On the other hand, in less developed and developing countries, telemedicine studies still need to focus on issues of acceptability, infrastructure, and implementation alone.

Table 2. Study Context on Telemedicine Country Background

Classifi- cation	Digital Infrastruc- ture	Issues
Least developed	+	Acceptance, and access, infrastructure
Developing	++	Implementation, infrastructure
Developed	+++++	Implementation, enhancement, and sustainability

Note: Classification based on The Word Bank (World Bank, 2022)

The development of telemedicine in health care benefits areas with a supporting context. Telemedicine has indeed contributed to reduce the degree of inequality in health. However, regions with limited access to telemedicine are becoming increasingly left behind. Telemedicine has become very diverse in use in various areas depending on the context of the region.

### Disruption Challenge for Physicians

The rapid development of telemedicine in the provision of health services is unavoidable. The acceleration of its development, which is relatively fast, is directly proportional to the advancement of technology, requiring the stakeholders to adapt (Sasangohar *et al.*, 2020). Significantly, the application of telemedicine has experienced a massive increase during the pandemic.

Table 3. Type of Disruption experience of physicians

Type of disruption experience	Σ Article
Disruption to circle of influence	4
Disruption to work environment	17
Disruption to clinical practice role and responsibility	20
Disruption to personal life	2
Disruption to current delivery mode	34

Disruption of health services becomes inevitable. The disruption raises new challenges for physicians as one of the actors in health services (Table 3). The difference in service media applied in telemedicine changes the implementation of health services. It requires not only adjustment (Barney *et al.*, 2020) but also a change of approach to running health services (Payán *et al.*, 2022).

Based on Kathleen Bagot's categorization of disruption in telemedicine, this study found that most of them elaborated on disruption at the level of changing patterns of healthcare delivery. The study shows the different approaches and patterns of health service delivery with or without telemedicine. There are indeed many adjustments that health service stakeholders must make, where change is not just the medium but also the way to a different working mindset.

In this study, the findings on disruption in the changing pattern of health service delivery are not only experienced

by developed countries but also by developing countries, the least developed countries (Table 2). There was no difference in the experience of the disruption that occurred. The difference lies in the response of health practitioners to the disruption that occurs. Health practitioners like physicians are more likely to refuse in least-developed countries. This study represents the case described through the Ethiopian experience (Sagaro, Battineni and Amenta, 2020). The experiences of physicians in developed countries are more responsive to acceptance, even though they have concerns regarding several issues in the implementation of telemedicine, such as inequality, ethics, and safety concerns (Bakhtiar, Elbuluk and Lipoff, 2020; Jain *et al.*, 2020; Phimphasone-Brady *et al.*, 2021).

The challenge of disruption to physicians in implementing telemedicine next found in this study is related to changes in clinical practice roles and responsibilities. During the examination, physicians often find things that require adjustments and even changes to carry out the examination. Telemedicine makes clinical processes and stages in health services require tools and different approaches.

The most significant problem doctors encountered when implementing telemedicine was the work environment. The work environment is related to changes in the workflow/ work system. Some changes occur not only in the clinical process but also require some support for the service process via telemedicine. Those work system changes may take time to make some adjustments. Unfortunately, it happened in a relatively short period.

The disruption experiences related to physicians' circle of influence and personal life are the least elaborated in telemedicine studies. Only a few studies have focused interest on these issues. There is not enough evidence to elaborate how physicians make a deal with swift adjustments on telemedicine implementation.

In fact, with the disruptive changes that have occurred, these last two things

also significantly impact the delivery of health services.

Disruption of the circle of influence, for example, affects the physician-patient relationship. Moreover, physician-patient relation grows in the increasing patient's role in the delivery of health services. Influences and relationships in communication that run under examination are crucial things that become more important than the development of technology itself.

Moreover, physicians also experience disruption in their personal life, which indirectly links to how they will build relationships with patients. This disruption to personal life comes from the burden of changes in various aspects of service, and adjustment efforts are necessary even if it will take time and change the working pattern of physicians. Those changes can be seen in the conditions that show diminishing the boundaries between private and professional life. There are differences between conventional healthcare and telemedicine. The conventional one requires physical presence as a prerequisite, delimited by time and space. On the other hand, telemedicine tears down the time and space boundaries. Telemedicine enables physicians to be accessed anywhere and anytime. So, the boundaries of a physician's professional and personal life become an essential challenge to find a way out. The potential problem as a consequence of work-life balance emerges and indirectly will affect the quality of health services provision (Alblihed and Alzghaibi, 2022).

The experience of physicians in dealing with disruptions explains that changes occur not only have an impact on changes in methods or ways of service. There is a domino effect from the widespread application of telemedicine from the system level and organization to individual stakeholder health service providers.

### Cultural Change and Innovation

Healthcare services appeared to have been in the same condition for decades. In healthcare services, a culture of the status quo prevails. The fact that the

pandemic has prompted innovation in healthcare technology demonstrates a confluence of forces that may cause leapfrogging and encourage physicians to adopt a new work culture.

While work culture influences innovation positively and vice versa, innovation encourages changes in new workplace cultures (Kostis, Kafka and Petrakis, 2018). These positive influences include confidence, discipline, work ethic, and honesty. Meanwhile, innovation is unaffected by a culture of routine and repetition at work.

Physicians must understand that innovation in healthcare services forces them to participate in an ecosystem that disrupts the formerly monotonous work culture in the context of technological disruption. On occasion, they must assist in the comprehension of transitions and the management of these cultural adjustments. Individual effort is crucial to adapting to technological disruptions because failure or difficulty catching up may cause depression, anxiety, and helplessness (Kostis, Kafka and Petrakis, 2018).

Physicians play a game-changer role because health services are related to the issue of transferring services and not selling products (Avelino *et al.*, 2017). Even though technological innovation is prevalent, physicians must be able to utilize it effectively. Recognizing that innovation in work performance and health services will provide broader changes in healthcare governance and grounding it as a service that educates the community about outstanding healthcare services makes these innovative technologies invaluable. Intelligent decision-making and innovative technologies may result in more effective solutions. Ultimately, innovation creates an obstacle-free healthcare governance system for all individuals.

This research shows the condition and experience of physicians in running telemedicine services worldwide via academic elaboration. Various contexts explain physicians' struggle with telemedicine disruption. According to the disruption condition, the overloaded burden experienced by physicians, the result differs in responses.

Further discussions about personal factors related to the quality of service are needed. It will indirectly impact on the quality of service produced. Studies that examine the disruption and burden of adaptation effect on the quality of telemedicine service delivery are encouraged.

Little concerns about the personal aspects of physicians in conducting telemedicine were found in this study, followed by questions about quality issues shortly. The disruption that occurs in various aspects faced by physicians has a large enough impact. As a professional, keeping abreast of developments and changes is vital. These demands will affect their burden not only as professionals but also impact their personal lives. Especially in the era of disruption, making changes happen so quickly requires an adaptation process that is not easy (Chen *et al.*, 2022).

The need for adjustment to disruption is a significant burden for professionals. These adjustments are, of course, time-consuming. Under conditions of limited time, it creates a double burden on a professional such as a physician to adjust to the disruption. Facing various aspects of the disruption

The question of service quality is the basis for how telemedicine can build trust for its users and affect the sustainability of telemedicine itself. The problem of personal life disruption experienced by stakeholders in telemedicine then becomes something that must be unconsidered for its effect on the quality and sustainability of telemedicine.

## Conclusion

Disruption faced by physicians is a necessity in the application of telemedicine. Especially during the pandemic, telemedicine is growing quite rapidly in its implementation. This study found at least 5 (five) disruptions related to clinical practice roles and responsibilities, current delivery modes, work environment, circle of influence, and personal life. The latter mentioned still needs to be revised. Problems related to personal life related to telemedicine encourage concern about the quality of telemedicine itself because apart

from relying on technology, the role of physicians in telemedicine is also essential.

The problem of disruption of physicians in personal life also raises concern because it may have triggers mental health issues. Workload and work-life balance patterns should be applied because may affect the physician's mental health.

## Abbreviation

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses; COVID-19: Coronavirus disease 2019.

## Declarations

**Ethics Approval and Consent Participant**  
Not Applicable

## Conflict of Interest

The authors declare that there are no significant competing financial, professional, or personal interests that might have affected the performance.

## Availability of Data and Materials

The availability of data and materials is based on demand from authors.

## Authors' Contribution

APN conceptualized the study; APN and AAP created the methodology, wrote, reviewed, and edited the manuscript; APN wrote the original draft.

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## References

Alblihed, M. and Alzghaibi, H.A. (2022) 'The Impact of Job Stress, Role Ambiguity and Work-Life Imbalance on Turnover Intention during COVID-19: A Case Study of Frontline Health



- Workers in Saudi Arabia', *International Journal of Environmental Research and Public Health*, 19(20), p. 13132. Available at: <https://doi.org/10.3390/ijerph192013132>.
- Avelino, F. *et al.* (2017) 'Game-changers and transformative social innovation', *Ecology and Society*, 22(4), p. art41. Available at: <https://doi.org/10.5751/ES-09897-220441>.
- Bagot, K.L. *et al.* (2015) 'Telemedicine in the acute health setting: A disruptive innovation for specialists (an example from stroke)', *Journal of Telemedicine and Telecare*, 21(8), pp. 443–448. Available at: <https://doi.org/10.1177/1357633X15610722>.
- Bakhtiar, M., Elbuluk, N. and Lipoff, J.B. (2020) 'The digital divide: How COVID-19's telemedicine expansion could exacerbate disparities', *Journal of the American Academy of Dermatology*, 83(5), pp. e345–e346. Available at: <https://doi.org/10.1016/j.jaad.2020.07.043>.
- Barney, A. *et al.* (2020) 'The COVID-19 Pandemic and Rapid Implementation of Adolescent and Young Adult Telemedicine: Challenges and Opportunities for Innovation', *Journal of Adolescent Health*, 67(2), pp. 164–171. Available at: <https://doi.org/10.1016/j.jadohealth.2020.05.006>.
- Chandwani, R. and De', R. (2017) 'Doctor-patient interaction in telemedicine: Logic of choice and logic of care perspectives', *Information Systems Frontiers*, 19(4), pp. 955–968. Available at: <https://doi.org/10.1007/s10796-016-9643-0>.
- Chen, M.H. *et al.* (2022) 'Healthcare Disruptions and Use of Telehealth Services Among People With Multiple Sclerosis During the COVID-19 Pandemic', *Archives of Physical Medicine and Rehabilitation*, 103(7), pp. 1379–1386. Available at: <https://doi.org/10.1016/j.apmr.2021.12.028>.
- Fields, B.G. (2020) 'Regulatory, Legal, and Ethical Considerations of Telemedicine', *Sleep Medicine Clinics*, 15(3), pp. 409–416. Available at: <https://doi.org/10.1016/j.jsmc.2020.06.004>.
- Jain, S. *et al.* (2020) 'Availability of Telemedicine Services Across Hospitals in the United States in 2018: A Cross-sectional Study', *Annals of Internal Medicine*, 173(6), pp. 503–505. Available at: <https://doi.org/10.7326/M20-1201>.
- Kuntardjo, C. (2020) 'Dimensions of Ethics and Telemedicine in Indonesia: Enough of Permenkes Number 20 Year 2019 As a Frame of Telemedicine Practices in Indonesia?', *Soepra*, 6(1), pp. 1–14. Available at: <https://doi.org/10.24167/shk.v6i1.2606>.
- Lubis, Z.I. (2021) 'Analisis Kualitatif Penggunaan Telemedicine sebagai Solusi Pelayanan Kesehatan di Indonesia pada Masa Pandemi COVID-19', *Physiotherapy Health Science (PhysioHS)*, 2(2), pp. 76–82. Available at: <https://doi.org/10.22219/physiohs.v2i2.15148>.
- Page, M.J. *et al.* (2021) 'The PRISMA 2020 statement: an updated guideline for reporting systematic reviews', *BMJ*, 372, p. n71. Available at: <https://doi.org/10.1136/bmj.n71>.
- Payán, D.D. *et al.* (2022) 'Telemedicine implementation and use in community health centers during COVID-19: Clinic personnel and patient perspectives', *SSM - Qualitative Research in Health*, 2, p. 100054. Available at: <https://doi.org/10.1016/j.ssmqr.2022.100054>.
- Phimphasone-Brady, P. *et al.* (2021) 'Clinician and staff perspectives on potential disparities introduced by the rapid implementation of telehealth services during COVID-19: a mixed-methods analysis', *Translational*

- Behavioral Medicine*, 11(7), pp. 1339–1347. Available at: <https://doi.org/10.1093/tbm/ibab060>.
- Pollack, C.C. *et al.* (2021) 'Language and Sentiment Regarding Telemedicine and COVID-19 on Twitter: Longitudinal Infodemiology Study', *Journal of Medical Internet Research*, 23(6), p. e28648. Available at: <https://doi.org/10.2196/28648>.
- Sagaro, G.G., Battineni, G. and Amenta, F. (2020) 'Barriers to Sustainable Telemedicine Implementation in Ethiopia: A Systematic Review', *Telemedicine Reports*, 1(1), pp. 8–15. Available at: <https://doi.org/10.1089/tmr.2020.0002>.
- Sasangohar, F. *et al.* (2020) 'Adapting an Outpatient Psychiatric Clinic to Telehealth During the COVID-19 Pandemic: A Practice Perspective', *Journal of Medical Internet Research*, 22(10), p. e22523. Available at: <https://doi.org/10.2196/22523>.
- Sharaf, A. and Muthayya, P. (2021) 'Multidisciplinary management of the burn injured patient during a pandemic – The role of telemedicine', *Burns*, 47(1), pp. 252–253. Available at: <https://doi.org/10.1016/j.burns.2020.04.028>.
- Singla, D.R. *et al.* (2021) 'Scaling Up Maternal Mental healthcare by Increasing access to Treatment (SUMMIT) through non-specialist providers and telemedicine: a study protocol for a non-inferiority randomized controlled trial', *Trials*, 22(1), p. 186. Available at: <https://doi.org/10.1186/s13063-021-05075-1>.
- Stavroulaki, T. (2019) 'Mind the Gap: Antitrust, Health Disparities and Telemedicine', *American Journal of Law & Medicine*, 45(2–3), pp. 171–187. Available at: <https://doi.org/10.1177/0098858819860607>.
- Suzuki, T. *et al.* (2020) 'Possibility of introducing telemedicine services in Asian and African countries', *Health Policy and Technology*, 9(1), pp. 13–22. Available at: <https://doi.org/10.1016/j.hlpt.2020.01.006>.
- Valentino, L.A., Skinner, M.W. and Pipe, S.W. (2020) 'The role of telemedicine in the delivery of health care in the COVID-19 pandemic', *Haemophilia: the official journal of the World Federation of Hemophilia*, 26(5), pp. e230–e231. Available at: <https://doi.org/10.1111/hae.14044>.
- World Bank (2020) 'World Development Indicator'. The World Bank. Available at: <https://data.worldbank.org/indicator/IT.NET.USER.ZS?end=2020&start=2020&type=shaded&view=map> (Accessed: 17 June 2022).
- World Bank (2022) *Digital infrastructure data based on country*. The World Bank. Available at: <https://data.worldbank.org/topic/infrastructure?view=chart> (Accessed: 20 June 2022).



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From Editorial Boards

## JAKI: #OpenScience Discussion

Yesterday, JAKI Editorial Board team and all partners had a beautiful day of welcoming the JAKI English Editor. It was a fruitful



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Yes! This week is my last week at JAKI internship. I got a task to find reviewers. This is JAKI's strategies to give a great article. We...



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