

Penyebab Buang Air Besar Sembarangan (BABS) di Provinsi Jawa Timur Tahun 2018

Causes of Open Defecation in East Java Province in 2018

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ABSTRACT

Background: Open defecation (OD) is a sanitation problem that can have a negative impact on health. Open defecation can have a bad impact on sanitation this poor sanitation can then trigger various diseases. **Objective:** This study aims to find out the factors related to the behavior of open defecation (OD) in Regency/City communities of East Java Province in 2018. **Methods:** Ecological approach based on secondary data published by the Ministry of Health of the Republic of Indonesia, East Java Provincial Health Office, and the Central Statistics Agency of East Java Province of 38 districts/cities in East Java Province were included in this study. This study examined the percentage of healthy latrine users with 4 other independent variables, namely the percentage of facilities that met the available requirements, the percentage of villages that applied Community Led Total Sanitation (CLTS), the prevalence of diarrhea cases, and the percentage of illiteracy rates. Data were analyzed using cross tabulation with SPSS. **Results:** There were still several districts/cities in East Java Province that had not used latrines when defecating, most of them were in districts/cities with inadequate facilities, low percentage of villages willing to implement CLTS, low percentage of illiteracy, and moderate diarrhea prevalence. **Conclusion:** Based on these results, it can be concluded that the factors of the availability of facilities, education, compliance with CLTS implementation, and the prevalence of diarrhea have a relationship with the percentage of latrine users in districts/cities in East Java Province. The results of this study can be used by local stakeholders to make health-based policies as an effort to reduce open defecation.

Keyword: latrines; open defecation; secondary data; ecological analysis

INTRODUCTION

Open defecation (OD) is an act of disposing of feces in fields, forests, bushes, rivers, beaches, or other open areas and allowing them to spread to contaminate the environment, soil, air, and water (Fitriyaningsih & Wahyuningsih, 2020). Open defecation is an unhealthy behavior that is still often seen everywhere (Paladiang et al., 2020). World Health Organization (WHO) and United Nation International Children's Emergency Fund (UNICEF) explains that open defecation is always practiced, with a quarter of cases not having specific policies and plans. Most countries already have data on open defecation and access to basic sanitation services. From this data, it is estimated that as many as 673 million people still do

not have latrines and practice open defecation (WHO/UNICEF, 2020).

The minimal percentage of use of healthy latrine facilities in districts/cities of East Java can be one of the benchmarks in the open defecation assessment. Based on data in Dinas Kesehatan Jawa Timur (2019), it shows that there were only 9 out of 38 regencies/cities in East Java Province that had reached 100% use of healthy latrines, the other 29 regencies/cities were still in percentage numbers between 74.91% to 99.83 %.

There are many factors and strategies that can be done to overcome the problem of open defecation, one of data, source doesn't need to be written. Number of tables and figures allowed is as which is through Community Led Total Sanitation (CLTS). In Indonesia, the percentage of villages implementing CLTS

in 2018 has exceeded the target. Based on Kementrian Kesehatan Republik Indonesia (2019), the target of villages that should implement CLTS was 40,000 villages, while the realization was that 49,283 villages implemented CLTS. However, the percentage of latrine use in Indonesia, especially in East Java, is still not maximized, this indicates that it is not only the percentage of villages that apply CLTS that affects the low percentage of latrine users in East Java. There are other factors such as level of education, knowledge, and availability of facilities (Murhan & Aprina, 2020).

Open defecation can have a bad impact on sanitation, this poor sanitation can then trigger various diseases. Various diseases resulted from poor sanitation in Indonesia due to open defecation according to Hadiati Sukma, Mursid & Nurjazuli (2018) were 72% cases of diarrhea, 0.85% cases of intestinal worms, 0.57% of hepatitis, 23% of scabies, 0.14% of trachoma, 0.02% of hepatitis E and 2.5% of cases of malnutrition. In addition to the health impact, the presence of open defecation behavior in the community can also cause social disturbances such as discomfort due to the smell of human feces, decreased water quality (for open defecation in rivers or lakes, and so on). Based on the description of the background above, this study is intended to determine the relationship between several factors on open defecation behavior, especially in East Java in 2018.

METHOD

This research was conducted using an ecological analysis approach or an ecological approach. The data analyzed were aggregated data in certain groups or levels, the level used in this study was the regency/city level. Variables in ecological analysis can be aggregate measurements, environmental measurements, or global measurements (Laksono & Sandra, 2020).

This study was conducted by utilizing secondary data from Health Profile of East Java Province in 2018 (Dinas Kesehatan Jawa Timur, 2019), the results of the 2018 basic health research data (Badan Penelitian dan Pengembangan Kesehatan, 2018), and Education Statistics data for East Java Province in 2018 (Badan Pusat Statistik Provinsi Jawa Timur, 2019). The unit of analysis in this study was the

districts/cities in East Java with a total of 38 districts/cities.

Table 1. Sources of Ecological Study Data from the Percentage of Healthy Latrine Users in East Java in 2018

Source	Variable
Health profile of East Java Province in 2018	percentage of healthy latrine users of facilities that met the available requirements
Basic health research data in 2018	percentage of prevalence of diarrhea cases
Education Statistics of East Java Province in 2018	percentage of illiteracy rate of villages that implemented CLTS

The dependent variable in this study was the percentage of healthy latrine users. In addition to the percentage of healthy latrine users as the dependent variable, there were 5 independent variables analyzed in this study, namely the percentage of facilities that met the available requirements, the percentage of villages that applied CLTS, the percentage of illiteracy rates, and the prevalence of diarrhea cases.

Data that were obtained would be analyzed in univariate and bivariate. Univariate analysis was performed using descriptive analysis on each variable and bivariate analysis was performed using cross tabulation with SPSS 21 software.

This study was conducted by utilizing secondary data from reports that were published on an official platform easily accessible by anyone, therefore ethical clearance was not required to carry out this research.

RESULTS AND DISCUSSION

Table 2 shows the results of the descriptive analysis of the variables of healthy latrine users with other related of the districts/cities in east java had been using 100% healthy latrines and most had not yet. One area that had 100% utilized latrines well was Ponorogo Regency. While the area with the lowest latrine users was Pacitan Regency with a percentage of 74.91%. Among the 38 regencies/cities in East Java Province, the lowest percentage

of facilities that met the available requirements was 74.04% and the highest percentage was 100%. The percentage of villages that implemented CLTS was the lowest 18.00% and the highest was 100%.

The lowest percentage of illiteracy rates was 1.26% and the highest was 21.88%, and the lowest prevalence of diarrhea cases was 1.04% and the highest was 11.53%.

Table 2. Descriptive Statistical Variables of Healthy Latrine Users with Related Variables

	N	Average	Min.	Max.	Middle value	Std. Deviation	Variance
Percentage of healthy latrine users	38	25.09	74.91	100.00	94.55	6.76	45.74
Percentage of facilities that met the requirements available	38	25.96	74.04	100.00	95.61	6.42	41.23
Percentage of villages that implemented CLTS	38	82.00	18.00	100.00	90.25	17.33	300.35
Illiteracy percentage	38	20.62	1.26	21.88	8.19	5.43	29.49
Prevalence of diarrhea cases	38	10.49	1.04	11.53	6.08	2.12	4.52

Source: (Badan Penelitian dan Pengembangan Kesehatan, 2018; Dinas Kesehatan Jawa Timur, 2019)

Table 3 shows the results of the cross tabulation between the percentage of facilities that met the requirements available and the percentage of healthy latrine users. Based on the Table 3, we can find that low percentage latrine users (74.91-83.27) were in inadequate to adequate facilities district/city. Moderate latrine users (83.28-91.64) were mostly

(75.0%) in regency/city with adequate facilities, and high latrine users (91.65-100.00) were mostly (83.9%) in regency/city with adequate latrines. This means that the more adequate the facilities in a regency/city, the higher the number of latrine users in that regency/city.

Table 3. Cross Tabulation of the Percentage of Facilities that Met the Available Requirements with the Percentage of Healthy Latrine Users

Percentage of facilities that met the available requirements	Percentage of healthy latrine users					
	Low (74.91-83.27)		Moderate (83.28-91.64)		High (91.65-100.00)	
	n	%	n	%	n	%
Inadequate (74.04-82.69)	1	33.3	1	33.3	0	0.0
Fairly Adequate (82.70-91.35)	1	33.3	0	0.0	5	16.1
Adequate (91.36-100.00)	1	33.3	3	75.0	26	83.9
Total	3	100	4	100	31	100

Source: (Dinas Kesehatan Jawa Timur, 2019)

Table 4 shows the results of the cross tabulation of the percentage of villages that implemented CLTS with the percentage of healthy latrine users. Based on Table 4, it can be seen that the percentage of healthy latrine users was low (74.91-83.27) and moderate (83.28-91.64) in districts/cities with a high

percentage of villages implementing CLTS. Meanwhile, the highest percentage of latrine users (87.1%) was in districts/cities with a high percentage of villages that implemented CLTS. This means that the higher the percentage of villages that implement CLTS, the higher the latrine users.

Table 4. Cross Tabulation of the Percentage of Villages that Implemented CLTS with the Percentage of Healthy Latrine Users

Percentage of villages that implemented CLTS	Percentage of healthy latrine users					
	Low (74.91-83.27)		Moderate (83.28-91.64)		High (91.65-100.00)	
	n	%	n	%	n	%
Low (18.00-45.30)	0	0.0	0	0.0	2	6.5
Moderate (45.31-72.61)	0	0.0	0	0.0	2	6.5
High (72.62-100.00)	3	100	4	100	27	87.1
Total	3	100	4	100	31	100

Source: (Dinas Kesehatan Jawa Timur, 2019)

Table 5 shows the results of the cross tabulation between the percentage of illiteracy with the percentage of healthy latrine users. Based on Table 5, we have found a low percentage of latrines users (74.91-83.27) are in regency/city with moderate illiteracy, percentage of moderate latrine users (83.28-91.64) by

50% were in district/city with a low and moderate percentage of illiteracy, and the highest percentage of latrine users (61.3%) were in districts/cities with a low percentage of illiteracy. This means that the lower the illiteracy rate, the more the latrine users.

Table 5. Cross tabulation of the percentage of illiteracy with the percentage of healthy latrine users

Illiteracy percentage	Percentage of healthy latrine users					
	Low (74.91-83.27)		Moderate (83.28-91.64)		High (91.65-100.00)	
	n	%	n	%	n	%
Low (1.26-8.13)	0	0.0	2	50	19	61.3
Moderate (8.14-15.02)	3	100	2	50	8	25.8
High (15.03-21.88)	0	0.0	3	0.0	4	12.9
Total	3	100	4	100	31	100

Source: (Badan Pusat Statistik Provinsi Jawa Timur, 2019; Dinas Kesehatan Jawa Timur, 2019)

Table 6 shows the results of the cross tabulation of the prevalence of diarrhea cases with the percentage of healthy latrine users. Based on Table 6, it can be seen that the percentage of low (74.91-83.27) and high (71.0%) latrine users were mostly in districts/cities with

moderate prevalence of diarrhea, moderate percentage of latrine users (83.28 -91.64) were mostly in districts/cities with a high prevalence of diarrhea. This means that the prevalence of diarrhea can increase the percentage of latrine users.

Table 6. Cross tabulation between the prevalence of diarrhea cases and the percentage of healthy latrine users

Prevalence of diarrhea cases	Percentage of healthy latrine users					
	Low (74.91-83.27)		Moderate (83.28-91.64)		High (91.65-100.00)	
	n	%	n	%	n	%
Low (1,04-4,53)	0	0.0	1	25.0	5	16.1
Moderate (4,54-8,04)	3	100	1	25.0	22	71.0
High (8,04-11,53)	0	0	2	50.0	4	12.9
Total	3	100	4	100	31	100

Source: (Badan Penelitian dan Pengembangan Kesehatan, 2018; Dinas Kesehatan Jawa Timur, 2019)

The not yet maximum use of latrines in several districts/cities in East Java can be influenced by the availability of facilities, the percentage of villages that apply CLTS, the percentage of illiteracy, and the prevalence of diarrhea. The assumption of the influence of the availability of facilities in the use of latrines is supported by the results of previous studies which showed that one of the factors that affected open defecation free was the availability of facilities (Abubakar, 2018). The selection of this independent variable is also supported by other studies which stated that the factors that influenced open defecation behavior were the level of education and community knowledge in using latrines (Murhan & Aprina, 2020). In addition to the things above, the results of previous research conducted in Trenggalek Regency in 2018 also showed a relationship between diarrhea and cases of open defecation (Dista et al., 2018).

In 2018 the most healthy latrine users in East Java Province were in the regency/city with the percentage of adequate facilities. This means that the more adequate latrine facilities in a regency/city, the higher the percentage of healthy latrine users. This statement is in line with the results of previous studies which showed that the lower the ownership of latrines, the more people would open defecation (Dwiana, 2017). In a similar study in Pematang Regency in 2016 also showed that open defecation behavior was influenced by knowledge, work, attitudes, availability of facilities and support from family and community leaders (Shaluhiah et al., 2016). In addition, the results of other studies also showed that there was a significant relationship between latrine ownership and open defecation behavior (Nina, 2019). In addition to having an impact on open defecation behavior, the unavailability of latrines also affected a person's psychology (Jain et al., 2020).

The percentage of healthy latrine users were mostly in districts/cities with a high percentage of villages implementing CLTS. Community-based total sanitation is a program strategy approach to change sanitation hygiene behavior through community empowerment with the triggering method (Syarifah et al., 2020). Total sanitation is the condition of people who do not open defecation or Open

Defecation Free (ODF). The principle of implementing Community-Based Total Sanitation is to eliminate subsidies for basic sanitation facilities with the aim of exploring the potential of the community in building sanitation facilities personally by developing social solidarity in the community. CLTS will encourage household responses to use household latrines (Alhassan & Anyarayer, 2018). The results of previous studies showed that CLTS was able to increase latrine coverage by 6-12% and even reach 30% (Harter, Inauen and Mosler, 2020). From this study, it can be seen that CLTS has a relationship with the use of latrines and effectively increases the percentage of latrine users, which shows that In addition, CLTS also supports the creation of a healthy society (Indriyani et al., 2016).

The inability to read or the illiteracy rate can be used as an indicator of measuring the level of education in an area. The higher the illiteracy rate in a regency/city, the lower the percentage of healthy latrine users in that regency/city. In previous studies, it has succeeded to show a significant relationship between knowledge and defecation behavior (Mailanie S, 2018). This is also supported by a research by conducted in Wamesa sub-district, South Manokwari district which showed that open defecation behavior was influenced by knowledge, attitudes, roles of health workers, government, cadres, and community participation (Linggar et al., 2019). Based on the results of previous research, it was shown that the education of the head of the family affected the behavior of open defecation. Education is one way for someone to get information and interpret it correctly as a cause of behavioral disease. Knowledge in the form of suggestions that invites people to think and evaluate the impact of defecating not in latrines according to health standards is an effective action (Syarifah et al., 2020).

The prevalence of diarrhea in a regency/city can increase the percentage of latrine users in that regency/city. According to a previous study conducted in 2019, the prevalence of diarrhea was slightly higher in non-ODF households than in ODF households (Megersa et al., 2019). Areas with free open defecation status had a lower prevalence of diarrhea cases compared to areas that had not achieved open defecation free status (Njuguna, 2016). The statement shows that the



prohibition of open defecation can reduce the number of cases of diarrhea, therefore the presence of diarrhea can increase public awareness to defecate in its place. This is also supported by a similar study conducted in Jambi which showed that diarrhea was the most significant variable to create open defecation behavior in the community (Eko Mirsiyanto et al, 2020). In addition, previous research conducted by Wiwik Winarningsih, Z. Fanani, 2019 in Pasuruan, East Java also showed that the diarrhea variable had a significant direct effect on permanent healthy latrines (JSP) and open defecation (BABS).

CONCLUSION

Based on the results of the study, it can be concluded that the low number of latrine users in East Java Province in 2018 was due to the inadequacy of healthy latrine facilities, the lack of village participation in implementing CLTS, and the existence of several districts/cities with moderate illiteracy rates. Apart from these factors, the presence of diarrhea cases can actually increase the percentage of healthy latrine users. The results of this study can be used by local stakeholders to make health-based policies as an effort to reduce open defecation

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Determinan Terhadap Penyerapan Vasinasi Covid-19 Pada Lansia di Kecamatan Jagakarsa Jakarta Selatan

Determinants of Covid-19 Vaccination Uptake Among the Elderly in Jagakarsa Sub-District, South-Jakarta

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ABSTRACT

Background: COVID-19 is considered to be responsible for the emergence of a new dangerous outbreak. Therefore, it is expected that the interest in receiving vaccines will be very high. However, the lowest vaccination uptake rate comes from the elderly population. **Objective:** To investigate determinants of COVID-19 vaccination uptake among the elderly. **Methods:** Cross-sectional design study. This research was conducted in Jagakarsa Sub-district from March to July 2021 with an online interview. The sample size was 393 from the total population study of 21,903. The sampling method was purposive sampling with independent variables namely gender, education level, knowledge, attitudes, government policy, health worker's recommendations, family support, access to COVID-19 vaccination service facilities, perceptions of COVID-19, and perceptions of COVID-19 vaccines. The dependent variable was COVID-19 vaccine uptake. Sample inclusion criteria included the elderly aged ≥ 60 years old and who lived in the Jagakarsa Sub-district. The exclusion criteria were those who were not willing to be respondents. This study conducted a univariate analysis to determine the frequency distribution of variables. Bivariate data analysis that was used were Chi-Square and multivariate data analysis with multiple logistic regression ($\alpha=0.05$). **Results:** The results of the bivariate analysis showed that education, knowledge, perceptions of COVID-19 and COVID-19 vaccines, attitudes, government policies, access to COVID-19 vaccination service facilities, health worker's recommendations, and family support had a significant relationship with COVID-19 vaccine uptake. The results of multivariate analysis showed that the most associated factor was the perception of COVID-19 vaccine with AOR= 9,928 (95% CI: 5,386-18,302). **Conclusion:** Respondents had a high acceptance of COVID-19 vaccines, whereas most of the respondents were worried about the side effects at the same time. As our findings suggest, informing the elderly about forthcoming vaccines would help to build their trust in the COVID-19 vaccines.

Keyword: COVID-19; COVID-19 vaccines; vaccine uptake; elderly

INTRODUCTION

Coronavirus Disease 2019, commonly known as COVID-19, is believed to be liable for an epidemic from Wuhan, Hubei Province, China since December 2019. As of 28 February 2021, World Health Organization (WHO) has reported 126 million cases and three million deaths due to the global spread of COVID-19 across 219 countries. The highest number of cases were reported from America, especially the United States of America in the first place. While the second rank was reported from a country in Asia, namely

India (World Health Organization, 2021). The Asian region, especially Southeast Asia, was the second-highest region in the world with more than 34 million cases of COVID-19. Countries that contributed to this high number of cases were India with 29,823,546 cases (CFR = 1.3%) and Indonesia with 1,989,909 cases (CFR = 2.8%) (World Health Organization, 2021).

As the country with the second most reported COVID-19 cases in Southeast Asia, Indonesia has been highly committed to implementing preventive behavior through 3M ("Memakai masker, Menjaga Jarak, dan Mencuci tangan"), 3T

("Tracing, Testing, dan Treatment"), and vaccination (Satuan Tugas Penanganan COVID-19, 2021). According to a previous study in 2021, over 90% of the community implemented the 3M attitude. However, the high mobility of the community on daily activities had accelerated the transmission of this virus. Thus a new, strategy arose to cut off the transmission of the virus from human to human through the concept of herd immunity and community protection, which was vaccination (Satuan Tugas Penanganan Covid-19, 2021).

The implementation of COVID-19 vaccination program in Indonesia began in two stages, namely stage 1 for groups of health workers, and stage 2 for the elderly and public officials. At this stage, the priority group's vaccine program was targeted at 40 million recipients. The dose 1 COVID-19 vaccination coverage for health workers and public officials had exceeded the national target. The success of this coverage was different for the elderly group, in which the coverage of dose 1 was 23.41% and 14% for dose 2 (Kementerian Kesehatan, 2021).

The low COVID-19 vaccine uptake in the elderly was a major obstacle in achieving the target of the COVID-19 vaccination in Indonesia. It was shown in the provinces within the Java-Bali region, considering the high transmission of COVID-19 among the elderly, especially in DKI Jakarta. Also, the provinces in the Java-Bali region had a vaccine proportion of 70% but was not able to achieve the elderly group vaccination target for four months of implementation. The following report found that dose 1 (65.3%) and 2 (58.7%) among the elderly were running slowly and were still far below the provincial target (Dinas Kesehatan Pemprov DKI Jakarta, 2021).

Jagakarsa Sub-district had the most elderly in South Jakarta with over twenty thousand people. Jagakarsa was also one of the five sub-districts with the highest cases of COVID-19 in DKI Jakarta (Sudin Kependudukan dan Pencatatan Sipil Jakarta Selatan, 2020). It was reported that COVID-19 vaccine uptake among the elderly in the Jagakarsa Sub-district was slow in reaching the target (Dinas Kesehatan Pemprov DKI Jakarta, 2021).

The delay of vaccination coverage programs was caused by the elderly's low desire to be vaccinated. The research conducted by the American Association of Retired Persons also stated that the increase of a person's age had an impact on decreasing a person's desire to be vaccinated. It was found that 69% of the elderly tended to have no desire to be vaccinated because they doubted the government (American Association of Retired Persons, 2020). In addition, the accelerated pace of vaccine development has contributed greatly to the public impression that the vaccine would not be adequately tested for safety and effectiveness (Karafillakis and Larson, 2017). According to a previous study in 2020, perceptions about vaccines influenced the willingness of the elderly to make decisions about whether to receive a COVID-19 vaccination (Sherman *et al.*, 2020). However, recommendations from health workers were considered helpful in alleviating elderly concerns about the safety and effectiveness of COVID-19 vaccines.

The previous research conducted in 2021 stated that knowledge was an important predictor of attitudes and behavior (Saiful Islam *et al.*, 2021). It was also an important component in developing an effective COVID-19 vaccination program strategy. In addition, family support factors had an important role in realizing the good health status of the elderly. Another factor related to receiving vaccines in the elderly was the access to COVID-19 vaccination service facilities based on distance, time, cost, and transportation needed by the elderly. This was because poor access could reduce the trust and interest of the elderly in this program and the vaccine itself (French *et al.*, 2020).

Regarding the delay of vaccination coverage programs among the elderly, the Indonesian Ministry of Health has urged local governments to be fully committed to overcoming conditions in the field (Kementerian Kesehatan, 2021). Although there has been no highly-effective vaccine yet and only a few proven effective treatments for COVID-19, various preventive measures need to be pursued Bults *et al.* (2020). Therefore, this program may be the best preventive measure in building immunity in the

community to eliminate the spread of COVID-19 in Indonesia. Based on the description above, a study was conducted to analyze the factors associated with covid-19 vaccination uptake among the elderly in Jagakarsa Sub-district.

METHODS

The research method that was used was quantitative analytics research with cross-sectional studies for the research design. It depicted community response at the point of the study. The population was all of the elderly who lived in the Jagakarsa Sub-district area. The minimum sample size was calculated using the Slovin formula, which was 393 respondents. Also, 393 respondents from the total elderly population of 21,903 met the sample criteria and were taken as samples in this study by purposive sampling method. Sample inclusion criteria included the elderly aged ≥ 60 years old and lived in the Jagakarsa Sub-district. The exclusion criteria were those who were not willing to be respondents.

This research was conducted in March-July 2021 by taking primary and secondary data. Secondary data were from demographic data of the elderly collected by urban villages. Then, the primary data were obtained from online interviews by telephone or video calls and an online questionnaire with google forms.

The independent variables were gender, education level, knowledge, attitudes, government policy, health worker's recommendations, family support, access to COVID-19 vaccination service facilities, perceptions of COVID-19, and perceptions of COVID-19 vaccines. The dependent variable was COVID-19 vaccine uptake. All variables were descriptively analyzed using univariate. Also, the bivariate analysis was used to determine relationships between a dependent variable and independent variables. In the final analysis, multiple logistic regression was required to evaluate associated factors. This research has received ethical approval from the Ethics Committee of Universitas Pembangunan Nasional Veteran Jakarta No. 305/VI/2021/KEPK.

RESULTS AND DISCUSSION

Table 1. Descriptive Statistics for COVID-19 Vaccines Uptake among Elderly

Characteristics	N	%
COVID-19 Vaccine Uptake		
Yes ¹	246	62.6
No ²	147	37.4
COVID-19 Vaccine Facilities³		
Puskesmas Kelurahan	37	15.0
Puskesmas Kecamatan	29	11.8
Public Hospitals	31	12.6
Private Hospitals	43	17.5
Other COVID-19 Vaccine Centers	106	43.1
Intention to take COVID-19 vaccines³		
Yes	38	25.9
No	109	74.1
Living Arrangements		
Living with family members	288	73.3
Living with partner	89	22.6
Living alone	16	4.1
Total	393	100

Vaccine is a measure to prevent or reduce the severity of many diseases and is important for people of all ages, including the elderly (University of Michigan, 2020). The COVID-19 vaccine is a drug that is injected to provide immunity against acute respiratory syndrome by SARS-CoV-2, the virus that causes the disease COVID-19 (Li *et al.*, 2020).

Table 1 shows that 246 (62.6%) respondents were already vaccinated. The majority of respondents (43.2%) who were already vaccinated received COVID-19 vaccine at COVID-19 vaccine service centers such as the Badan Usaha Milik Negara (BUMN) Istora Senayan vaccine center, Balai Besar Pelatihan Kesehatan (BBPK) Hang Jebat, and mobile vaccine service at schools and offices. The respondents were likely more interested in vaccination centers at the sub-district and urban village levels than in health facilities. On the other hand, 147 respondents who were unvaccinated reported that the majority did not intend to get COVID-19 vaccines. Compared to the younger age group, the elderly group had the lowest interest with only 1-3% (Kementerian Kesehatan, 2021). Also, the respondents were dominated by the elderly who lived with family members.

Table 2. Cross-tabulation for independent variables and COVID-19 vaccine uptake

Category	COVID-19 Vaccine Uptake						P-Value
	Yes		No		Total		
	n	%	n	%	n	%	
Gender							
Women	138	62,2	84	37,8	222	100	0,923
Men	108	63,2	63	36,8	171	100	
Educational level							
Degree level or above	88	85,4	15	14,6	103	100	0,000
Below degree level	158	54,5	132	45,5	290	100	
Knowledge							
Good	188	79,0	50	21,0	238	100	0,000
Insufficient	58	37,4	97	62,6	155	100	
Attitude							
Positive	214	76,4	66	23,6	280	100	0,000
Negative	32	28,3	81	71,7	113	100	
Perception of COVID-19							
Positive	149	75,3	49	24,7	198	100	0,000
Negative	97	49,7	98	50,3	195	100	
Perception of COVID-19 vaccine							
Positive	177	88,1	24	11,9	201	100	0,000
Negative	69	35,9	123	64,1	192	100	
Government policy							
Yes	214	72,8	80	27,2	294	100	0,000
No	32	32,3	67	67,7	99	100	
Access to vaccination facilities							
Yes	164	58,4	117	41,6	281	100	0,009
No	82	73,2	30	26,8	112	100	
Health worker's recommendations							
Yes	147	68,7	67	31,3	214	100	0,009
No	99	55,3	80	44,7	179	100	
Family support							
Good	160	77,7	46	22,3	206	100	0,000
Insufficient	86	46,0	101	54,0	187	100	

Based on the level of education, it shows that most (73.8%) respondents were below degree level. The majority of the respondents have completed formal education, which entailed high school and elementary school. The result of the bivariate analysis showed that p value= 0.000 (<0.05) indicating there was a significant relationship between education and COVID-19 vaccine uptake. This result is in line with a previous research in 2021 which stated that education had a significant relationship with greater public willingness to receive the vaccine (Nikolovski *et al.*, 2021).

Nevertheless, there were 238 (60.6%) of the 393 respondents who had a good knowledge about COVID-19 vaccines. It was because of the good support from their family that provided information about COVID-19 vaccine program. The study also found that there was a relationship between knowledge and vaccine uptake with a significance level of 0.000 (<0.05). Knowledge was considered to have an important role as a predictor of

attitudes and behavior, a crucial component in formulating an effective COVID-19 vaccination program strategy (Saiful Islam *et al.*, 2021).

This research found that 88.1% of respondents tended to have positive attitude towards COVID-19 vaccine uptake. The bivariate statistical test results obtained a value of p= 0.000 (<0.05) which meant there was significant relationship between attitude and COVID-19 vaccine uptake. The reason for receiving COVID-19 vaccine was self-protection and protecting close relatives. Over 70% of respondents wanted to get vaccinated without hesitation. According to the results of previous research conducted in 2021, the attitude towards vaccine uptake was composed of satisfaction, comfort, and trust in the COVID-19 vaccine (Sallam, 2021). The perception of COVID-19 disease was found to be significantly associated with vaccine uptake among the elderly. It was because the bivariate test obtained p value = 0.000 (<0.05). The results of the analysis showed that the more respondents

were worried about the spread of COVID-19 outbreak, the higher the acceptance of COVID-19 vaccine. Respondents who were very worried about getting COVID-19 were more likely to agree to take COVID-19 vaccine. It had a good impact on influencing the satisfaction factor which referred to the perception of the risk of being infected with the disease. So that someone would consider it was necessary to receive the vaccines. Meanwhile, the trust factor referring to the perception of COVID-19 vaccines was related to the safety of vaccination and the effectiveness of the vaccine, as well as the convenience factors were related to the availability, affordability, and convenient vaccination process.

This study also found that the perception of COVID-19 vaccines was significantly associated with vaccine uptake after a chi square test. The results of the test showed that p value = 0.000 (<0.05). Based on a previous research conducted in 2021, the theory of planned behavior identified three main factors that influenced the decision to receive COVID-19 vaccines (Cordina, Lauri and Lauri, 2021). The factors were a person's attitude towards vaccination in general and COVID-19 vaccines in particular, a person's attitudes towards vaccines that were considered important, and perceptions of behavioral control which referred to the perceived difficulty in carrying out an attitude, namely receiving vaccines. Attitudes towards COVID-19 vaccines were proven in this study to have a significant relationship.

A positive attitude towards vaccination can be encouraged through public policy initiatives. Through the government's mandatory COVID-19 vaccine program, the majority of respondents consider this as an obligation of citizens. It was found that there was significant relationship between government policy and COVID-19 vaccine uptake with a significance level of 0.000 (<0.05). This result is in line with previous research in 2020 which explained that acceptance of COVID-19 vaccine in the United States was lower if it was not recommended by the Health Service and the local Food and Drug Administration (Kreps *et al.*, 2020). However, most people did not consider themselves as a vulnerable group and they accepted the vaccine with a sense of trepidation.

In addition, the convenience of COVID-19 vaccine service facilities based on distance, time, cost, and means of transportation needed by the elderly from their place of residence was very affordable for 281 (71.5%) respondents. This was essential to achieve the program's success targets, where poor access could reduce trust and interest in program organizers and the vaccines themselves (French *et al.*, 2020). Based on the bivariate analysis, it was found that there was a relationship between access to vaccination facilities and COVID-19 vaccine uptake with a significance level of 0.000 (<0.05). Respondents with very affordable access to COVID-19 vaccine service facilities had a higher tendency to receive COVID-19 vaccines. This was also evidenced by the place chosen by the majority of respondents, which was another COVID-19 vaccine center. COVID-19 vaccine centers such as the Badan Usaha Milik Negara (BUMN) Istora Senayan vaccine center, Balai Besar Pelatihan Kesehatan (BBPK) Hang Jebat, and mobile vaccine service at schools and offices were chosen by the elderly because of the ease of access and administration. Respondents also preferred vaccination centers at the sub-district and urban levels to get vaccinated against COVID-19 compared to doing it at health facilities.

Otherwise, the elderly's high trust in the health provider was associated with the use of preventive health services such as vaccination. The results of the assessment were p value= 0.009 (<0.05). In this study, respondents who believed in the recommendations of health workers were four times more likely to receive COVID-19 vaccines. Public skepticism about vaccines was closely linked to a distrust of medical evidence. It could be overcome according to previous research in 2021 which explained that 67.7% of the elderly who were vaccinated against COVID-19 stated they received advice from doctors and medical professionals before deciding to get vaccinated (Malesza and Bozym, 2021). The public's doubts could be appeased by health workers through counseling and messages dissemination referring to the government policies. Therefore, the recommendations of health workers, especially medical personnel, were an important factor in people's decision-making to receive COVID-19 vaccines.

Table 3. Multiple Logistic Regression Predicting the Likelihood of COVID-19 Vaccine Uptake among the Elderly.

Variable	B	SE	P Value	Exp (B)	95% CI	
					Lower	Upper
Educational level	1,176	0,397	0,003	3,241	1,487	7,062
Knowledge	0,981	0,307	0,001	2,667	1,460	4,873
Perceptions of COVID-19 vaccines	2,295	0,312	0,000	9,928	5,386	18,302
Attitude	1,069	0,341	0,002	2,913	1,492	5,687
Government policy	1,091	0,343	0,001	2,976	1,520	5,827
Access to COVID-19 vaccination service facilities	1,038	0,359	0,004	0,354	0,175	0,716
Family support	0,861	0,318	0,007	2,365	1,269	4,409

The majority of the research respondents had sufficient family support to make decisions about the acceptance of COVID-19 vaccines for the elderly. Respondents with good family support were 4,085 times more likely to receive COVID-19 vaccines than respondents with less family support. Attitudes and perceptions of other key people were identified as important factors to influence vaccine uptake. A strong positive correlation was found between family support and COVID-19 vaccination uptake with a significance level of 0.000 (<0.05).

Table 3 shows the multiple logistic regression model after adjustments of variables namely educational level, knowledge, attitude, perception of COVID-19 vaccine, government policy, access to COVID-19 vaccination facilities, and family support. Out of ten independent variables, gender, perception of COVID-19, and health worker's recommendations were excluded. The results of multiple logistic regression test showed that perceptions of COVID-19 vaccines were significantly associated with COVID-19 vaccine uptake ($p= 0.000$). The likelihood of being vaccinated was the highest among the elderly with positive perceptions of COVID-19 vaccine. The elderly with

positive perceptions were 9,928 times as likely to receive COVID-19 vaccine compared with those who had negative perception after controlling by the variables of education, knowledge, attitudes, government policies, access to COVID-19 vaccination facilities, and family support (AOR= 9,928; 95% CI: 5,386-18,302).

This result was in line with a previous study in 2021 which classified the perceptions of COVID-19 vaccines based on the susceptibility, benefits, barriers, and self-efficacy of the vaccines; which had a significant relationship with COVID-19 vaccine uptake (Guidry *et al.*, 2021). The positive perceptions of COVID-19 vaccines had been explained in various studies using the health belief model (HBM) theory which consists of perceived susceptibility, perceived severity, perceived benefits, and perceived barriers, and successfully explained 66% of the variance of COVID-19 vaccine uptake and provided a useful framework (Guidry *et al.*, 2021). The COVID-19 vaccine perception factor associated with COVID-19 vaccine uptake in this population is belief about safety. This positive perception can explain the high COVID-19 vaccine uptake among the elderly in Jagakarsa Sub-district. It is because they had a strong perception of the benefits of vaccination compared to the risks according to the HBM.

This research had the limitation that the cross-sectional study was not able to explain the cause-and-effect relationship of the variables. It is because there was no clear time sequence between exposure and outcome. The secondary databases from sub-district and urban village levels were not completely available. Therefore, the purposive sampling method was chosen even though it was not representative. So, a more representative sampling method will be required to investigate the actual elderly's perspectives on COVID-19 vaccine uptake in the future. The final limitation concerns about the respondent's answer could be unstable. Any possibility might cause a change in the respondent's opinion about the vaccination program.

CONCLUSION

This study revealed that positive perceptions towards the COVID-19 vaccines were significantly associated with COVID-19 vaccine uptake. It was found that the

elderly had a high acceptance of the COVID-19 vaccines, although some respondents were still worried about the side effects. As our findings suggest, informing the elderly about forthcoming vaccines helped to build positive perceptions and attitudes towards the vaccination program and the vaccines themselves. In that case, the government should focus on spreading a public policy that is easy-to-understand on the effectiveness, safety, and convenience of receiving the COVID-19 vaccine. Also, it could be supported by Health workers who maintain communication on the benefits related to the COVID-19 vaccination uptake. On the other hand, family could be a source of information that the elderly trusted the most. The COVID-19 vaccination service facilities should be less than thirty minutes from the elderly's residence. Furthermore, mobile vaccination facilities should be widened so it would provide easier access.

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Tradisi Muslim Indonesia di Masa Pandemi COVID-19

Indonesian Muslim Tradition during COVID-19 Pandemic

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ABSTRACT

Background: The majority of Indonesians are Muslim (87%) scattered in each province. They celebrated Eid al-Fitr at the end of May 2020 along with the COVID-19 pandemic that has not ended yet. The tradition of celebrating Eid day is contradictive to the COVID-19 transmission prevention efforts that prohibit people from the crowd, prohibit having activities outside of their houses, and limit human mobilization. Even the president has imposed a ban on mudik Lebaran (coming back to hometown) due to the prediction of massive human migration. The handling of the COVID-19 pandemic requires participation of all parties, including the central government, regional governments, local leaders, the private sector, and the whole community. **Objective:** This study aims to describe the Indonesian Muslim tradition related to the prevention of the transmission of COVID-19 pandemic. **Methods:** This was quantitative research with a cross-sectional design. Data were collected a day before Eid day. There were 246 Muslims in Central Java province as respondents. Variables in this study were respondent characteristics (age, sex, educational level, occupation, and economic level) and Muslim Eid Al-Fitr tradition such as mudik tradition, Eid shopping needs, silaturahmi tradition, and Eid praying. This study also identified the respondents' practice in preventing COVID-19 transmission. All variables were analyzed descriptively to explain how Muslims conducted their tradition during the COVID-19 pandemic. **Results:** COVID-19 pandemic caused most Muslims not to celebrate Eid as usual. They had to be far away from their families. On the other hand, the tradition to visit the tombs of the ancestors was also maintained by Javanese people and had become a habitual culture. Carelessness and disobedience against health protocols during a pandemic might bring fatal consequences to themselves and others. **Conclusion:** Most Muslims were discouraged from mudik, silaturahmi, and performing Eid prayer in a congregation in the mosque. They encountered difficulties to keep physical distancing due to people around did not exercise physical distancing for themselves.

Keyword: COVID-19, Islam, Muslim, pandemic, tradition

INTRODUCTION

COVID-19 cases in Indonesia were first identified on March 2nd, 2020. By mid-May 2020, COVID-19 cases were still increasing (Kementerian Kesehatan Republik Indonesia, 2020). The World Health Organization (WHO) has declared COVID-19 as a global pandemic (WHO, 2020). For the spread may occur from person to person, it can cause a tremendous impact on society (Suganthan, 2019; Muhammad Adnan Shereen, Suliman Khan, Abeer Kazmi, Nadia Bashir, 2020). Its medication still has yet to be found as of now.

Until June 19th, 2020, the positive confirmed cases in Indonesia were 43,803 cases after the addition of

1,041 new cases. The number of recovered patients reached 17,349 after having an increase of 551 people. There were 34 additional deaths, raising the total mortality to 2,373 people (COVID-19, 2020b).

In Central Java, there were 2,659 COVID-19 confirmed cases (1,242 people in medical treatment, 1,193 recovered, and 224 could not survive). The number of patients under surveillance (PDP) was 7,621 people (972 people in medical treatment, 5,589 recovered, and 1,060 died). The number of people in monitoring of COVID-19 was 46,062 people, with the number of people who were still under observation as many as 1,230 people (Satuan Gugus Tugas

Percepatan Penanganan COVID-19, 2020c).

Health protocols continue to be promoted to break the chain of COVID-19 transmission, in which the public encounters difficulties to implement, especially for physical distancing. However, the transmission of COVID-19 will be easier to control if everyone obeys it (COVID-19, 2020a). One of the obstacles is due to social and cultural factors in the community, including Central Java citizens.

Javanese culture is inseparable from social life and is motivated by the habits of the past. Past habits have taught people to respect each other and prioritize manners (Destareni Belda Puspawuni and Moordiningsih, 2016). Gathering and visiting each other in Java have become a challenge in the current pandemic era. Muslims are the majority in Central Java Province. Although prohibitions on holding gatherings and face-to-face meetings exist, there has been an indication that people will still celebrate the moment of Eid al-Fitr like in previous years.

Javanese people will feel pleasant when they visit and gather with their family in their hometown (Destareni Belda Puspawuni and Moordiningsih, 2016). Indonesian Muslims have these traditions called *mudik* (coming back to hometown to celebrate Eid day), *Eid* prayer (gathering for Eid prayer in congregation), and *silaturahmi* (visiting and gathering to apologize to each other).

Every year during Eid al-Fitr, Central Java becomes the most-visited homecoming destination province in Indonesia (Yulianto, 2011). In the context of Javanese culture, the term of *mangan ora mangan sing penting kumpul* which means "the main thing is to gather, whether there is food or not" also reflects Javanese culture that will be troublesome in preventing COVID-19 transmission (Wijayanti, H., & Nurwiantri, 2010). Especially for larger families who have not seen each other for a long time, the tradition of going back home to gather with the family becomes an inevitable phenomenon.

In line with the tradition of visiting each other and gathering, people will also have prepared for serving the snacks, dishes, and souvenirs. To entertain guests

and other family members, people are required to visit and shop at shopping centers, such as the traditional market and mall, since online shopping is not common to some people in Central Java. If people ignore the health protocols of COVID-19 prevention, it will tremendously increase the risk of being infected by COVID-19. The handling of the COVID-19 pandemic requires participation of all parties, including the central government, regional governments, local leaders, the private sector, and the whole community (Kementerian Dalam Negeri Republik Indonesia, 2020). The aim of this study is to describe the Muslim tradition during Pandemic COVID-19 in Indonesia.

METHODS

This was a cross-sectional study with online data collection through google form. Data were collected only on May 23rd, 2020, a day before Muslim Eid Al-Fitr which fell on May 24th-25th, 2020. There were 388 people who filled the surveys. We obtained 246 Muslim respondents who lived in Central Java. Respondents had provided written approval for their involvement in the study. This study has received ethical approval from the Faculty of Public Health Diponegoro University Ethics Committee No: 054/EA/KEPK-FKM/2020.

Variables in this study were respondents' characteristics (age, sex, educational level, occupation, and economic level) and Muslim Eid Al-Fitr tradition such as *mudik* tradition, Eid shopping needs, *silaturahmi* tradition, and Eid praying. This study also identified the respondents' practice in preventing COVID-19 transmission. All variables were analyzed descriptively to explain how Muslims conducted their tradition during the COVID-19 pandemic.

RESULTS AND DISCUSSION

Table 1 shows that the majority of respondents in this study were women, categorized as adults (26-45 years). Other main variables of respondents consisted of completed undergraduate, working in the private sector, and having a wage above the minimum rate. Most of them were unconfirmed COVID-19 when they filled the questionnaires.

Table 1. Characteristics of Respondents

Variables	n	%
Sex		
Female	180	73.2
Male	66	26.8
Age		
Teenager	61	24.8
Adult	120	48.8
Elderly	65	26.4
Education Level		
No Education	1	0.4
Primary School	3	1.2
Middle School	9	3.7
High School	75	30.5
Academy/Diploma	16	6.5
Undergraduate	105	42.7
Postgraduate	37	15
Occupation		
Public Employee	66	26.8
Stated Enterprise Employee	7	2.8
Private Employee	70	28.5
Entrepreneur	24	9.7
College Student	49	19.9
No Occupation/ Housewife	30	12.2
Income Level		
Below the minimum wage	94	38.2
Above the minimum wage	152	61.8
Status of COVID-19		
Unconfirmed	236	95.9
In monitoring	10	4.1

People migrate to urban areas from rural areas to get a higher education or to find a respected job, but they return to their hometown for a while to meet their parents or relatives or to show off their success (Ridho, Fachrizal and Lubis, 2018). A small number of respondents continued to carry out the tradition of *mudik* (going back home) to celebrate Eid al-Fitr with their family, and 13.4% stated that there was still a possibility to do *mudik* to their hometown during or after Eid day.

Although the government has banned the public from going home and appealed to stay at home during this pandemic, the *mudik* tradition contains the dimensions of spiritual, psychological, and social that must be addressed by implementing a cultural heteronomy. *Mudik* tradition can be defined as the deepest expression of homesickness or symbol of spiritual awareness triggered by daily routines in the city, encouraging certain people to return to their hometowns at a specific time. That is Eid day (Majid, 2013).

Research on COVID-19 during Eid Al-Fitr suggested that the government needed to impose clear and law-bound

regulations to prevent the spread of COVID-19 during Eid day (Wartoyo, 2020; Handayani, Kusumawati and Indraswari, 2021). There was a regulation from the Minister of Transportation No. 25 Year 2020 which prohibited *mudik* during the COVID-19 pandemic. However, this regulation was considered controversial due to weak arguments and the possibility to cause economic loss. The regulation itself was hard to be understood by the community (Ubaidillah and Aji, 2020).

However, *mudik* has been considered a heritage tradition of most Javanese people. This tradition is related to the custom of Javanese farmers of visiting their homeland. They visit the tombs of the ancestors to pray for them as a form of respect and belief in the existence of the afterlife (Irianto, 2012).

The tradition of visiting ancestors' tombs is also maintained by Javanese people. Usually, they visit the tombs as a form of respect to their ancestors, at least once a year, at the moment of Eid Day. The ritual of praying together, cleaning the tomb, and putting flowers remains a habit that is often performed by Javanese people.

Table 2. Muslim Tradition in Eid Day during Pandemic COVID-19

Variables	n	%
Did mudik		
Yes	14	5.7
No	232	94.3
Planning for mudik		
Yes	7	2.8
Perhaps	33	13.4
No	206	83.7
Planning for Eid praying in mosque		
Yes	32	13
Perhaps	63	25.6
No	151	61.4
Planning for silaturahmi		
Yes	14	5.7
Perhaps	89	36.2
No	143	58.1
Visiting market		
Yes	105	42.7
No	141	57.3
Eid shopping needs		
Yes	68	27.6
No	178	72.4
Total	246	100

Happiness and joy to be able to gather with friends and family at home have become the goal of *mudik* tradition for most people. There is no heavy burden felt in the calculation of economic size or

costs incurred for the tradition. The joy and happiness that will be enjoyed together with families while being far from their residences erase all social and economic burdens. Ignoring the high costs incurred while carrying out the migratory tradition so the desire to gather can be fulfilled.

These costs are obtained not only from income and savings for the year but also through debts to the bank or pawnshop or even selling anything of personal value as long as the desire to meet the family on Eid day is fulfilled (Soebyakto, 2011). Based on the calculation using the cost and benefit comparison, some people decided to keep *mudik* during this pandemic with all the possible consequences afterwards.

Muslims perform *sholat Eid* on the day of Eid al-Fitr and Eid al-Adha. Some believe that this prayer law is obligatory to be carried out. Some also believe it as *fardhu kifayah* (enough to be done by some people only). However, many Muslims in Indonesia believe that it is *sunnah* (recommended to be carried out but not sinful if left out) (Budiawan, 2014).

Eid prayers can be done alone or in a congregation at the mosque, or at home. Towards Eid, the Indonesian Ulema Council or *Majelis Ulama Indonesia* (MUI) has issued a *fatwa* that concurrent prayer at the mosque can be performed only by those who live in COVID-19-free areas, with shortening prayer readings and sermons, and always implementing health protocols (Majelis Ulama Indonesia, 2020). This pandemic has caused organized religions, along with adherence to age-old traditions, to re-evaluate themselves concerning congregational gatherings, burial rites, pilgrimage, and other established acts of worship (Shah, 2020). Even though almost no region in Indonesia is free from COVID-19, only 61.4% of respondents stated firmly not to have prayed at the mosque.

The reluctance of Muslims to do *sholat Eid* alone or at home is due to the presumption that Eid day is a symbol of the victory of Muslims after a month of fasting. Fasting and prayer are the teachings of Islam and are religious rituals as a part of religious practices. This practice is carried out by adherents in the context of devotion, worship, or honor to the God they believe in. In addition to

religious practices, the religious dimension is seen as sociologically classified as a religious belief system and a religious experiential dimension.

Fasting is interpreted as fighting against lust. Therefore, after finishing the fight, the Muslims believe that victory needs to be celebrated together (in congregation) (Hamdi, Kholiq and Tahir, 2007). Having Eid prayer in congregation in the mosque, as is generally done by people in Java, is also one of the symbols of Islam (Majelis Ulama Indonesia, 2020); which some people want to continue to be maintained even though the number of COVID-19 cases continues to increase in all regions (Satuan Tugas Penanganan COVID-19, 2020).

Likewise, with the *silaturahmi* tradition, only 58.1% of respondents had a strong intention not to carry out the tradition as in previous years. *Silaturahmi* is not limited by any kinds of people's characteristics (Hakam, 2015). It can enhance the value contained in the Eid al-Fitr as the value of kinship. This value is obtained when meeting and gathering with family. Even *silaturahmi* can bring happiness because it is a catharsis and psychotherapist mechanism both individually and socially (Fuad, 2011).

In a big Muslim family, people usually meet up in their village. Meeting with family becomes one of the crucial experiences that people seek. Traditionally, younger family members visit their older relatives (Prasetyo and Warsono, 2018) (Iriany et al., 2019). The importance of family meaning for the Muslim community in Java provides a valuable opportunity to appeal for not returning to hometown (*mudik*). The importance of the family and a sense of wanting to protect them from danger have the potential to be a simple reminder treatment to discourage those who want to carry it out, especially during the current COVID-19 pandemic (Prasetyo and Sofyan, 2021).

The phenomenon of *mudik* is closely connected with the production, distribution, and consumption of materials and services (Prasetyo and Warsono, 2018). A crowded market is a common sight before Eid. It turns out that these conditions were still valid during the pandemic. 42.7% of respondents were still determined to visit the market before Eid day. Most claimed it was to shop for

Eid needs such as staples food, fashion stuff, and snacks to entertain guests in the gathering on Eid day.

Eid tradition is very meaningful, so people are willing to continue to be able to celebrate as normal as possible. Only 15% of respondents visited the market not to shop but to work as a seller or a health worker who conducted rapid tests on visitors and sellers in the market.

Table 3. Respondents' Practices in Preventing COVID-19 Transmission

Variables	N	%
Always wearing a mask while conducting activities outside		
Yes	235	4.5
No	11	95.5
Touching face despite wearing a mask		
Yes	106	43.1
No	140	56.9
Hand washing		
Sometimes	3	1.2
Often	103	41.9
Always	140	56.9
Physical distancing		
Never	1	0.4
Sometimes	7	2.8
Often	123	50
Always	115	46.7
Total	246	100

4.5% of respondents claimed not to always wear masks outside of their houses as recommended by the government to wear cloth masks for the general public and surgical masks for health workers. As studies concluded, mask-wearing (surgical or homemade masks) could inhibit the virus growth in aerosol (Ma, Q-X, Shan, H, Zhang, H-L, Li, G-M, Yang, R-M, Chen, 2020) (Davies A, Thompson KA, Giri K, Kafatos G, Walker J, 2013). Even though the majority had complied with the appeal, 43.1% of respondents still often touched their faces. However, research in China revealed that there were some super-factors associated with COVID-19 transmission. One of them was touching the cheek, nose, and mouth as in the face's area (Wang *et al.*, 2020).

Almost all respondents stated that they currently washed their hands more often than before the pandemic. However, not all respondents did handwashing in the right steps and ways. Handwashing is considered as one of the ways that have a strong correlation with COVID-19 prevention practices (Alzyood *et*

al., 2020; Haque, 2020). WHO recommended washing hands in 11 steps, using running water, and soap for 40 - 60 seconds (World Health Organization (WHO), 2009).

Physical distancing was recommended to be implemented for COVID-19 prevention, as it was one of the Indonesian government's appeal (Ihsanuddin, 2020). However, the results of this study showed that only 46.7% of respondents were still compliant to do physical distancing while conducting activities outside of their houses. Meanwhile, the rest admitted that it was difficult to always implement physical distancing because others around them were not compliant with these recommendations. Research in the United States revealed that health information and awareness of close family members were strongly correlated with the practice of physical distancing (S. Li *et al.*, 2020).

Often people around them did not empathize with others who had tried to keep their distance while they were outside. Community ignorance is caused by the lack of awareness of the COVID-19 seriousness and the perception that they are not susceptible to contracting the virus. People with no feeling of illness consider their body's immunity is in a good condition. Some people infected with the COVID-19 virus experience no symptoms at all, although can shed the virus which then spread to others (WHO, 2020). A recent systematic study found that the proportion of asymptomatic cases ranged from 6% to 41% and gave a combined estimate of 16% (12%-20%) (Byambasuren, 2020).

Society still follows old traditions and cultures, especially when it comes to gathering. They will rather choose to gather despite knowing the risk of COVID-19 than to receive the threat of experiencing discrimination from neighbors and family if they do not. In addition, the tradition of eating together while gathering with family will increase the risk of COVID-19 transmission.

This is also caused by their presumption that they have carried out healthy living behaviors such as eating nutritious food, exercising, and getting enough rest. So the virus will not infect them (Khosravi, 2020; R. Li *et al.*, 2020; Zegarra, Chino and Ames, 2020). This study did not measure those behaviors.

Meanwhile, people must always be vigilant and obey the government's appeal to break the chain of transmission of COVID-19 despite feeling healthy. Carelessness and disobedience against health protocols, when implemented during a pandemic, may bring fatal consequences to themselves and others.

CONCLUSION

COVID-19 pandemic caused most Muslims not to celebrate Eid as usual. Most Muslims were discouraged from mudik, silaturahmi, and performing Eid prayer in a congregation in the mosque. Nevertheless, some were still engaged in buying and selling activities in the market to fulfil the needs of Eid, such as shopping for staples and preparing snacks for guests. They encountered difficulties to keep physical distancing due to people around not conducting physical distancing for themselves.

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Efektivitas Pelatihan dan Penggunaan Aplikasi *Si Centing* Terhadap Pengetahuan dan Keterampilan Kader Posyandu

S

Effectiveness of Training and Use of Si Centing Application on Knowledge and Skills of Posyandu Cadres

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ABSTRACT

Background: Stunting is a condition where toddlers have a length or height that is less than their age. Various efforts have been made to overcome nutritional problems in the community through optimizing the role of posyandu. Cadres are front liners in the early detection of nutritional problems within the community, so they are required to have good knowledge and skills. **Objective:** The purpose of this study is to determine the effectiveness of the training and use of the *Si Centing* Application. **Methods:** This study used a pre-experimental design with a one group pretest-posttest design. The population in this study was all posyandu cadres with a total sample of 64 people. Data collection techniques were carried out by measuring the knowledge and skills of cadres before and after receiving training and using the centing application. The data analysis technique used the T-test. **Results:** The P-Value of the statistical knowledge test was 0.000 and the p-value for attitude was 0.000. These results indicate that H_0 was rejected, so it can be concluded that there are differences in the average value of the knowledge and skills of volunteers before and after the training and use of the *Centing* application. **Conclusion:** There was a difference in the average value of knowledge and skills of cadres before and after the training and use of the *Centing* application in Singaparna District 2020. We suggest Puskesmas and Health to develop an agenda for capacity building activities for Posyandu cadres which are held regularly by using tools or promotional media of health according to the needs of the community.

Keywords: Training, application of the *Centing*, Knowledge, attitudes, cadre

Kata Kunci: Efikasi diri, Primigravida, Ibu Pekerja, Menyusui

INTRODUCTION

Nutrition in infants and toddlers can determine the quality of human resources since being healthy and quality human resources are the main capitals for health development that determine a nation. Indonesia is faced with a double burden of nutrition, namely over and undernutrition, where some children are obese, but some are stunted or short, thin, and even malnourished. Under-five stunting is a chronic nutritional problem caused by many factors such as socioeconomic conditions, maternal nutrition during pregnancy, disease in infants, and lack of nutritional intake in infants. Based on basic health research data, 18.8% of children aged 0-5.9 months experienced severe malnutrition, 29% experienced stunting due to chronic

malnutrition. While on the other hand, there were 1.6% of children under five who were obese (RISKESDAS: 2013).

Various efforts have been made to deal with nutritional problems in Indonesia, one of which is by creating a community-based health service forum conducted by, from, and with the community, namely *posyandu*. Integrated Service Post or Integrated Service Post (*posyandu*) is a form of Community-Based Health Efforts carried out by, from, and with the community, to empower and provide convenience for the community to obtain health services for mothers, infants, and toddlers (Ministry of Health of the Republic of Indonesia, 2012).

As implementers, cadres have an important role, one of which is to determine the success of weighing infants and toddlers. The right weighing step will

decide the quality of determining nutritional status where nutritional status itself is an indicator of the nutritional state of a community (Ministry of Health, 2011).

An effort to improve the quality of cadres can be done by providing facilities such as sending cadres to training, providing a guide book, attending health seminars, and rewarding (Ministry of Health, 2011).

From the five *neighborhood health centers*, a program of activities undertaken included the health of the child's mother or *maternal health and Children (KIA)*, family planning or *family planning (KB)*, immunization, nutrition services, and diarrhea prevention and control. In the work area of the Singaparna Health Center, the results of the survey conducted by researchers in 2019 were 73,3% of cadres stated that cadres needed cadre training to measure weight and height as well as skills to carry out counseling communications at the time of implementation of *posyandu* (Fitriani, 2020).

Therefore, training for *posyandu* cadres is a solution to the problem of suboptimal services of *posyandu*. This training is expected to produce cadres with good knowledge and skills so early detection of nutritional problems can be carried out. In addition, the use of *Si Centing* as a media for health promotion and applications helps to enforce the nutritional status of toddlers so cadres can carry out their roles and functions properly. Based on this, this research aims to determine the effectiveness of training and use of the application *Si Centing* on the knowledge and skills of *posyandu* cadres in Singaparna District in 2020.

METHODS

The research method used was pre-experimental with one group pretest posttest design. The population in this study was all cadres of *posyandu* in Cikunir Village, namely 64 people with a sampling technique of *total sampling*. The independent variables in this study were cadre training and the use of the centing

application, while the dependent variable was the knowledge and skills of *posyandu* cadres about early detection and prevention of stunting. Knowledge is defined as the ability to answer questions about the meaning of stunting prevention. The skills variable consists of the cadre's ability to measure height and weight, as well as the ability to communicate in counseling.

The instruments in this study were questionnaires and skill observation sheets. The questionnaires were designed by researcher and were tested on 20 targets that had the same characteristics as the respondents. Data collection techniques were carried out directly by measuring knowledge through filling out questionnaires and assessing the skills of cadres in weighing and measuring body weight as well as counseling before being given an intervention. Then, the respondents were given training and the use of the centing application to be re-measured after the intervention. This research has passed the research ethics test with certificate No. 044/KEPK-BTH/VI/2020. The analysis technique was carried out after the data were complete and then were tested for normality using the Kolmogorov-Smirnov test. Data analysis was carried out using t-test as the data were normally distributed.

RESULTS AND DISCUSSION

Table 1. Characteristics of respondents based on age and tenure of *posyandu* cadres in Singaparna sub-district

Variable	n	%
Age (years)		
20-35	16	25.0
36-50	33	51.6
>50	15	23.4
Service period (years)		
<1	4	6.3
1-3	24	37.5
3-5	27	42.2
>5	9	14.1
Total	64	100.0

Table 2. T-Test of Effectiveness of Training and Use of Important Applications of Knowledge and Skills

Paired Differences	t	Df	Sig. (2-
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	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		n	tailed)	
				Lower	Upper			
				Pre & post (Knowledge)	-4.453			1.490
Pre & post (Skill)	-2.141	.710	.089	-2.318	-1.963	-24.129	63	0.000

Based on the Table 1, it is found that the majority of cadres were aged 36-50, namely 51.6% and the majority of the cadres' working period were 3-5 years, namely 42.2%. 7.31 while after the intervention was 11.77. For the attitude variable, it was found that the average score of cadres' skills before the intervention was 4.20 and after the intervention was 6.34. The correlation value for the knowledge variable was 0.622 and for the attitude variable was 0.510 which means there was a very strong relationship.

Based on the Table 2, it was found that the P-Value of the knowledge statistical test was 0,000 and the P-Value for attitude was 0,000. These results indicate that the value of P-Value > (0.05) so that H_0 was rejected, so it can be concluded that there was a difference in the average value of the knowledge and skills of the cadres before and after training and the use of the *Centing* application at the 95% confidence level.

Knowledge and Skills of Cadres

Cadres are the spearhead in socialization efforts to the community. One of the cadres' duties is to provide health information in the posyandu. Cadres are a source of reference for community referrals, trusted by the community, and have close relationships with the community because these cadres are part of the community. The role of cadres in carrying out their duties as providers of health information has a major influence on behavior in the community (Pradana, 2012).

The importance of the role of cadres must of course be balanced with the knowledge of cadres and attitudes of cadres in their role in socialization or counseling related to maternal and child health. Research conducted at Pondok Betung Pondok Aren stated that the knowledge of cadres about nutrition was related to the ability of cadres to deliver counseling. Cadres need good knowledge and skills to convey important messages

about health to the community in order to form a clean and healthy lifestyle, record and report posyandu activities so as not to enter wrong data and conclude the results of posyandu activities. Research conducted in the Wonokerto Health Center area stated that knowledge had a significant influence on the practice of cadres in the implementation of posyandu. (Latif, 2010)

Knowledge of cadres can influence the behavior of cadres in carrying out tasks such as early detection of growth and development in toddlers. This is in accordance with the statement that knowledge is a predisposing factor in the formation of behavior. Knowledge is a predisposing factor that has a significant effect on the behavior of cadres in carrying out early detection of toddler development. (Eka et al., 2014). Meanwhile, skills are one of the factors in Lawrence Green's behavioral theory regarding predisposing factors or factors that facilitate cadres to behave (Notoatmodjo, 2012). This is in accordance with the results of the research which stated that there was a significant relationship between knowledge, attitude, level of education and training of cadres with cadre practices in counseling at table 4 posyandu (Pangestuti et al., 2016).

The knowledge and skills possessed by cadres include the implementation of the main tasks and functions of cadres at the posyandu on posyandu days and outside posyandu days. Cadres need to understand how to measure height and weight correctly so they can determine the nutritional status of targeted infants and toddlers. Another cadre's task is to have the ability to communicate well at the counseling desk or conduct counseling. So good knowledge is needed about the dangers of nutritional problems in infants and toddlers, as well as efforts to prevent nutritional problems in infants and toddlers. In addition, public speaking skills or counseling skills need to

be trained to help make it easier for cadres to convey health messages. (Direktorat Bina Gizi, 2011).

The Effect of Cadre Training and Use of Si-Centing Applications

Based on the results of the study, the average value of knowledge before training was 7.31 while after intervention was 11.77. For the skill variable, the average cadre skill score before the intervention was 4.20 and after the intervention was 6.34. The P-Value of knowledge statistical test is 0.000 and the P-Value of skill is 0.000. These results indicate that the P-Value value > 0.05 so that H_0 was rejected. It can be concluded that there was a difference in the average value of knowledge and skills of cadres before and after training and the use of Centing applications with 95% of confidence level. The correlation value for the knowledge variable was 0.622 and for the skill variable was 0.510, which means the relationship was very strong.

There are factors that can directly affect a person's skills, namely motivation, experience, and expertise. Where one's skills can be supported through training activities so they can help produce something more valuable more quickly (Agnes, 2015). Training activities, interactive learning, and integrated learning are clinically important to impart knowledge and skills (Bluestone *et al.*, 2013).

Training is also defined as a systematic effort to master skills, regulations, concepts, or ways of behaving that have an impact on improving performance. Experience in training is an integral part of an individual and is an integrated investment of a person in interacting effectively with the social environment and the surrounding community (Mulyawan, 2012).

In order to increase the use of posyandu in the community, the government again has launched a plan to revitalize posyandu by providing refresher/retraining, especially for new cadres. Cadre training is an activity carried out to improve the ability, knowledge, technical skills, and dedication of cadres. Posyandu services can be expanded by increasing the quality and quantity of services on open days for home visits. It can also create a conducive climate to provide health services by providing facilities, infrastructure,

reporting, and collecting data on posyandu work. Knowledge will increase the ability of doctors and puskesmas staff to provide additional support when they come to supervise. (Direktorat Bina Gizi, 2011).

The results of a study stated that increasing the capacity of posyandu cadres through training on monitoring the nutritional status of toddlers could increase the knowledge and abilities of toddler cadres, especially in measuring the weight of babies over two years old and under two years old, then measuring the height of toddlers and writing them down in the Growth Graph book (Zaki *et al.*, 2018). Another study stated that balanced nutrition training for cadres could increase the knowledge and skills of cadres by 34% (Pratiwi, 2012). The results of the research conducted in Jelbuk District found that there was a strong and positive relationship between the amount of training received by cadres and the skills of cadres in providing counseling on nutritional status. (Aini, 2019) There are several other research results that support the previous statement, namely an increase in knowledge before and after the training intervention (Purnomo *et al.*, 2018). The increase in knowledge before and after training is also shown in the results of the following study where the results before the intervention had a mean value of 19.30 and after the intervention an average of 20.36 (Akol *et al.*, 2017). The same results are shown in the following study where the value of knowledge before training was 56.2 and after was 66.8 (Febrianto *et al.*, 2019). And the results of knowledge before the training intervention were included in the sufficient category, namely 53.3% and after the training was in the good category, namely 66.1% (Murtadho, 2019). In addition to cadre training, also the use of assistive media that can facilitate cadres in carrying out their duties and functions during posyandu service through an innovative design. This is as in the following statement, in the process of entering data and concluding data on the nutritional status of cadres, it requires a fast and accurate way through the use of technology. Mobile technology can help health workers, cadres and the community in collecting data, reminder messages, facilitating health education and as a medium of communication in the

community (World Health Organization, 2011). The application of Si Centing presents as an innovation produced by one of the universities in Tasikmalaya which is developed as a means of early detection of stunting through a process of inferring nutritional status and health promotion media that can be accessed using an android phone. There are studies that utilize mobile health innovations that are expected to reach all levels of society by using online tools or prepaid systems with communication devices/media that are very close to humans such as mobile phones, tablets and the internet. The use of smartphone applications has the potential to be used as a means of health promotion that can increase one's knowledge and attitudes (Coughlin *et al.*, 2016).

The results of this study are in line with the results of research using iposyandu as a medium to increase knowledge and skills of cadres where the level of knowledge of cadres before being given an intervention of using iposyandu was good knowledge as much as 54.65% and sufficient knowledge as much as 45.34%. After being given training for cadres with iposyandu, there was an increase in good knowledge to 100% including the good category (Widarti *et al.*, 2019).

CONCLUSION

The conclusion in this study is that there was a difference in the average value of knowledge and skills of cadres before and after training and the use of the *Centing* application in Singaparna Subdistrict in 2020.

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Persepsi Ancaman dengan Perilaku Pencegahan COVID-19 pada Masyarakat di Sukoharjo

Threat Perception with COVID-19 Prevention Behavior in Community in Sukoharjo

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ABSTRACT

Background: Currently, almost all countries in the world are experiencing cases of the COVID-19 pandemic. The COVID-19 disease has been declared as a pandemic by the World Health Organization (WHO) after almost most of the countries in the world were infected with COVID-19. One of the ways to prevent COVID-19 is determined by perception of threat to COVID-19 that occurs in the community. **Objectives:** This study aims to determine the relationship between threat perception and COVID-19 prevention behavior in Sukoharjo Regency. **Methods:** The type of research used was analytical observational with a cross-sectional approach. The population was all residents aged 15-65 years in Sukoharjo Regency of 618,992 in 2018 with a total sample of 246 people from simple random sampling technique. The research was conducted in October-December 2020. The research instrument used was questionnaires which were filled out directly by the respondents through google form. The research variables were threat perception and COVID-19 prevention behavior. Bivariate statistical test using chi square test. **Results:** The results showed that respondent's perception of the threat of COVID-19, the perception was high (67.1%) with high COVID-19 prevention behavior as well (58.8%). Threat perception influenced mask wearing behavior (OR= 2.68; P value<0.031), hand washing behavior (OR= 3.39; P value<0.001), and social distancing behavior (OR= 3.39; P value<0.001). There was a relationship between threat perception and COVID-19 prevention behavior in Sukoharjo Regency (P value<0.000). **Conclusion:** The study concluded that threat perception was related to COVID-19 prevention behavior, both the behavior of using masks, washing hands and social distancing. There is a need for regional government policies to maintain the behavior of preventing COVID-19 in order to reduce the number of COVID-19 cases in Indonesia

Keywords: threat perception, preventive behavior, COVID-19.

INTRODUCTION

Currently, almost all countries in the world are experiencing cases of the COVID-19 pandemic. After most of the countries in the world were infected with COVID-19, the World Health Organization (WHO) declared the COVID-19 disease as a pandemic. The COVID-19 pandemic started in Wuhan, Hubei Province, China in December 2019, and then quickly spread to many countries around the world (WHO, 2020).

COVID-19 has severely affected various countries including the United States, Italy, France, Spain, Germany,

Switzerland and Iran. However, the highest death rates were found in Italy, Spain, England, France and Iran. There is an increasing trend in the transmission, prevalence, and mortality rate due to COVID-19. The increasing number of cases and the estimated risk of death indicate that increased public health mediation, good hygienic conditions, social distancing and limited movement can control the COVID-19 epidemic (Taghrir, Borazjani and Shiraly, 2020). Given the epidemiological characteristics of COVID-19, it is very important to stop the spread of the virus through endemic prevention and control methods such as isolating

infected patients and controlling the source of infection (Li *et al.*, 2020).

Global COVID-19 confirmed cases in early August 2020 were 18,354,342 cases with 696,147 deaths (CFR 3.8%) spread across 215 affected countries and 171 local transmission countries. Confirmed cases in Indonesia were 116,871 cases with 5,452 deaths. The highest cases were found in East Java (23,412 cases), DKI Jakarta (23,026 cases), and Central Java ranked third (10,764 cases) (Kemenkes Republik Indonesia, 2020). In Central Java, the highest cases were in Semarang Regency while Sukoharjo Regency was ranked sixth with a total of 297 COVID-19 cases (Dinas Kesehatan Propinsi Jawa Tengah, 2020). The 297 cases with 1,451 cases of close contact and 810 suspected cases in Sukoharjo Regency were spread across all sub-districts in Sukoharjo Regency with the highest cases being in Grogol District with 56 cases (Dinas Kesehatan Kabupaten Sukoharjo, 2020).

Beyond the danger to health, increased stress factors with consequent increased anxiety and emotional development occur because of emergencies and constant worries (Bauer *et al.*, 2020; Jin *et al.*, 2019). A person's perceived threat to health can be seen from the perceived susceptibility (i.e. beliefs in vulnerability and the possibility of contracting the disease) and perceived severity (i.e. beliefs related to changes in the disease experienced) (Kan and Zhang, 2018). Characteristics of high threat perception are shown in a state of excessive alertness, a feeling of life-threatening danger and a strong sensitivity to the emergence or recurrence of disease (Chang, 2017). Thus, beyond physical health, fear of the consequences of infection such as death or severe physical disability can be experienced by people at risk and patients diagnosed with COVID-19 (Moreira *et al.*, 2020). Such emotional disturbances combined with the boredom, loneliness, and anger that can arise in quarantine (Zhao *et al.*, 2020).

Based on the number of COVID-19 cases in Sukoharjo Regency, until August 2020, there was an increase and the perception of the threat to COVID-19 could encourage the occurrence of COVID-19 prevention behavior in the community (Dinas Kesehatan Kabupaten Sukoharjo, 2020). Therefore, it is important to obtain

information related to threat perception and COVID-19 prevention behavior in Sukoharjo Regency.

This research is expected to provide information about the perception of the threat and behavior of COVID-19 prevention in Sukoharjo Regency, so that it can be used to make policies for the COVID-19 disease prevention and control program in Sukoharjo Regency. This study provides an overview of the relationship between threat perceptions and COVID-19 prevention behavior in people in Sukoharjo Regency. The purpose of this study is to determine the relationship between threat perception and COVID-19 prevention behavior in Sukoharjo Regency.

METHODS

This research was an analytic observational study with a cross-sectional research approach design. The population in this study was the entire population aged 15-65 in Sukoharjo Regency, which was 618,992 in 2018 (BPS Sukoharjo, 2019). Using the sample size formula as follows (Lameshow and Pramono, 1997):

$$n = \frac{Z_{1-\alpha/2}^2 p(1-q)N}{d^2(N-1) + Z_{1-\alpha/2}^2 p(1-q)}$$

With $N=250$, $P \text{ value}=80\%$ and $d=0.05$, the sample size in this study was 246 people. Sampling was done using simple random sampling technique (Sugiyono, 2015). The research was conducted in October-December 2020 with a google form distributed through the whatsapp group owned by the research team.

The instrument in this study was an interview with a questionnaire via google form. The independent variable was threat perception and the dependent variable was COVID-19 prevention behavior. Demographic data and characteristics of respondents in this study were obtained through a google form questionnaire.

The research variables were threat perception and COVID-19 prevention behavior. Threat perception explains the respondent's perception regarding the danger, impact and prediction of the increase in COVID-19. Threat perception was obtained through

a questionnaire consisting of 5 questions. COVID-19 prevention behavior explains the behavior of wearing masks, washing hands, keeping a distance, seeking information about COVID-19, and socializing about COVID-19. COVID-19 prevention behavior was obtained through a questionnaire consisting of 8 questions.

Data analysis was carried out by means of descriptive analysis to describe the threat perception and COVID-19 prevention behavior. Bivariate analysis used chi square test to determine whether there was a relationship between variables.

RESULTS AND DISCUSSION

This study found that more than half of the respondents were old adults (72.8%) and female (71.5%). From the education level of the respondents, most of them were undergraduate (42.7%) and the highest occupation in amount was State Civil Apparatus (24.4%) and other private sectors (24.4%). Judging from the respondent's perception of the threat of COVID-19, the perception was high (67.1%) with high COVID-19 prevention behavior as well (58.8%).

Table 1. Univariate Analysis Results

Variable	n	%
Age		
Young adults (20-39 year)	66	26.8
Old adults (40-60 year)	179	72.8
Elderly (>60 year)	1	0.4
Gender		
Female	176	71.5
Male	70	28.5
Education		
Middle school	6	2.4
High school	71	28.9
Diploma	34	13.8
S1	105	42.7
S2	30	12.2
Profession		

Variable	n	%
Does not work	4	1.6
Student/College Student	53	21.5
Housewife	28	11.4
Farmer	3	1.2
Labor	4	1.6
Entrepreneur	34	13.8
State Civil Apparatus	60	24.4
Other private sectors	60	24.4
Threat Perception		
Low	81	32.9
High	165	67.1
COVID-19 Prevention Behavior		
Low	102	41.5
High	144	58.5
Total	246	100

The statistical test results showed that a low COVID-19 prevention behavior had the same perception of the threat (50%) and the high COVID-19 prevention behavior had a high threat perception (67.1%) and the P value of 0.000. It means that there was a relationship between threat perception and COVID-19 prevention behavior in Sukoharjo Regency.

This study is in line with research in Wonosobo which found that most of the respondents were women (64.5%), productive age (26-45 years), with higher education (63.2%), and private employment (29.2%) (Purnamasari *et al.*, 2019). This indicates that women participate more in research than men. The questionnaire was filled out with a google form and was disseminated through a whatsapp group so that the respondents were mostly in the productive age with higher education.

Table 2. Results of Bivariate Analysis

Threat Perception	COVID-19 Prevention Behavior				Total	P value	
	Low		High				
	n	%	N	%			
Low	51	50	30	20.8	81	32.9	
High	51	50	114	79.2	165	67.1	0.000
Total	102	100	144	100	246	100	

Research conducted in West Java, Banten, and Jakarta found that people in the Capital of Jakarta did not have sufficient risk perceptions to protect themselves with COVID-19 prevention behavior (Permatasari *et al.*, 2020). Research in the United Kingdom (UK) found that threat perceptions in 10 different countries around the world were high. This threat perception was related to the experience of people who had been infected by the COVID-19 virus and the different socio-cultural factors of each country. In addition, threat perception was also influenced by gender where men tended to have lower threat perceptions than women. Another finding was that trust in government actions in preventing the transmission of COVID-19 was also one of the factors that caused people to have high threat perceptions (Dryhurst *et al.*, 2020).

Research in India found that 80% of respondents were busy with the COVID-19 pandemic and around 40% of respondents felt paranoid about the thought of contracting a COVID-19 infection. Around 70% of respondents reported feeling worried about themselves and those closest to them being infected with COVID-19 during the pandemic. This concern caused around 12% of respondents to be unable to sleep during the pandemic. Almost half of respondents felt panic by reports of the COVID-19 pandemic through printed and electronic media. This finding shows that COVID-19 was a threat to them so there was concerns about contracting COVID-19 (Roy *et al.*, 2020).

The research in United States found that respondents rated the risk of being infected as relatively high and they considered the COVID-19 disease as a threat to health. They would be aware of the potential for transmission, which

indicates that if they got infected, they would more likely spread it to others (Wise *et al.*, 2020).

Research in Wonosobo found that in general, the community's COVID-19 prevention behavior included washing hands with soap or hand sanitizer, keeping a distance, carrying out calls to stay at home, avoiding crowds, and physical and social distancing (Purnamasari *et al.*, 2019). Another study on COVID-19 prevention behavior in Prenggan village, Kota Gede, Yogyakarta, found that community behavior in preventing COVID-19 was good except for the use of disinfectants and smoking cessation (Pascawati and Satoto, 2020). Compliance with COVID-19 prevention behavior in the Bengkulu Health Polytechnic Academic or *Politeknik Kesehatan Bengkulu* community was only 59.1% with the highest adherence in educators and the lowest in students. Bad behavior would increase the number of cases and death rates due to COVID-19. The highest prevention behavior was not leaving the house unless there was an important business (76.6%) and implementing clean living behaviors such as washing hands before eating and before touching the face (74.3%) (Simbolon *et al.*, 2020).

Research in India found that as many as 82% of respondents had reduced social contact and about 90% of respondents began to avoid gatherings and parties. Nearly 33% of people accepted that they felt obligated to purchase and store essential items at home. In addition, the preventive behaviors carried out were using a mask without clear signs and symptoms of infection (37%) and more than 75% felt the need to use sanitizer and gloves (Roy *et al.*, 2020).

One effective way to kill germs is by washing hands, because it is known

that the COVID-19 virus can stick on the body, especially on hands that have touched other objects infected by droplets. Splashing saliva on objects can transmit the COVID-19 virus by 75% (Kemenkes Republik Indonesia, 2020).

This behavior can prevent transmission of COVID-19 infection because based on research results, washing hands with soap and running water can prevent transmission of bacterial and viral infections (Ataee *et al.*, 2017). The use of masks as personal protective equipment can prevent the transmission of COVID-19 through splashes of saliva where 72.2% of the Wonosobo people have complied with using masks (Purnamasari *et al.*, 2019). Although the most effective masks to prevent COVID-19 are surgical masks, people can still use cloth masks as an effort to prevent COVID-19 from splashing saliva (Ika, 2020). Research by Emely E *et al.* showed that the fitted filtration efficiency increased from the use of health masks by 55% to 66% when using double masks (health masks and cloth masks) (Emily E. Sickbert-Bennett *et al.*, 2021).

Research in the UK using a newly developed scale found that FCV-score 19S was associated with positive changes in COVID-19 prevention behavior. This study found that individuals were more involved in preventive behavior when they had a severe threat perception, so this threat perception can act as a motivating factor to perform behaviors that facilitate the prevention of COVID-19 (Harper, 2020). An Iranian study conducted on medical students found that threat perceptions differed significantly between students trained in the emergency room (ED) and non-ED. This study also found a significant correlation between threat perception and COVID-19 prevention behavior (Taghrir, Borazjani and Shiraly, 2020).

Another study conducted in 10 different countries around the world (United Kingdom, United States of America, Australia, Germany, Spain, Italy, Sweden, Mexico, Japan, and South Korea) found that there was a correlation between threat perception and COVID-19 prevention behavior in 10 countries (Dryhurst *et al.*, 2020). This is also in line with research in America which found that the perception of the risk of being infected with COVID-19 in oneself affects protective behavior such as washing

hands, maintaining distance, avoiding social interactions, staying at home, and traveling less frequently (Wise *et al.*, 2020).

The government of Indonesia has issued a policy in order to prevent the spread of COVID-19, namely washing hands with methamphetamine, wearing masks, maintaining distance, and avoiding crowds. However, the behavior of preventing and spreading COVID-19 has not been implemented by the entire community.

CONCLUSION

People in the Sukoharjo area have already possessed a high perception of the threat to COVID-19 to be able to implement COVID-19 prevention behavior (washing hands with soap/hand sanitizer, wearing masks, keeping a distance, avoiding crowds). Local government policies are needed to maintain COVID-19 prevention behavior (washing hands with soap/hand sanitizer, wearing masks, keeping distance, avoiding crowds) in order to reduce the number of COVID-19 cases in Indonesia. In addition, proper education was needed about perception of the threat like the dangers, impacts and prediction of the increase in COVID-19 on the community.

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Preferensi Metode dan Media Promosi Pencegahan Penyalahgunaan Narkoba Menurut Sudut Pandang Siswa dan Orang Tua di Bima

Preference of Methods and Media for Promotion of Drug Abuse Prevention According to the Point of View of Students and Parents in Bima

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ABSTRACT

Background: Drug abuse in the Bima region increases from year to year, and it is dominated by students. In 2017 there were 44 cases handled, increased to 79 cases in 2018, and 71 cases in 2019. Bima region as a port city that connects Sumbawa island with a number of large islands in Indonesia has become a risk factor for illicit drug trafficking. Socialization on the dangers of drug abuse that has been carried out in the school environment has a number of limitations, especially in terms of time, methods, and media as well as the number of target audiences that are covered by the activity. It is necessary to develop a method and media approach that is appropriate to the developmental characteristics of adolescents. **Objectives:** This study aims to obtain an overview of the need for methods and media for the promotion of drug abuse prevention from the point of view of students and parents in Bima. **Methods:** This research was conducted through a survey method. It was carried out in six Junior High Schools (SMP) in Bima from May to October 2021. Research variables consisted of demographic characteristics; the history of drug and substance use by students; and the need for prevention of drug abuse based on methods, media, locations, frequency, and information providers in Bima. Research data were collected using a questionnaire instrument. Population of this research was students and their parents. The sample size was determined based on the Slovin formula. Data were obtained from 275 students and 70 students' parents. Research data analysis was done with univariate statistics. **Results:** Students and parents need drug abuse prevention promotion activities that are implemented by health workers either directly or through audiovisual media and social media, such as film screenings on television and gadgets. The promotion is conducted on a scheduled 2-3 times a year. Most of the respondents chose the school and house for the promotion activities. **Conclusion:** Students and parents had the same interests and opinions about the need for methods and media to promote drug abuse prevention. The results of this research are expected to be a recommendation for the development of a promotion program for the prevention of adolescent drug abuse in Bima.

Keyword: drug abuse; health promotion; media; method; prevention; adolescent

INTRODUCTION

Drug abuse or misuse of drugs and other substances is a risky behavior that encourages health problems. Such risky behavior often starts in adolescence. Impacts of this risky behavior greatly affect individuals, families, and the large society (Das *et al.*, 2016). The common use of either narcotics or other illicit drugs nowadays is mostly found within the

circle of youngsters or students. According to data released by the Body of National Narcotics (*Badan Narkotika Nasional* or BNN), it was discovered that there has been a shift of trend in users of narcotics, psychotropics, and illicit drugs in 2017 and 2018. In 2017, the majority of the users were workers and in 2018, it was shifted to being dominated by users of the adolescent and children age groups. Citing data from BNN in 2018, the

prevalence of drug abuse within the circle of students in 13 capitals of provinces in Indonesia reached 3.2 per cent or as many as 2.29 million people (Irianto *et al.*, 2020).

West Nusa Tenggara (*Nusa Tenggara Barat* or NTB) is one of the regions with a status of drug emergency along with an increase in cases of drug abuse. Based on data in 2019, there were 557 cases of drug use, which increased by 74 cases compared to the previous year. Drug users in NTB were dominated by students aged 15-20, precisely 231 cases. 59 regions in NTB were included in the regional category of illegal trafficking and drug abuse, one of which was Bima City (Ardyan, 2020). The Bima region as a harbor that connects Sumbawa Island with a number of big islands in Indonesia has become a risk factor to the illegal trafficking of drugs in Bima.

Abuse of drugs and substances within the circle of adolescents in Bima has given a number of negative impacts. They caused at least 405 adolescents in Bima City to be sent to the Mental Hospital of NTB Province due to detection of nervous disorders (SUARANTB.com, 2017). Results of a study on drug abuser students in Bima showed that impacts on psychological aspects caused the subject to become lazy, slow, often tense and uneasy, hard to focus, unstable emotionally, and feeling pressured (Nurmaya, 2016). In line with it, other results of a study stated that manifestations of drug abuse in adolescent behavior caused disrupted sleep patterns, decreased study concentration, and habit of truancy (Wulandari, 2020).

Socialization about the abuse of Narcotics, Alcohols, Psychotropics, and other Addictive Substances (*Narkotika, Alkohol, Psikotropika, dan Zat Adiktif lainnya* or NAPZA) for the society in Bima has been conducted by several related parties, one of which was through the Prevention, Eradication of Abuse and Illicit Trafficking of Drugs (*Pecegahan, Pemberantasan Penyalahgunaan dan Peredaran Gelap Narkoba* or P4GN) held by the District National Narcotics Agency (*Badan Narkotika Nasional Kabupaten* or BNNK) of Bima City. Parallel to the Regional Rules of Bima City about P4GN, targets of the P4GN event included high school students, both junior high school

students and senior high school students, thus this program was also conducted at school. The importance of conducting P4GN at school was supported by the results of a study on NAPZA abuse in adolescents in Bima, which showed that trial behaviour about abuse on drugs and other substances started from junior high school (Wulandari, 2020). Therefore, prevention efforts need to be performed as early as possible, and students are one of the proper targets.

Even though the effort to socialize the danger of NAPZA abuse has been conducted through educational activity by related parties, the cases of NAPZA abuse continue to increase. According to data recorded by BNNK Bima in 2018, it was known that in 2017 44 cases were being taken care of, increased to 79 cases in 2018 afterwards, and became 71 cases in 2019 (Ardyan, 2019). Results of an interview with several teachers in a high school in Bima showed that based on their observation, the socialization activity on drug abuse that was held within the school environment had several difficulties, particularly on the aspect of time, method, media, and amount of target audience that could be reached by the activity. On the time aspect, this socialization activity still felt inadequate as it was held only one to two times a year and was not scheduled routinely. A classical method of speech was thought to be less interesting for students in this millennial era and only able to cover a small portion of the targets. They need variations in types of activity that are more effective.

The increase of NAPZA abuse within adolescents in which the majority consists of school-age children and the non-optimal results of the classical educational activity make it necessary to develop a suitable method and media approach to characteristics of adolescent development in this millennial era. Exploration study is an early step that can be conducted to deepen the knowledge and new ideas to develop either methods or media of prevention for NAPZA abuse in adolescents of Bima. This research aims to get the overview of the need for methods and media of promotion of NAPZA abuse prevention from the point of view of students and parents in Bima. Students of junior high school are at an age group of adolescents that is denoted

by the storm and stress period. This makes them a susceptible group to various risky behaviors like NAPZA abuse.

According to their characteristics of development, adolescents in general still have a dependency on their parents. For that reason, students and parents become the proper targets for promotion programs concerning adolescent health. Opinions and views of students and parents on methods and media of promotion that they need for NAPZA abuse prevention can be study material in the development of relevant future promotion programs. This is hoped to be able to support the effort of achieving the activity's goal optimally.

METHODS

This research was a quantitative descriptive study using the survey method to get an overview of the need for NAPZA abuse prevention according to the point of view of students and parents. A survey was done on junior high school students and their parents from 6 junior high schools in Bima. The time of research was from May to October 2021. The sample selection with cluster random sampling was performed on 880 students and 880 fathers or mothers. The sample size was determined according to the Levin formula and amounted to 275 samples each for students and parents. The final data were obtained from 275 questionnaires that were filled out by parents. Criteria of the respondents, for both students and parents, were able to read and write.

The questionnaires were developed to procure data that depict the variables of the research. These variables included demographic characteristics of respondents; opinions of students and parents on methods, media, source of information, time and materials of needed education for NAPZA abuse prevention; as well as the history of drug use of the students. Explanations regarding the research and how to fill out the questionnaires were given directly to students, while for parents, those were through research explanation texts that were sent along with an Agreement After Explanation (*Persetujuan Setelah Penjelasan* or PSP) sheet. Respondents filled out the questionnaires after the sheet was

signed by the parents. Students filled out their questionnaires at school and the questionnaires for parents were sent through the students to be filled out at home. There were 275 questionnaires filled out by students and 70 questionnaires filled out by parents.

Rechecking was performed on the filled questionnaires to ensure the completion of data from each respondent. Research data were analyzed with univariate statistics to obtain an overview of the distribution of frequency of respondents' characteristics, the history of use of drugs and substances of the students, and the need for NAPZA abuse prevention according to the point of view of students and parents. The design of this research has been checked for appropriateness by the ethical health committee of the Faculty of Medicine of Universitas Mataram and has been approved by the decision of study number: 94/UN18.F7/ETIK/2021.

RESULTS AND DISCUSSION

Data of this research that have been processed and analyzed showed results that depicted respondents' characteristics and needs on Pa. According to the results, the distribution of the characteristics and needs of prevention of NAPZA abuse from the point of view of students and parents is shown in the following table:

Table 1. Students' Characteristics according to Age, Sex, Parents' Education, Parents' Occupation, and Residency.

Characteristics	n	%
Age		
< 14 years old	145	52,7
14-16 years old	127	46,2
> 16 years old	3	1,1
Sex		
Male	139	50,5
Female	136	49,5
Parents' Education		
Elementary School	37	13,5
High School	222	80,7
College	11	4,0
Others	5	1,8
Parents' Occupation		
Civil Servant/Armed Forces/Police	66	24,0
Entrepreneur	74	26,9
Private Farmer, Laborer, and Others	21	7,6
	114	41,5
Residency		

With Parents	244	88,7
With Other Family Member	18	6,5
With Grandfather	11	4,0
Grandmother		
With Other People	2	0,7
Total	275	100

From Table 1, it can be seen that more than half of the students (52.7%) were <14 years old, male students were almost the same in amount as female students. Many of the parents were within the middle level of education, and most worked as farmers, sellers, and laborers. According to residency, the majority lived with their parents.

Most of them were in the group of early adolescents, aged 12-16. Period of adolescent growth which is denoted by a change in emotions, known as storm and stress, is a related factor to risky behaviors like NAPZA abuse. Characteristics of adolescent social development are also denoted by the strong influence of peers on shaping social values and behaviors (Krisnaningrum and Atmaja, 2017). Based on these development characteristics, developing methods or media for NAPZA abuse prevention is necessary to be conducted through strengthening the role of peers. Utilizing peers as tutors is one of the methods in health education that can be applied at school with proper media and communication (Kristiono, 2018).

A lot of the respondents lived with their parents. Most of the parents have middle-level education and worked as farmers, sellers, and laborers. According to a survey report of BNN in 2020 on the prevalence of drug abuse, it was shown that in 2018 the drug abuse in adolescents reached 2.29 million people. This drug abuse increased by 24 to 28 percent and per the respondents' residency, it was known that almost three quarter (67.9%) of them lived with parents/family (Irianto *et al.*, 2020). Therefore, prevention efforts need to involve parents by considering methods or media that can be accepted by both adolescents and their parents.

Family empowerment is a method of approach to health promotion that can be done to increase parents' participation to prevent NAPZA abuse (Gayatri Setyabudi and Dewi, 2017). Parents' role can be improved in teaching behavior standards and examples regarding the standards, helping adolescents to refuse pressures from peers to use drugs and have

knowledge on drugs and signs of its abuse (Ridwan, 2018).

Table 2. Parents' Characteristics according to Age, Sex, Education, Occupation, and Residency.

Characteristics	n	%
Age Category		
Early Adulthood	9	12,9
Late Adulthood	44	62,9
Early Elderly	14	20,0
Late Elderly	2	2,9
Elder	1	1,4
Sex		
Male	32	45,7
Female	38	54,3
Education		
Elementary School	4	5,7
High School	41	58,6
College	24	34,3
Others	1	1,4
Occupation		
Civil Servant/Armed Forces/Police	17	24,3
Entrepreneur	9	12,9
Private	4	5,7
Farmer, Laborer, Others	40	57,1
Residency		
Countryside	42	60,0
City	28	40,0
Total	70	100

According to Table 2, it can be seen that more than half of the parents that filled out the questionnaires (62.9%) were within the age group of late adulthood, male parents were almost the same in amount as female parents. The majority of them had middle-level education and worked as either farmers, sellers, or laborers. Based on residency, more lived in the countryside than in the city.

Data of characteristics of parents' education showed that most of them have middle-level education, which indicates that a lot were able to read and write. This can be a factor to be analyzed concerning the development of models and media of promotion for NAPZA abuse prevention, for parents. As explained in the concept of health promotion method, that level of readiness and maturity of participants, the situation in various conditions and circumstances, and availability of facilities are factors that affect the choice of health promotion method (Pakpahan *et al.*, 2021). Results of research conducted by the Center of Research, Data, and Information (*Pusat Penelitian, Data, dan Informasi* or

Puslitdatin) of BNN in 2020 discovered that electronic media namely television and/or radio became the promotion media for NAPZA abuse prevention that was the most often used and heard by respondents. Television and radio were the liked media by respondents among all levels of age, whether those who lived in the city or countryside. Likewise, according to sex and education, respondents who were female or male and were within the middle level of education chose television and radio as information delivery media that they liked. The majority of them stated that they were ready to avoid the danger of drugs after understanding the information on it (Irianto *et al.*, 2020).

The history of the use of drugs and substances by junior high school students in Bima is shown in Table 3. In table 3, it is evident that most of the students (66.2%) consumed drugs due to sickness and health, but a lot still did so, not for any of these two, and 15.3% consumed drugs just for fun with friends. 31.3% were addicted to certain kinds of drugs and 19.3% consumed drugs without reading the instructions. Likewise, for the behavior of smoking and consuming alcoholic drinks, regardless of a small percentage, there were students who smoked and drank alcohol.

Based on data about the respondents' history of the use of drugs and substances, it is known that there were students who consumed drugs not for indication to consume the drugs. There were also students who consumed drugs without reading the instructions. In addition, there were a number of students who smoked and drank alcohol. Albeit a minority, such behaviors can be an indicator of risky behaviors. Results of a study on the pattern of drug abuse of adolescents in Bima stated that behavior of drug abuse started from when the respondents were still junior high school students (Wulandari, 2020). According to the results of the study, education on the proper drug use is highly recommended for high school students with suitable methods of approach and media with the characteristics of adolescent growth. The government's program of educational effort to suppress errors in self-medication is known with the term of the Smart Society Movement when Using Drugs (*Gerakan Masyarakat Cerdas Menggunakan Obat* or *Gema Cermat*). To aid the implementation of the *Gema Cermat* program, conducting socialization to the society was necessary, including to the age group of adolescents. Research on the *Gema Cermat* promotion program for adolescents that used smart calendars as media was conducted in Kendawangan Kalimantan Barat. The media contained information on self-medication of limited free drugs, viewed from the aspect of the correct medication, precise indication, precise dosage, correct contra indication, and also side effects. Results of this research showed that the calendars affected knowledge and attitude of adolescents on the limited free drugs (Fadli and Agustini, 2021).

Table 3. History of the Use of Drugs and Substances by Junior High School Students in Bima.

Use of Drugs and Substances	n	%
Consume drugs due to sickness and health reasons		
Yes	182	66,2
No	93	33,8
Consume drugs due to addiction		
Yes	86	31,3
No	189	68,7
Consume drugs for fun with friends		
Yes	42	15,3
No	233	84,7
Consume drugs under parents' supervision		
Yes	204	74,2
No	71	25,8
Read instructions before consuming drugs		
Yes	222	80,7
No	53	19,3
Have smoked		
Yes	26	9,5
No	249	90,5
Have drunk alcohol		
Yes	6	2,2
No	269	97,8

Table 4. Students' and Parents' Need on Promotion for NAPZA Abuse Prevention according to Method, Media, Location of Event, Frequency, Information Provider, and Material of NAPZA Abuse in Bima

Need	Students		Parents	
	n	%	n	%
Interesting Method				
Screening Movie	102	43,6	23	32,9
Direct	124	45,1	42	60,0
Radio broadcast	6	2,2	3	4,3
Leaflets	25	9,1	2	2,9
Interesting Media				
Television and social media	235	85,4	67	95,7
Radio	18	6,5	1	2,9
Printed media	22	8,1	2	1,4
Preferred location				
Home	114	41,5	19	27,1
School	101	36,7	36	51,4
Environment	44	16,0	13	18,6
Religious place	16	5,8	2	2,9
Preferred frequency of event				
Once	58	21,0	14	20,0
2-3 times	184	66,9	53	75,7
>3 times	33	12,0	3	4,3
Information provider				
Parents	74	26,9	0	0,0
Teacher	25	9,1	1	1,4
Health worker	158	57,5	65	92,9
BNN	8	2,9	3	4,3
Idol icon	10	3,6	1	1,4
Material of education				
Causes	105	38,2	16	22,9
Impacts	107	38,9	44	62,9
Signs and symptoms	63	22,9	10	14,3

From Table 4, it can be seen that most of the students (88.9%) chose methods of direct activity and movie, media of television, and other social media (85.4%). Home and school became the preferred locations (78.2%). The majority of students (66.9%) wanted the event of NAPZA abuse prevention to be held 2-3 times a year and more than half (57.5%) chose a health worker as the information provider. According to the data obtained from parents as shown in the previous table, most of the parents (60.0%) chose the method of direct activity and the media of television and other social media (95.7%). School became the preferred location (51.4%). Most of the parents (75.7%) wanted the event of NAPZA abuse prevention to be held 2-3 times a year and the majority (92.9%) chose a health worker as the information provider. Students and parents thought that the causes and impacts of NAPZA abuse were the

necessary material of education for junior high school students in Bima.

Based on the results of a survey on the need for the promotion of NAPZA abuse prevention, most of the students and parents had the same interest and opinion. According to the preferred media of health promotion, both students and parents chose audiovisual media like gadgets. Methods of health promotion that are utilized directly and through a movie were preferred compared to other methods. Similar results were obtained by a study on adolescents in Surabaya, which showed that students were unsatisfied with the education about drugs and reproductive health that used the method of speech by a teacher. They needed audiovisual media and education methods that were more creative such as discussion, games, and movies (Siswantara, Soedirham and Muthmainnah, 2019). The high interest of the respondents on audiovisual media,

namely the use of gadgets as media of promotion for NAPZA abuse prevention, is in line with results of research on the need of adolescents for application in smartphones as media of health promotion for adolescents in the Special Region of Yogyakarta. According to the analysis results of the research, it was known that most of the respondents (90.63%) felt the need for online counseling media of adolescent health and that they were interested to try an android-based health application. This research recommended the development of applications using android based smartphone technology as a means of counseling for adolescents to lower the number of health problems in adolescents (Isnri, Putra and Anwar, 2019). Results of research on dissemination of NAPZA abuse in Tangerang also showed that innovation in the form of the use of social media was proven to be effective in relation to the strategy of distributing information about drug abuse prevention by BNN among adolescents (Marbun, 2021). Even though the use of social media is in line with the hope and need of adolescents in this digital era, the availability of internet connection and gadget means is highly determined by the social-economic condition of users. Hence, it is important to do a further study on this variable (Siswatibudi, Paramastri and Lazuardi, 2016).

The use of audiovisual media as one of the forms of strategy to deliver information to adolescents can be developed through various models of design. There have been many studies on the design of audiovisual media as a means for NAPZA abuse prevention, one of which was learning through video. The use of vlog video and Society Service Commercial (*Iklan Layanan Masyarakat* or ILM). Health promotion using learning media in the form of video in Public Junior High School 13 of Tangerang City was more effective towards change in the use and attitude of respondents on smoking than promotion through printed media (Purwadi, Setiaji and Maryam, 2019). The use of vlog video as health promotion media could improve the knowledge of students Strada Marga Mulia Junior High School South Jakarta on drug abuse, so that they would be prevented from drug abuse (Printina and Martina, 2018). A broadcast of NAPZA abuse prevention through ILM was also proven to be effective in improving

knowledge, attitude, and motivation of students of Junior High School 12 Balikpapan to prevent NAPZA abuse (Fitriana *et al.*, 2020). Showing stories through movies was also another model of audiovisual media use as a promotion effort for NAPZA abuse prevention in adolescents. Results of research on the use of movies as health promotion media recommended that movie media should contain 9 supportive components. The components included goal of the movie-making, theme of the movie, content or message, clear plot, conflict within the movie, language, play duration, artistic layout that were realistically arranged to attract and strengthen the story as well as the characterization on the story (Saleh *et al.*, 2016).

Home and school became the most picked locations by the respondents for the implementation of the NAPZA abuse prevention effort. This finding is in line with the results of a review of several research results regarding programs of NAPZA abuse prevention. According to the review, school-based and family-based prevention programs were effective in reducing and protecting adolescents from smoking, alcohol consumption, and drug abuse (Das *et al.*, 2016). Home became the most-picked location by the majority of students where the health promotion event should be held. However, there were also plenty of students who chose to follow the event at school. The students' choice to follow a health promotion event at home can be understood as a form of adaptation towards adolescent social development that requires privacy. They assume that having it at home can protect their privacy better when the promotion event is conducted along with a counseling service. This can also relate to the limited amount of targets that will be covered by the event if it is held at school. The finding is supported by results of a qualitative study on adolescent role in the implementation of adolescent health programs in Surabaya City. This study in Surabaya showed that an education event on adolescent health at school would aim at a small portion of the students only, namely students who were members of the student council, student representatives from each class, and students who were chosen as peer counselors (Siswantara, Soedirham and Muthmainnah, 2019). The limited number of students that became the targets of the

education event at school could be the reason why students chose home for the event. Different from the students, the majority of parents chose school as the location for the event. Characteristics of the parents that mostly worked as farmers and laborers could cause a lack of time for them to provide attention if the health promotion event was held at home. This condition could be the reason why parents preferred the promotion event of NAPZA abuse prevention to be held at school.

Referring to the concept of health promotion, setting the location of health promotion can actually be established at school, workplace, and within the society (Pakpahan *et al.*, 2021). Conducting health promotion for adolescents at home can surely involve parents as the executor component. A strategy and method are needed to improve the involvement of parents with many different demographic backgrounds, especially to facilitate the availability of time and knowledge of the parents that are limited. Results of research on the implementation of a method of greeting parents of adolescents through the distribution of adolescent health booklets was proven to be effective to improve knowledge, attitude, and behavior of parents towards adolescent health education in Cirebon City (Widiyastuti and Nurcahyani, 2019). According to the findings in this research which showed that audiovisual media became the parents' preferred media, therefore the development of health promotion media to improve parents' knowledge on NAPZA abuse prevention in adolescents can utilize the audiovisual technology.

A study on the implementation of a school-based prevention model for substance abuse was known to be effective in improving students' knowledge about its impacts on mental health and physical health. Results of this research gave recommendations of the importance of the development of a prevention model that could be applied for children of younger age (Moore, Karpinski and Tsien, 2018). Various forms of effective events to improve students' knowledge, attitude, and participation in NAPZA abuse prevention which could be held at school were identified by research in Surabaya. This research at some schools in Surabaya identified several school-based roles of cadres of anti-drug abuse that were issued

by the BNN Surabaya. Cadres of anti-drug abuse who were students as extensions of the BNN Surabaya performed roles as educators, counselors, and leaders in an effort to prevent drug abuse at school (Sari, 2017). Similar research on a school-based promotion program of NAPZA prevention was also conducted in an equivalent high school in Surabaya City. Results of this research recommended a form of the event which contained peer counselors, sudden inspections, and urine tests for students. In addition, the implementation of promotion events of NAPZA abuse prevention should be able to be applied in the teaching and learning activities as well as in the counseling process of the school's counselor. This program is known as the effort of *Bina Suasana* which means Atmosphere Building (Fitriana *et al.*, 2019).

Health workers were the most-picked information providers by the respondents. The former was thought to be able to provide information on the causes and impacts of NAPZA abuse which the latter needed through health education, more than teachers. This finding is supported by results of research by Nurmaya (2016) about NAPZA abuse in adolescents in Bima City which concluded that professionals are needed to maximize the effort of information service on NAPZA abuse at school that has been conducted by the school's counselor all this time (Nurmaya, 2016). Health workers are included in the professionals with the capacity of providing the information service through health promotion events. According to students and parents, the frequency of the NAPZA abuse prevention event needed to be conducted 2-3 times a year with health workers as the event executors.

The hope of the respondents for health workers as the executor agents of health promotion of NAPZA abuse prevention in Bima is still significant. This indicates that society holds trust in the roles of health workers as educators, facilitators, and advocates in public health efforts. Similar results of research were also shown on the health promotion strategy in an effort to prevent drug abuse in Wajo District, South Sulawesi Province. This research has identified the roles and functions of the Health Office in the development of the strategy of drug abuse prevention through advocacy, partnership, and

empowerment. The advocacy strategy by the Health Office of Wajo District was in the form of a financial assistance proposal to the Regional Government. Partnership strategy was conducted through cooperation with several related agencies that are assumed to be capable in helping the process of drug control in Wajo District. The empowerment that was done by the Health Office upon the drug prevention efforts was forming adolescent health cadres at school (Kurniawan, 2018). The success of health workers in performing the role of adolescent health promotion is also related to the competencies of the health workers in the use of promotion media. Research on the use of educational media of adolescent health by health workers in East Kalimantan has been done with the purpose of comparing the effectiveness of the use of printed media and audiovisual media. Results of this research showed that the use of audiovisual media in health promotion events was effective in improving the knowledge of the targets. Health workers are recommended to improve their competencies on the strategy of selecting media that are innovative, according to the development of technology (Ifroh *et al.*, 2019).

CONCLUSION

Students and parents had the same interests and opinions on the need for a method of promotion of NAPZA abuse prevention, which was through direct events and movies. The preferred promotion media were audiovisual media and social media, especially through the television broadcast. Students had their home and school and the locations for promotion events, while parents still chose it to be held at school. Both students and parents chose health workers as the information providers in the events of NAPZA abuse prevention with the frequency of 2-3 times a year. Factors that became the causes and impacts of NAPZA abuse would be the most important material of education to be relayed through health promotion events according to students and parents in Bima. Results of this research are expected to be a recommendation for the development of a promotion program for the prevention of adolescent drug abuse in Bima.

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Komunitas Keluarga Berencana di Pemogan Menggunakan Model Keterlibatan Komunitas WHO

Family Planning Communities in Pemogan Using WHO Community Engagement Model

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ABSTRACT

Communities is an area unit at the village level with criteria in which there is an integration of the Family Planning Population and Family Development program and related sectors to improve the quality of family and community life. The formulation of the research problem is how the village community is engaged in the family planning communities program in Pemogan Village Denpasar. Objective: The objective of this research is to find out the involvement of the village community in the family planning communities program. Methods: This study used a qualitative descriptive research design and was conducted from April to May 2021. This research applied the World Health Organization (2012) framework on community engagement by identifying the level in involvement of inform, consult, involve, collaborate, and shared leadership. There were 9 informants which consisted of the head of Pemogan Village Denpasar, educators of family planning, cadres of family planning communities, and community groups with inclusion criteria. Data collection methods used focus group discussion, in-depth interviews, and document analysis. Data were analyzed with thematic data reduction, data presentation, and conclusion. Data validation used triangulation of sources and methods, peer debriefing, and member checking. Results: This study found that the community has been a part of the family planning communities program. Community engagement level in the family planning communities program is at the involve level and less in informing the program and leadership. Conclusion: Community engagement in the family planning communities program in Pemogan Village includes the level of inform, consult, involve, collaborate, and shared leadership. This research suggests the village government increase space for the community to be engaged as a partner in implementing activities and shared leadership through cadre empowerment and socialization.

Keyword: Bali; Cadre; Community Engagement; Empowerment; family planning communities; Qualitative study

INTRODUCTION

The number of civilians that continues to increase has become the world's issue, particularly in developing countries (Nurjannah, Siti Nunung dan Susanti, 2018). In the effort to control the civilian growth rate, innovation has been made through the policy of family planning communities program established by President Joko Widodo in 2015 (Zuhriyah, Indarjo and Raharjo, 2017).

The family planning communities program is a social empowerment program that aims to realize health

promotion on the choice of contraception as well as poverty eradication for an independent community (Nugroho, 2018).

Balinese people have developed rapidly in the last 10 years. In 2010, the number of people in Bali Province experienced an increase of 42.66 thousand on average every year (Badan Pusat Statistik Provinsi Bali, 2021). In order to solve the very rapid civilian rate, family planning communities have been established in 4 villages of Denpasar City. The distribution of the family planning communities included

Pemogan Village, South Denpasar Subdistrict, Sumerta Kaja Village, East Denpasar Subdistrict, Dauh Puri Kaja Village, North Denpasar Subdistrict, Daug Puri Kauh Village, and West Denpasar Subdistrict (Restiyani and Murjana Yasa, 2019). Out of these 4 subdistricts, the first position in the achievement of family planning membership percentage was occupied by South Denpasar and East Denpasar Subdistrict until November 2020. Data of family planning membership were namely: percentage of fertile age couple of active family planning members was 81% and percentage of fertile age couple of inactive family planning members was 19%, and percentage of fertile age couple of non family planning members was 26.7% (Dinas Pemberdayaan Perempuan, Perlindungan Anak, Pengendalian Penduduk, dan Keluarga Berencana Kota Denpasar, 2020).

In addition, percentage of family participation in activity group in Pemogan Village of South Denpasar Subdistrict became one of the highest in the activity group of Guiding Family of Under-Five, Guiding Family of Adolescent, and Guiding Family of the Elderly by 100% (Badan Koordinasi Keluarga Berencana Nasional, 2018b).

Community participation is one of the important factors for a program's success (Ahmad, 2016). Community engagement that has meaning can be seen from the act of engaging community within a program cycle from planning, implementation, monitoring, to the evaluation step for voluntary contribution in a development program (Normina, 2016). However, there have been various barriers and challenges that are faced to engage the community with meaning, especially in the implementation of the family planning communities program; such as the lack of socialization to the community thus participation rate in contraception use does not increase, minimal available budget, not yet maximized cadres amount, and low community independency (Zuhriyah, Indarjo and Raharjo, 2017). Previous research showed that community engagement in the health sector is still too focused on the implementation step and is very minimal on other program cycles (Saraswati and Lubis, 2020).

Meanwhile, community participation from the beginning of planning to evaluation is very needed in the achievement of program outcomes. Thus, community participation efforts can be conducted by increasing the roles of community in each program cycle. Community engagement with meaning surely includes the community as a party that also acts as producer and consumer (prosumer) of a program, which means not seeing community as only users, but also positioning them to be producers and work partners in producing health promotion efforts (Lubis, 2019).

Community engagement in a program is one of the requirements to forming the family planning communities. This engagement is proven by several aspects, namely there must be an understanding or uniformity in perceptions on the family planning program which has become the main requirement so that the community will be ready, able, and empowered to do activities; also commitment and support from stakeholders (Cahyani and Lubis, 2020). Measuring community participation can be done through indicators of population success, family planning, and family development of family planning communities. The indicators included 1) amount of family that can function optimally, 2) the growth and development of social togetherness in family planning development, 3) guided involvement of family planning, and availability of service centers of family planning and family development (Badan Koordinasi Keluarga Berencana Nasional, 2016). This research was conducted in Pemogan Village, Denpasar, Bali, one of the best villages for the implementation of family planning communities in Denpasar. The family planning program activities in Pemogan Village were integrated with other sectors, like the economy and social sector. The activities consisted of four activity groups, which were Guiding Family of Under-Five, Guiding Family of Adolescent, Guiding Family of the Elderly, and Prosperous Family Income Improvement Efforts (Badan Koordinasi Keluarga Berencana Nasional, 2018a). Integration among sectors within family planning communities in the form of comprehensive service between sectors that are needed by the community, such as family planning service activity, population certificate making services like

birth certificate, marriage certificate, and death certificate, comprehensive service post, and so on (Arinta, 2018). Therefore, this research was conducted to know deeper about forms of engaging the community in the family planning communities program in Pemogan Village, South Denpasar Subdistrict, Denpasar City.

METHODS

The design of this research was descriptive qualitative. The research was done from April to May 2021 in Pemogan Village, South Denpasar Subdistrict, Denpasar City. Informants of this research amounted to 9 people, namely the head of Pemogan Village, educators of family planning, cadres of family planning communities, and social groups with inclusion criteria. The inclusion criteria included: people that have joined the family planning communities activity at least once, influential people that were involved in the implementation of family planning communities activity who lived within the Pemogan Village region and were willing to be informants. Data collection was by focus group discussion, in-depth interview, and document collection. Results of this research were analyzed thematically according to the model of World Health Organization WHO (2012) on Community Engagement which consists of 5 levels, namely inform, consult, involve, collaborate, and shared leadership (World Health Organization, 2012). Steps of analysis included data reduction, data serving, and conclusion making. Data analysis was done with thematic analysis manually by coding on the collected data with a total of 64 codes that were grouped into 4 themes, namely picture of the implementation of the family planning communities program, community engagement in the family planning communities program, barriers, and challenges, as well as innovations and successes. Data validation was done by triangulation of sources, methods, peer debriefing, and member checking. This research has been approved by the Ethic Committee of Faculty of Medicine of Universitas Udaya with number: 1152/UN14.2.2.VII.14/LT/2021. All informants in this research were asked to fill out informed consents after getting

explanations from the interviewer. During the interview and FGD, the interviewer and informants/participants conducted health protocols by using masks and preparing hand sanitizer as well as keeping distance to prevent COVID-19 transmission.

RESULTS AND DISCUSSION

Pemogan village is a village in the South Denpasar region that is led by the head of Village with a secretary, consists of 17 sub-villages that are each led by heads of sub-villages (Dinas Kominfo Kota Denpasar, 2019). Population composition in Pemogan Village in 2020 according to sex shows that male population was 13,067 people and female population was 9,023 people with the amount of the head of the family was 31,081 of family cards (Kantor Desa Pemogan, 2020).

Research Informant Characteristics

This research involved 9 informants with an age range of 29-51 years old. These informants were given code initials, namely I-01 for informant 1, I-02, I-03, and so on until I-09.

Table 1. Research Informant Characteristics

Initial	Age	Sex	Title
I-01	51	M	Head of Village
I-02	34	F	Educator of family planning communities
I-03	44	F	Cadre
I-04	48	F	Civilian
I-05	38	F	Civilian
I-06	29	F	Civilian
I-07	39	F	Civilian
I-08	36	F	Civilian
I-09	39	F	Civilian

Characteristics of the informants according to statuses showed that informant 1 (I-01) was the head of Pemogan Village; informant 2 (I-02) was an educator of family planning and the key informant; informant 3 (I-03) was a cadre of family planning communities as well as the leader of family planning communities workgroup and was the key informant; I-04 to I-09 were civilians that have joined the family planning communities activity at least once.

Implementation of Family Planning Communities Program in Pemogan Village

The family planning communities program in Pemogan Village was issued on February 22nd, 2017 in Pemogan Village (Badan Koordinasi Keluarga Berencana Nasional, 2018b). At first, the family planning communities in Pemogan Village was a program in the scope of sub-village that was conducted in one sub-village only, which was Gelogor Carik. However, in line with time, the family planning communities program in Pemogan Village has developed into being in the scope of the villages until now.

"...Yes at first it was really in the Gelogor Carik Sub village, then the scope was evolved into not only in Gelogor Carik, but also in the villages and moreover cadres from each sub village was given training" (I-02).

The family planning communities program is a family development education program through community-based activities like community empowerment into being a comprehensive service post and cadres of the elderly in the effort to realize a family development. It is parallel to the concept of the family planning communities program, which is a family-based and community-based social empowerment program (Aji and Yudianto, 2020).

"The family planning communities is a regional program at the village level, right. It has a purpose to increase community well-being, such as improvement in knowledge" (I-02)

In this case, principles of the family planning communities entail from, for, and by the community through the prosperous family development. A prosperous family is a family with a strong economy and security. The prosperous family development is one of the efforts to eradicate poverty (Badan Koordinasi Keluarga Berencana Nasional, 2017).

Inform Level in Family Planning Communities Program

Community has been involved in the inform level by delivering information related to the family planning communities program. Executors of the program (such as the head of village, educator of family planning, and regional family planning organization) provide information to the community on the family planning communities program through monthly family welfare empowerment meetings in the Sub-village Hall and socialization on family planning

communities activities in hope that the community will engage actively in the activities that will be conducted in it.

"...I knew about the family planning communities program from a family welfare empowerment meeting in a sub-village." (I-04), (I-05), (I-06), (I-07)

"...At first from a family welfare empowerment meeting in a sub-village, after that there was a socialization to introduce the family planning communities" (I-08), (I-09)

Community is positioned as the target object of information delivery through a communication channel development process. The information delivery (inform) is at the level of a community-oriented approach (World Health Organization, 2012).

The information is about the directions of the government's policy. It means, the government's policy is something that has been established and has to be implemented by the community (Wicaksono, 2020).

Consult Level in Family Planning Communities Program

Community engagement in the consult level is in planning, monitoring, and evaluation of family planning communities program in the form of planning, and aspiration delivery by community representatives in the village development planning conference that is held once every year. The implementation of the conference in Pemogan Village only involves influential civilians like the head of the sub-village, members of family welfare empowerment, and administrators of the village. In addition, the conference discusses the Establishment of the National Middle Term Development Plan 2019-2025. Then, in the development planning conference of Pemogan Village, development plans of Pemogan Village is discussed and is attended by community leaders and administrators of Pemogan Village (Badan Koordinasi Keluarga Berencana Nasional, 2018b).

"...Yes since in the Development Planning Conference community aspirations are being absorbed, the Development Planning Conference is attended by community leaders, heads of sub-villages, family welfare empowerment, and also administrators of the village." (I-02).

The community's role in development today is not only as an object but also as a subject. This is being emphasized on community participation in decision-making processes of the development planning so that the policy that is produced will be in line with the community's needs. Community engagement shows that the policy formation process is participative. It means that the government is the determiner of development policy and that the community relays their aspirations to the government according to their needs through the Development Planning Conference (Salangka, 2020). The development planning conference as a public ride is necessary to synchronize top-down and bottom-up approaches, as well as synergize stakeholders in understanding regional problematic issues to achieve agreement and consensus on development priorities (Mustanir and Yasin, 2018).

Next, community engagement in program monitoring is in the consult level, where informants relay their criticisms and suggestions directly to cadres or to the program executors post the family planning communities activities and in the family welfare empowerment member meetings in the Sub-Village Hall. The community involvement in monitoring aims to know the things that need to be fixed in the activities to be able to develop them in an even better direction.

"...Monitoring is done by giving suggestions directly in the meeting after we conduct socialization" (I-02).

"...In the family welfare empowerment meeting in the sub-village there is often a suggestion on the family planning communities" (I-04), (I-05), (I-06), (I-07), (I-08), (I-09).

In the form of program evaluation, cadres of family planning communities are involved to relay criticisms and suggestions on the family planning communities in an occasion that is attended by the Women's Empowerment Service, Children Protection, Population Control, and Family Planning, educators of family planning, and the Provincial National Population and Family Planning Agency as the program organizers. Program evaluation is also conducted through questionnaires and observation on program implementation written on the

web of family planning communities of Pemogan Village.

"...There is an evaluation with the cadres as well, with the family planning division of the regional family planning organization and the population control from the Women's Empowerment Service, Children Protection, Population Control, and Family Planning, and the Provincial National Population and Family Planning Agency. They are involved in, for example, web, through questionnaires." (I-02).

The consult level is within the community-based level that is conducted to obtain information and input from the community through either face-to-face dialogs or media to the decision-makers (World Health Organization, 2012). In this matter, community participation is in the monitoring and evaluation step, which means that community participates by monitoring the process of development activities so these can be in line with what has been planned beforehand (Hardianti, Muhammad and Lutfi, 2017). Development success can be achieved if the community is involved in program planning, implementation, and evaluation.

Involve Level in Family Planning Communities

In the form of program planning that is on the involve level, policyholders conduct deeper dialogs with the group of cadres of family planning communities in a workgroup meeting by applying specific issues, discussing suggestions about budget and activities with the program holders.

This workgroup of family planning communities consists of members of the family welfare empowerment from the sub-villages in the scope of family planning communities of Pemogan Village. Later, the workgroup representatives of family planning communities and educators of family planning will relay the results of suggestions in the development planning conference.

"...In the village office at that time there was a workgroup meeting. Cadres of family planning communities were involved, the workgroup leader, educator of family planning, and administrators of the village. Discussing suggestions about the budget." (I-03).

"...Only suggestions of desired activities. Later we will talk about them

at the development planning conference.” (I-02).

Community engagement in the involve level is within the community-based level, where the community is being involved through consultation by putting intervention in the community (World Health Organization, 2012). Community engagement through deeper dialogs is conducted so that the community can obey policy, understand the reasons why the policy is important, and invite other groups to also contribute to the policy implementation (Wicaksono, 2020).

Collaborate Aspect in Family Planning Communities Program Implementation

The family planning communities program involves various partners. In the family planning communities program of Pemogan Village, it was limited to collaborating with the government’s institutions only, namely the National Population and Family Planning Agency of Bali Province, the Health Office with Public Health Center III South Denpasar, the Regional Family Planning Organization of the Women’s Empowerment Service, Children Protection, Population Control, and Family Planning, and the Education Office. On the other hand, the private sector has not been involved as a partner in the family planning communities program of Pemogan Village.

“...With the Regional Family Planning Organization, the Provincial National Population and Family Planning Agency. Regional Family Planning Organization from the Women’s Empowerment Service, Children Protection, Population Control, and Family Planning.” (I-02).

“...For the private sector, there has been none.” (I-02).

In addition, the family planning communities program is closely related to health services such as reception of family planning acceptors, family planning services, and other services (Aji and Yudianto, 2020). So, the public health center becomes the stakeholder that holds an important role in aiding the family planning communities program in the health service field (Badan Koordinasi Keluarga Berencana Nasional, 2017). The collaborate level is within the community-managed level, which needs the engagement of more actors in the program implementation (World Health

Organization, 2012). All policy executors hold an important role in effective policy implementation. In this case, the quality of inter-organizational relationships will determine significantly the success of achieving the goals of the policy implementation (Arighi Bachtiyar *et al.*, 2017).

Shared Leadership Level in Family Planning Communities Program

Community engagement in the shared leadership level is in the form of empowering community to become cadres of family planning communities. The number of cadres of family planning communities in Pemogan Village was 19 cadres. These cadres were also involved as cadres of the comprehensive services post and cadres of the elderly. Cadre training was conducted in a mini workshop once a year which was handled by the regional family planning organization. Meanwhile, the refreshment activities for the cadres of the comprehensive services post was done by the public health center. A real example of cadre training is about how to bake a cake, make ice cream, cook healthy food from sweet potatoes, and create a webbing.

“...Cadres of family planning communities are dedicated (to the family planning communities) but they are also involved in the comprehensive services post, in the Guiding Family of Under-Five.” (I-02).

“...From the regional family planning organization it is every year. It is a mini workshop. The refreshment for cadres of comprehensive services post is the same with cadres of the elderly. Also, we have aerobics here for the elderly, there is a cadre of the elderly that guides the elderly.” (I-03).

“...Often following (the activities) in the village office, there was a webbing session, healthy food from sweet potatoes.” (I-03).

The village government along with the program holders conducts training for cadres of family planning communities and members of family welfare empowerment in order to be empowered independently in improving household economy and developing quality families. In this case, cadres of family planning communities work together to succeed in the effort of family development through the family planning communities program.

Cadres of family planning communities are divided into cadres of comprehensive services post and cadres of the elderly. In the shared leadership level, it is in the community-owned level in which the community is empowered to develop its own government system (World Health Organization, 2012). In the Ottawa Charter, it is being emphasized that social participation is the main element in social empowerment in the health field that aims to strengthen the skills and increase the influence on social and economic conditions (Sulaeman *et al.*, 2012).

Barriers and Challenges in Community Involvement

Barriers and challenges in community engagement include overlapping time of implementation of family planning communities activities with other cultural activities in the community, very minimal budget during the pandemic, as well as limited implementation of activities during the COVID-19 pandemic.

"...But perhaps we overlapped with time like during eid day." (I-02).

"...Perhaps the budgets. Actually we have it, but since there is the COVID situation." (I-02).

Funding of family planning communities is from the operational assistance for family planning, state budget, and regional budget (Badan Koordinasi Keluarga Berencana Nasional, 2018b). During the COVID-19 pandemic, the family planning operational assistance experienced refocusing and relocation of budget processes. This impacted the achievement of the family planning indicators 2020 (FP2020) on the minimal allocation of the family planning budget per year. In addition, it hindered the achievement of the family planning indicators (Soewondo *et al.*, 2020). The spread of the COVID-19 pandemic in Indonesia has induced prevention acts by the government. Community level prevention through physical distancing and social distancing (Kementerian Kesehatan, 2020). COVID-19 pandemic has caused limitations in the family planning communities program implementation. Socialization also is rarely conducted during the pandemic. If it is, hence the implementation is online. The COVID-19 pandemic impacts on decreased amount of acceptors and several postponed family

planning activities that need face-to-face meetings (Saeroji;dkk, 2021).

Innovation and Success of Community Involvement

Innovation and success of community involvement in family planning communities of Pemogan Village is the earliest to have completed activity groups such as the Three Guidings (Guiding Family of Under-Five, Guiding Family of Adolescents, Guiding Family of the Elderly) and prosperous family income improvement efforts compared to other subdistricts in Denpasar and these are still active as of now. Even though at the moment the family planning communities in other subdistricts have started to have completed activity groups as well. If activity groups are completed, the activities will be more in amount and variations, hence they will likely have impacts on improving social involvement in the family planning communities program.

"...If being compared to other family planning communities in Denpasar, the parts of the activity group here are completed, there are Three Guidings and the prosperous family income improvement efforts. In other family planning communities, some do not have. But lately, some have started to have them." (I-02).

Another success in social involvement is good communication between village government and community. The village government always facilitates every activity of the family planning communities from the policy side, by giving rooms for the community to relay their aspirations. Communication holds an important role in coordination sustainability in the implementation of a policy. In the family planning communities program in Pemogan Village, there have been forms of interpersonal communication, group communication, and mass communication.

"...Support from the village is very good in the policy, for example from the making of decision letters. The collaboration is already good." (I-02)

"...Two way communication exists, for example the workgroup of the family planning communities meets the village secretary, family welfare empowerment representatives, and cadres to discuss activity plans." (I-02).

Communication is a process of coordination and integration between several functions in each part of policy implementation structure to get unity and equity of actions as well as perceptions among the activity executors so that things will be in line with the terms and objectives of the policy (Hidayah and Latifah, 2018). Forms of communications include intrapersonal communication, interpersonal communication, group communication, and mass communication (Hariyanto, 2021). In the form of interpersonal communication, in this case, the village government often does interpersonal communication with the leader of the family planning communities workgroup to discuss family planning communities related activities. For example, a meeting between the village secretary and leader of the family planning communities workgroup that is held interpersonally. Then, in the form of group communication between the village government and community, which is by giving a room for the community representatives to give aspirations, criticisms, suggestions, and advices through the village development planning conference or family planning communities workgroup meetings, also involving cadres, members of family welfare development, community leaders in program implementation, therefore communication and collaboration that are bonded is pretty good. Moreover, in the form of mass communication, through giving information to the community about the family planning communities on either newspaper, web, or social media of WhatsApp.

Another success is in the form of a good collaboration between educators and cadres of the family planning communities in Pemogan Village. Factors that support the success of this collaboration include from the sector of human resource, incentive support, and allowance for the cadres, also benefits that are obtained from programs like various knowledge on the health aspect or family economy. Cadres of family planning communities are experienced and competent in their field since prior to being chosen as cadres they were active as cadres of comprehensive services post thus easier to adapt, deliver information to community, and invite the community to contribute in the family planning

communities program. In conducting tasks as cadres of the family planning communities, the cadres receive incentives and allowances from the Regional Family Planning Organization of the Women's Empowerment Service, Children Protection, Population Control, and Family Planning of Denpasar City; and from village funds.

"...The approach to cadres, community leaders, group leaders, which is the program delivery" (I-02).

"...About other cadres, before they became cadres of the family planning communities they were cadres of the comprehensive services post. So they are accustomed to it and easier to deliver information." (I-02).

"...Allowances from the regional family planning organization for the family planning communities dedicated cadres are like a kind of education. While incentives for cadres of the comprehensive services post and Three Guidings are from the village funds" (I-02).

A good collaboration is created from approaches that are followed by educators of the family planning communities to cadres, group leaders, thus in conducting activities, the cadres of family planning communities will be easy to be asked to collaborate. This affects good community involvement in Pemogan Village. Cadres of family planning communities in Pemogan Village have a role in inviting as many as possible of the community members to follow family planning communities activities. The incentives and allowances are also given to the cadres to induce enthusiasm in them in conducting their tasks so as to facilitate collaboration to achieve common goals. Rewards have a positive contribution in forming internal motivation like rewards for cadres of the comprehensive services post in the form of incentives or allowances for transportation feed of the cadres that are given after the comprehensive services post is conducted (Hermiyanty and Nurdiana, 2016). The weakness of this research is the lack of digging for impacts of the family planning communities programs in the marginalized groups such as the disability group.

CONCLUSION

Results of this research showed that Pemogan Village community has been involved in inform, consult, involve, collaborate, and shared leadership components in the family planning communities program implementation of Pemogan Village. This research suggests the village government increase space for the community to be involved as activity executor partner and shared leadership through cadre empowerment efforts and socialization to improve the knowledge and skills of the community.

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Persepsi Kemudahan Penggunaan dan Kegunaan Facebook untuk Pendidikan Kesehatan Sindrom Premenstruasi

Perceived Ease of Use and Usefulness of Facebook for Premenstrual Syndrome Health Education

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ABSTRACT

Background: Premenstrual syndrome (PMS) is a collection of physical, psychological and behavioral changes that can be experienced by women of reproductive age. School adolescents who experience PMS symptoms can have an impact on school activities and daily life. One of the efforts to overcome it is through health education about PMS. Health education innovation in adolescents can be done with the use of social media. Social media that can be used as a means of sharing information is Facebook. **Objective:** This study aims to know the relationship between perceived ease of use and perceived usefulness of Facebook for health education about PMS. **Method:** Analytic study research design with a cross section approach. The research variable was the perception of ease of use and usefulness of Facebook as a medium of health education about PMS. The population was 320 school teenagers and the samples were taken by purposive sampling as many as 77 school teenagers who experienced PMS symptoms and had received PMS health education on Facebook. The research data were taken using a questionnaire of perceived ease of use (PEOU) and perceived usefulness (PU) and analyzed using a descriptive and contingency coefficient. **Results:** Facebook was considered easy (63.6%) to be used for health education about PMS and Facebook was considered useful (57.1%) as a medium for health education about PMS. There was a significant relationship between perceived ease of use and usefulness of Facebook as a medium for health education about PMS (p -value=0,017) with a correlation coefficient value of 0.263 indicating that the correlation is weak. **Conclusion:** Perceived ease of use was related to the perceived usefulness of Facebook. Facebook was easy to use and useful for health education about PMS. Facebook was effective and useful for learning about PMS. Social media can be a medium for health education and help improve the health of school adolescents who experience PMS.

Keyword: Perceived, Facebook, Health Education, Premenstrual Syndrome

INTRODUCTION

Premenstrual syndrome (PMS) is a collection of physical symptoms and behavioral changes that occurs a few days before menstrual bleeding and disappears a few days during menstruation (Casper F, 2019). PMS is experienced by almost half of women of reproductive age, especially young women of 18 to 24 years old on average (Geta, Woldeamanuel and Dassa, 2020; Thodupunuri, Samer and Hassan, 2020). The prevalence of PMS is more than 50% in adolescents and the highest is

in school adolescents (Katjiukua *et al.*, 2020).

PMS symptoms that are experienced by women of reproductive age include irritability (79%), anxiety (61%), mood swings (71%), feeling stress (84%), back pain (78%), whole-body discomfort (75%), headache (50%) and fatigue (67%) (Thodupunuri, Samer and Hassan, 2020). In-school adolescents can experience PMS symptoms on a mild to severe level. Symptomatic patients with moderate to severe PMS symptoms are characterized by severe stress symptoms (83.3%),

disturbed sleep patterns (43.4%) while mild levels are characterized by severe stress symptoms (16.7%) and sleep pattern disturbances (56.6%) (Ilmi and Utari, 2018).

PMS symptoms of adolescents at school can have impacts on school activities, such as less learning concentration (46.5%), reduced learning motivation (48.8%), poor school achievement (48.8%), unable to work in teams (38.4%), not going to school (8,1%), and difficulties in doing activities and work (10,5%). PMS symptoms can interfere with interpersonal relationships, namely disturbed relationships with friends (7%), disturbed relationships with family (5.8%) and social withdrawal (45.3%) (Buddhabunyan et al., 2017).

Efforts to treat PMS symptoms can be done with pharmacological and non-pharmacological methods. Non-pharmacological efforts can be in the form of regulating a healthy lifestyle through exercising, dieting, and relaxation techniques (ABAY and KAPLAN, 2019; Dilbaz and Aksan, 2021). Health education effectively increases PMS knowledge so it can help to reduce PMS symptoms and signs in school girls (Ahmed and Saeed, 2021). The internet has been used as a medium in PMS cognitive behavioral therapy and helps to reduce PMS symptoms (Borji-Navan et al., 2022). Currently, online-based health education has been developed, one of which is in the use of online social media. As technology develops, social media can be used to help promote and communicate health information (Stellefson et al., 2020).

Online social media can be used as a means of health promotion. This media is effective in disseminating health information according to the target. The online social media innovation strategy is the use of advancement in digital technology in the field of communication (Vedel, Ramaprasad and Lapointe, 2020). Various social media are used to disseminate information. Based on data from 2019 to 2020, internet users in Indonesia were 196.71 million people (73.7%). The reasons for using the internet were online social media (24.7%), communicating (29.3%), and spreading health news (6.3%). The list of frequently visited and used social media consisted of Facebook (65.8 %), Instagram (42.3%), and

YouTube (61.0%). The contents that were often seen on online social media included movies (16.2%) and of the health sector (8.9%) (Asosiasi Penyelenggara Jasa Internet Indonesia, 2020).

Online social media can also be used as a medium for health education. This media includes Twitter, Facebook, Wechat, YouTube, WhatsApp, Instagram and others (Chen and Wang, 2021). Facebook can be used as a medium to promote a healthy lifestyle (Krishnamohan et al., 2017).

Premenstrual syndrome that is experienced by women of reproductive age, especially school adolescents, can have an impact on school activities, so it is important to make efforts to overcome it, conduct health education, and maintain a healthy lifestyle. The use of online social media in PMS health education is innovation in health promotion. Online social medical health education can increase school youth knowledge about premenstrual syndrome (Handayani, Hapsari and Widyandana, 2020). For this reason, this study aims to know the relationship between perceived ease of use and usefulness of Facebook for health education about PMS. Hence, the variables of this study were the ease of use and usefulness of facebook for health education about PMS.

METHODS

The design of this research was an analytic study with a cross-sectional. This study aims to know the relationship between perceived ease of use and perceived usefulness of Facebook for health education about PMS.

Samples were taken using a purposive sampling technique and through the PMS symptom screening of the American College of Obstetricians and Gynecologists (ACOG). The samples were as many as 77 school teenagers with inclusion criteria namely registered as female students at a Vocational High School (SMK) in Central Java Indonesia, experiencing PMS symptoms, having an active Facebook account, willing to be respondents and having received PMS health education on Facebook media in the research (Handayani, Hapsari and Widyandana, 2020). Exclusion criteria were students who did not obtain parental permission to participate in this

study. Respondents who had previously received PMS health education for 4 weeks including menstruation concept, PMS concept, and self-care management during PMS; such as nutritional diet, physical exercise, coping with stress, and how to monitor and report PMS symptoms (Handayani, Hapsari and Widyandana, 2020).

The research data were taken using a questionnaire. Perceived ease of use (PEOU) is an instrument to determine the perceived ease of use of Facebook as a media for health education about PMS, and perceived usefulness (PU) is an instrument to determine the perceived usefulness of Facebook as a medium for health education about PMS. This instrument research on perceived usefulness, perceived ease of use, and user acceptance of information technology (Davis, 1989 *cit* Salloum *et al.*, 2018). The instrument was translated from English to Indonesian using the translation service of the Gadjah Mada University Language Center. The PEOU and PU questionnaires were tested for validity on experts/experts in the field of health management information systems at Gadjah Mada University in June 2016. The questionnaire was used to test the validity and reliability of Cronbach's Alpha with PEOU's alpha coefficient of 0.687 and PU's alpha coefficient of 0.774.

The research data were taken in November 2016 at the computer laboratory of a Vocational High School (SMK) in one of the districts in Central Java, Indonesia, using PEOU and PU instruments. The instrument was an online questionnaire on google forms. The data collection process was done by sharing an online questionnaire link via Facebook, which was made specifically for this research with the account name "Remaja Sehat Selama PMS", then respondents accessed the questionnaire link on the research Facebook homepage. After the questionnaire was submitted by each respondent, the questionnaire link was closed and the respondent could not access it again.

Research data were processed using computer software. The statistical analysis was descriptive statistics to determine perceived ease of use (PEOU) and perceived usefulness (PU) variables. Contingency Coefficient was used to determine the relationship between PU

and PEOU. This study has received ethical approval by the ethics committee of the Faculty of Public Health Nursing (FKKMK) Gadjah Mada University with Ref no.: KE / FK / 978 / EC / 2016.

RESULTS AND DISCUSSION

Respondent characteristics in this study are presented in Table 1.

Table 1. Frequency Distribution of Respondents Characteristics (n=77)

Characteristics	n	%
Age (year)		
15	11	14.3
16	56	72.7
17	9	11.7
18	1	1.3
Facebook access frequency per day		
1-2 times	51	66.2
3-4 times	5	6.5
More than 4 times	21	27.3
Habits when accessing Facebook		
a. Giving a like, comment on a friend's Wall/Facebook status message	68	17.7
b. Reading a friend's wall	55	14.3
c. Uploading photos dan videos	53	13.8
d. Updating status	51	13.2
e. Chatting	46	11.9
f. Finding friends	31	8.1
g. Opening news information about information outside the health sector	30	7.8
h. Sharing information	24	6.2
i. Opening news information about health information	19	4.9
j. Writing in the notes field of facebook	5	1.3
k. Playing game	2	5
l. Uploading activity videos	1	3

Table 1 shows that the majority of respondents were 16 years old (72.7%). Facebook access frequency was 1-2 times/day at most (66.2%). During the facebook access, the time needed was at most 1-2 hours/day (87%). The activity of respondents on Facebook before the study was mostly to give likes, comments on messages uploaded on the Facebook wall (17.7%), while to seek health information as much as 7.8%.

Table 2. Perceived Ease of Use (PEOU) of Facebook as PMS Health Education

Perceived Ease Of Use	n	%	Mean (SD)
Easy	49	63.6	41.4 (3.7)
Not easy	28	36.4	
Total	77	100	

Table 2 shows that the average value of the perceived ease of use of Facebook by respondents was 41.4. This indicates the respondents (63.6%) agreed Facebook was easy to use as a medium for health education about PMS.

Table 3. Perceived Usefulness (PU) of Facebook as PMS Health Education

Perceived Usefulness	n	%	Mean (SD)
Useful	44	57.1	44.3 (4.3)
Not useful	33	42.9	
Total	77	100	

Table 3 shows that the average value of the perceived usefulness of Facebook as a PMS health education medium was 44.3. This indicates that respondents (57.1%) agreed that Facebook was considered useful as a medium for health education about PMS.

This research also shows that the usefulness of Facebook in PMS health education was as many as 50 (64.1%). The respondents agreed that using Facebook made it easier to access material about PMS, 46 (59%). Increased effectiveness in accessing material about PMS, 47 (60.3 %) was useful to learning material about PMS. Facebook increases the intensity for viewing material about PMS (66,7%).

Then, this research also shows the ease of using Facebook in PMS health education that as many as 53 (68.8%) respondents felt it was not complicated to access material about PMS through Facebook, 46 (59%) did not feel confused in using Facebook to learn material about PMS and 51 (66, 2%) did not make a choice about the ease of recalling all the material about PMS that had been learned through Facebook.

Table 4. Contingency Coefficient Result

PEOU	PU		%	CC	P value*
	Useful	Not Useful			
Easy	22.1	14.3	36.4	0.263	0.017
Not Easy	20.8	42.8	63.6		

42.9	57.1	100
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*significant $p < 0.05$; CC:contingency coefficient

Table 6 shows that as many as 42.8% respondents perceived that Facebook was easy to use and useful for PMS health education. Perceived ease of use is related to the perceived usefulness of Facebook for PMS health education with a p-value of 0.017, less than a significance level of 0.05. The correlation coefficient value of 0.263 indicates that the relationship between PEOU and PU was weak.

The activity of respondents prior to this research was mostly using Facebook to give likes, comments on messages uploaded on the Facebook homepage and still little use to find health information. According to another research, social media that was used by adolescents consisted of 83.2% Instagram and 78.6% Facebook. Social media to upload information about health was namely 58.1% on Facebook, 31.4% on Instagram, 26.7% on Twitter. Within a month of using social media, adolescents used it to share about mood (76.2%), wellness (57.1%) and treatment conditions (41.9%), and health information (51.5%). Only 25% of adolescents used social media for health information (Hausmann *et al.*, 2017). Research showed that social media that was used by adolescents were Facebook (27.4%), Twitter (32.0%) and Instagram (53.8%). Adolescents used Instagram to communicate with family (33.6%), upload pictures of friends and family (61.6%) and only 3.5% used social media to find health information (Plaisime *et al.*, 2020).

Perceived Ease of Use of Facebook as a Medium for PMS Health Education

Facebook is easy to use as a medium for health education about PMS. Facebook is an effective and easy communication medium in student learning. Facebook in academic life is an efficient and convenient platform for students to engage in learning. Facebook is an effective social networking media that is used to communicate with other people (Lee, 2021). Facebook has sections or features that make it easy to transfer information. There are Facebook sections that make it easier to achieve health education goals (Handayani, Hapsari and Widyandana, 2020).

Perceived of Usefulness of Facebook as a Medium for PMS Health Education

Facebook is considered useful as a medium for health education about PMS. Facebook contributes to reproductive health education in an interactive, fun, and practical way. Adolescents are more confident in talking about reproductive health with these media and they feel easier with health information and services (Mazza et al., 2018). Facebook may have the potential to increase students' cognitive engagement in flipped classrooms (Utama et al., 2020).

Facebook is the right tool to promote web applications in sexual health education for teenagers with fast reach and affordable cost (Gabarron et al., 2017). Facebook makes it easy to access material about PMS, it increases effectiveness in accessing material about PMS, and is useful to learn material about PMS. Respondents felt that it was not complicated to access material about PMS through Facebook media, thus they did not feel confused about using Facebook to learn about PMS. Social networking media is effective in promoting health behavior change efforts.

Relationship between Perceived Ease of Use and Perceived usefulness of Facebook as a Medium for Health Education about PMS

Perceived ease of use (PEOU) is related to the perceived usefulness (PU) of Facebook as a medium for health education about PMS. According to previous research, there is a relationship between PEOU and PU with a significance value of 0.001. Facebook is important in the distribution of information online and useful for its users and encourages continuous use of social media (Yasa et al., 2021). PEOU and PU are important factors in the use of social networking media for e-learning, where there is a significant relationship between PEOU and PU with a value of 0.001 (Salloum et al., 2018).

The basis for users in utilizing information technology (TAM) is PU and PEOU. This perception explains the desire and mind in utilizing certain technologies (Hoong, Thi and Lin, 2017).

Facebook has been used as a health education medium to increase knowledge of self-care management during PMS for school adolescents with PMS (Handayani, Hapsari and Widyandana, 2020).

According to research, school adolescents with PMS symptoms can reduce PMS symptoms with the support of the use of social media (Su Jin Nam; Chiyong, 2019). Internet-based cognitive behavioral therapy is useful in reducing PMS symptoms (Borji-Navan et al., 2022).

CONCLUSION

Perceived ease of use is related to the perceived usefulness of Facebook. Facebook is easy to use and useful as a medium for health education about premenstrual syndrome (PMS). Facebook is effective and useful to learn about PMS. Facebook is one of the social media that can be a medium for health education and can be used as a medium of communication in the health sector, especially for school adolescents in an effort to help improve the health of school adolescents who experience PMS.

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Analisis Pemanfaatan *WhatsApp* dalam Perubahan Perilaku Pengolahan Makanan pada Wirausaha

Analysis of the Use of WhatsApp in Food Processing Behavior Changes in Entrepreneurs

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ABSTRACT

Background: Food and beverage sanitation hygiene really needs to be guaranteed of its safety, including the sanitation hygiene of home-made snacks produced by food entrepreneurs. Poor food sanitation hygiene can cause food poisoning, which is bad for buyers. Especially during the COVID-19 pandemic, food sanitation hygiene in small and medium businesses must be considered to avoid transmission while maintaining an entrepreneurial image in the midst of the pandemic. **Objective:** This study aims to analyze behavior changes including knowledge, attitudes, and entrepreneurial actions in food and beverages processing through mentoring using WhatsApp messenger media. **Methods:** This study used a quasi-experimental approach. The population of this study was small and medium entrepreneurs specializing in food and beverage processing accompanied by an incubator in North Sumatra with as many as 35 entrepreneurs. The samples of this study amounted to 29 food entrepreneurs who were selected using the purposive sampling technique. The time of the study was in July and August 2020. Data were obtained by giving questionnaires before mentoring, two weeks after mentoring, and four weeks after mentoring. The variables consisted of knowledge, attitudes, and actions, as well as assistance to use WhatsApp messenger media. The collected data were then analyzed using the Wilcoxon and Friedman test. **Results:** The results showed that the mentoring using WhatsApp messenger media could increase knowledge (P value = 0.000), attitudes (P value = 0.000) respondents' actions (P value = 0.015). **Conclusion:** The role of health workers was very necessary for the use of WhatsApp messenger based social media, including as assistants who present health promotion content, annul negative content, and make positive efforts to reconcile if there be bad communication in the WhatsApp messenger social media group.

Keywords: Food Entrepreneurship, Hygiene, Behavior Change, WhatsApp

INTRODUCTION

Food is the most basic need that humans must meet at all times, hence the availability of healthy food is essential. As it can cause diseases in humans, the processing of food that is consumed must not be dangerous. Food poisoning is a result of unhygienic food processing. During the 2019 period, a report from the National Agency of Drug and Food Control or *Badan Pengawasan Obat dan Makanan* (BPOM) stated that there had been 77 reports of Extraordinary Food Poisoning Incidents or *Kejadian Luar Biasa Keracunan Pangan* (KLB-KP), while the number of

people affected due to food poisoning outbreaks in that year was 7,244 cases, of which 3,281 people experienced pain with an attack rate of 45,29 (*Badan Pengawas Obat dan Makanan*, 2019).

The food must be processed properly and correctly to be useful and not harmful to people who eat it. Efforts are needed to make food/beverages healthy, one of which is by optimizing the control of factors that can cause contamination and subsequently affect the growth of disease germs and the increase of additive substances in processed food and beverages, so they will not become a cause of disease transmission and health

problems. Increasing knowledge of food handlers will help reduce the incidence of illness and death that may be caused by food (Zairinayati *et al.*, 2020).

Maintaining the sanitary hygiene of food and beverage processing is conducted through maintaining health in food processing, namely controlling the factors of food, place, people, and equipment used, which may cause health problems. A good food processing is a food processing that follows the principles of hygiene and sanitation, including food processing must meet technical requirements, selection of food ingredients, compounding of ingredients must be hygienic, and cooking utensils and cutlery must be made of materials safe for food and hygienic food handling (Kementrian Kesehatan RI, 2018). Environmental sanitation listed in the guidelines for the good food processing methods consists of the production environment, location, production facilities, buildings, clean water facilities, and sanitation facilities (Badan Pengawas Obat dan Makanan, 2012).

Food comes from various sources. It can be made by the family or purchased from formal and informal vendors. One of the informal sectors that provides food and sells it is the Small and Medium Enterprise (SME) or *Usaha Kecil Menengah* (UKM). SMEs are entrepreneurs in society who produce goods; which in this case, the product of the business is food. One of the biggest in the SME sector is food.

The National Workshop on Food and Nutrition or *Widyakarya Nasional Pangan dan Gizi* (WNPG) IX of 2008 described several problems related to food safety specifically in food SMEs that were not standardized still and needed to be improved; in particular, improvements on the quality of human resources, food additives, and other hazardous chemicals prohibited from being used in food products, as well as technological facilities and capabilities.

In 2011, BPOM carried out tests and obtained results related to food that 2,902 (14.15%) of 20,511 food samples did not meet feasibility and safety. The issue of food hygiene and lack of sustainability became a problem and challenge for SMEs. They often ignored the importance of cleanliness, resulting in factory designs with many mistakes and problems that arose after the factory was built. This shows that the food processing of SME

needed special attention (Hasnan *et al.*, 2014).

Small and Medium Enterprises are the sector that needs special attention in food processing, so the government has made various efforts, one of which is assistance by business incubators. The incubator is expected to increase the capacity of SMEs, including the quality of their products. Based on this, an effective action is needed to improve personal hygiene behavior in food processing. According to Bloom *et al.*, (1956), behavior is the integration of cognitive, affective, and psychomotor aspects.

WhatsApp was able to be used as an effective educational media as part of a health education program about diabetes, especially type 2 (Ekadinata and Widyandana, 2017). In addition, it has been proven that WhatsApp media was effective in helping to improve health behavior, which in this case, youth health behavior in the prevention of HIV/AIDS and drugs in Deli Serdang (Roni Gunawan, Mucti Yuda Pratama, Sulaiman, Anggriani, 2018). WhatsApp group media in women for the purpose of health education seemed to be a good alternative in breast cancer control strategies as there would be an exchange of experiences in it. In particular, intervention by sending picture messages had a higher degree of influence than text messaging (Pereira *et al.*, 2020). Hence, this study aims to analyze behavioral changes including knowledge, attitudes, and entrepreneurial practice in food and beverages processing through mentoring using the WhatsApp messenger media.

METHODS

This study used a quantitative approach with a quasi-experimental one-group pretest-posttest design. According to Sugiyono (2014), the quasi-experimental design has a control group but is unable to work completely to control the outside variables affecting the experiment (Sugiyono, 2014). The quasi-experimental design offers practical options for conducting impact evaluations in real-world settings. By using pre-existing or self-selected groups such as individuals who have already participated in studies, this method can also prevent researchers from ethical problems associated with

random assignments (White and Sabarwal, 2014).

This study provided action or intervention in the form of assistance through WhatsApp messenger messages. The quasi-experimental design was chosen since typically this type of study does not fully control one time or the location of the entire sample that becomes the object of the study. It was only conducted in one group and measured the conditions before and after the intervention. The intervention given was the provision of information related to proper and correct food processing using pictures, narration, and also videos through WhatsApp groups.

The population in this study was all food processing entrepreneurs accompanied by the Business Technology Innovation and Incubation Institute of Universitas Sumatera Utara (USU) in 2019, which amounted to 35. The samples of this study were all entrepreneurs specifically in the food processing sector, amounted to 29 SMEs (Small and Medium Enterprises). The respondents were SMEs that processed food, such as chips, crackers, onion sticks, and frozen food. The time of the study was in July-August 2020.

This study used a quasi-experimental approach thus there were interventions carried out in the group that was the study object. The data were collected three times from the same study object, namely before the intervention, during the intervention, and after the intervention. The data collection was done using questionnaires that have been tested in other studies specifically for food managers. The questionnaires were filled out online by the respondents and a data cleaning was carried out if there was an unclear answer from the respondents.

The Wilcoxon test was used in this study to analyze the difference between two paired variables, resulting in data of the ordinal data type; and an alternative test was used, which was the Friedman test as the measurements were conducted more than 2 times. Ethical approval has been acquired with the ethics clearance number of 002/VII/KEPK-SIHA/VII/2020.

RESULTS AND DISCUSSION

A bivariate data analysis used the Wilcoxon test to measure paired data in 2 groups of data that were not normally distributed on the knowledge, attitude,

and practice variable. The results of the Wilcoxon test data analysis are shown in Table 1. Based on Table 1, from the calculation of the Wilcoxon Signed Rank Test, the first comparison between initial knowledge measurement and measurement after 2 weeks was obtained. The conclusion of the hypothesis was to accept H1, or it can be interpreted that there was a difference between the initial group measurement and the 2-week post-measurement. In the second comparison between the initial knowledge measurement and measurement after 4 weeks, the hypothesis decision accepted H1, which means that the initial group measurement and measurement after 4 weeks of intervention were different.

In the third comparison between knowledge measurement after 2 weeks with measurement after 4 weeks, the hypothesis decision accepted H1, which means that there was a difference between the measurement group at 2 weeks and at 4 weeks. Based on the measurement results of the knowledge variable above, it was known that a big change occurred in the third comparison of the measurement after 2 weeks with the measurement after 4 weeks of mentoring.

Table 1. Wilcoxon Test Results on Knowledge, Attitude, and Practise

Variable	Mean	Z	Sig.
Knowledge			
Value of Knowledge Before Mentoring	5,9	-4,710	0,000
Value of Knowledge After Mentoring for 2 Weeks	7,9		
Value of Knowledge Before Mentoring	5,9	-4,706	0,000
Value of Knowledge After Mentoring for 4 Weeks	9,3		
Value of Knowledge After Mentoring for 2 Weeks	7,9	-4,712	0,000
Value of Knowledge After Mentoring for 4 Weeks	9,3		
Attitude			
Value of Attitudes Before Mentoring	42,90	-3,542	0,000
Value of Attitudes After Mentoring for 2 Weeks	44,72		
Value of Attitudes Before Mentoring	42,90	-4,117	0,000
Value of Attitudes After Mentoring for 4 Weeks	46,38		
Value of Attitudes After Mentoring for 2 Weeks	44,72	-3,862	0,000
Value of Attitudes After Mentoring for 4 Weeks	46,38		
Practice			
Value of Practise Before Mentoring	31,24	-3,542	0,000
Value of Practise After Mentoring for 2 Weeks	34,14		
Value of Practise Before Mentoring	31,24	-4,117	0,000
Value of Practise After Mentoring for 4 Weeks	36,69		
Value of Practise After Mentoring for 2 Weeks	34,14	-3,862	0,000
Value of Practise After Mentoring for 4 Weeks	36,69		

In a multivariate manner, this study used the Friedman test; a test to analyze the effectiveness of a treatment with more than two measurements (in this case, three measurements) where the variables are not normally distributed in paired data. The results of the analysis can be seen in the following Table 1.

Based on Table 1, from the calculation of the Wilcoxon Signed Rank Test in the first comparison between the initial attitude measurement and the measurement after 2 weeks, the hypothesis decision was to accept H_1 indicating that there was a significant difference between the first measurement group and the measurement after 2 weeks. In the second comparison between the initial attitude measurement and measurement after 4 weeks, the hypothesis decision was to accept H_1 indicating that there was a significant difference between the first group measurement and the measurement after 4 weeks.

In the third comparison between the attitude measurement after 2 weeks and the measurement after 4 weeks, the Z value was obtained, so the hypothesis decision was to accept H_1 indicating there was a significant difference between the group measurement after 2 weeks and the measurement after 4 weeks. Based on the measurement results of the attitude

variable above, it is known that a big change occurred in the second comparison of the initial measurement with the measurement of after 4 weeks of mentoring.

Based on Table 1, from the calculation of the Wilcoxon Signed Rank Test, in the first comparison between the initial action measurement and the measurement after 2 weeks, there was a significant difference between the first group measurement and the measurement after 2 weeks. In the second comparison between the initial attitude measurement and measurement after 4 weeks, the hypothesis decision was therefore meaningful between the first group measurement and measurement after 4 weeks.

In the third comparison between the attitude measurement after 2 weeks and measurement after 4 weeks, it can be interpreted that there was a difference between the group measurement after 2 weeks and measurement after 4 weeks. Based on the measurement results of the action variable above, it is known that a big change occurred in the second comparison of the initial measurement with the measurement after 4 weeks of mentoring. The results of the analysis using the Friedman test on 3 variables are shown in Table 2.

Table 2. Friedman Test Results on Knowledge, Attitude, and Practice Variable

Variabel	Mean Rank	Chi square	Significance
Knowledge			
Value of Knowledge Before Mentoring	1,16		
Value of Knowledge After Mentoring (Post Test 1)	1,93	51,235	0,000
Value of Knowledge After Mentoring (Post Test 1)	2,91		
Attitude			
Value of Attitudes Before Mentoring	1,07		
Value of Attitudes After Mentoring (Post Test 1)	1,97	39,671	0,000
Value of Attitudes After Mentoring (Post Test 1)	2,97		
Practice			
Value of Practise Before Mentoring	1,84		
Value of Practise After Mentoring (Post Test 1)	2,05	55,055	0,000
Value of Practise s After Mentoring (Post Test 1)	2,10		

Based on Table 2, it is known that the conclusion of the hypothesis was to reject H_0 or in other words there was an increase in the respondent's knowledge on 3 different measurements. Thus, it can be concluded that assistance using WhatsApp messenger media could really increase one's knowledge.

Social media had a positive contribution in helping to improve health promotion, although some weaknesses should be improved namely the outreach to the audience, reduction of false information, and continuation to use by health professionals (Leonita and Jalinus, 2018). This study sought to cover up the weaknesses that occurred in WhatsApp-based mentoring. The media could control the circulating information in group members, the interaction between members was very close and exchanging opinions, passive members would be stimulated by professionals to provide responses, in addition to the information disseminated was guaranteed to be correct, as it was part of the intervention. Assistance through the WhatsApp messenger group covered the weaknesses of other media, especially if accompanied with integrative interventions, for example through pictures of health messages related to food management. Images could provide a value for health communication activities, and public health images could be easily shared on social media (Leonita and Jalinus, 2018)).

Image messaging interventions had a higher significance than interventions through text messages (Ekadinata and Widyandana, 2017). WhatsApp social media messenger allowed members of the social media group to interact with each other, so that there was a mutual support experience as long as it was maintained by

health professionals that managed the group. Social media provided good exposure intensity, communicative feedback, engagement, and information exchange. Social media also created big changes in the change of understanding (Garcia, 2011), as many as 80% of cancer patients used social media to connect with peers which could improve communication between members (Braun *et al.*, 2019).

Social media acts as a double-edged knife. It can be very dangerous and can injure oneself. Its speed in reaching the target applied equally to information disseminated by pro or contra parties (Agung Dwi Laksono, 2015). Negative information can also develop quickly. The dissemination of information on social media is more of a chain reaction similar to the pattern of spreading viruses. The use of social media as a promotional media must indeed be used and arranged optimally and accompanied with its use by health workers, so that the dissemination and discussion in it can be in accordance with the interests of improving the health behavior of the members.

Based on the comparison of the test results, it shows that the assistance carried out took a long time so that a good discussion was built between the WhatsApp group members. The discussion could open the opportunity for everyone to share ideas and experiences in the discussion with a big contribution in improving the cognition of SMEs in it. Discussions that built up on WhatsApp features had a great opportunity to help increase the interest of its users, especially in knowledge improvement programs, using WhatsApp opened up opportunities for better communication and management to increase discussion and share information (Alsaggaf, 20218 (Kamel Boulos, Giustini and Wheeler, 2016)

Based on Table 4, it is known that there was a difference in the average increase in respondents' attitudes on 3 different measurements. Thus, it can be concluded that mentoring using WhatsApp messenger media could also improve a person's attitude. There was a change in respondent's attitude between before the pandemic and during the pandemic. The attitude change that occurred was even more positive, whereas before the pandemic the majority of respondents' attitudes were moderate, then during the pandemic it changed for the better that the majority had more positive personal hygiene attitudes (Gunawan, Maya and Siregar, 2020).

This change in attitude originated from respondents' perceptions of COVID-19 disease. Respondents viewed that the current COVID-19 was quite threatening thus it affected their attitude. The concept of the health belief model is in line with this phenomenon and individuals who feel that a given health problem is serious are more likely to behave in accordance with the prevention of the problem (or reducing its severity). Perceived seriousness includes beliefs about the disease itself (Purwodihardjo, 2020).

Based on Table 6, it is known that the Asymp. Sig. amounted to 0.000 < 0.015, then H_0 was rejected and H_1 was accepted. In other words, there was a difference in the average increase in respondent's actions on 3 different measurements. Thus it can be concluded that assistance using WhatsApp messenger media could improve one's actions.

Based on the comparison of the three variables above using the Friedman test, it is known that the action variable was the variable with the greatest change rate between the knowledge and attitude variables. WhatsApp messenger media was very effective in increasing the action of SMEs to process food hygienically.

The results showed that mentoring through WhatsApp messenger had an effect on improving overall behavior among respondents. There were no significant differences in each week, but overall it showed good results in improving behavior. This is in line with previous research in 2015 that increasing social support and sharing support with other parties enabled people to independently spread positive experiences about

healthier behavior change (Cutrona *et al.*, 2015). With information support through social media, people could receive or provide information content related to their health problems. They might read the experiences of others who were diagnosed with the same health problem, then share information about treatments and other supportive diagnoses (Naslund *et al.*, 2016).

Social media was considered capable of being a medium to share information and practical experiences as a stimulus for other members in it. The results of the study proved that WhatsApp was useful as a health care tool for HIV sufferers, and a potential media to dispel doubts in this regard, as well as to promote treatment adherence (Lima *et al.*, 2018).

Small and medium enterprises fostered by the incubator were accompanied by professionals who not only focused on business development, but also on product improvement by providing training related to proper and correct food processing to strengthen the behavior of SMEs in managing food hygiene. Public health practitioners and organizations might use the summary as a starting point to explore the application of social media in their daily practice of healthcare (Chen and Wang, 2021). The use of social media was a good and preferred opportunity to send health education messages to a wider target (Alshammari and Alshammari, 2017).

CONCLUSION

Assistance using WhatsApp messenger media could increase one's knowledge, attitude, and actions. Based on the analysis of the existing variables, it is known that assistance using WhatsApp messenger media had the greatest increase in action so it can be concluded that this media was effective to increase the actions of SMEs in processing food hygienically.

The role of health workers was very necessary in the use of WhatsApp messenger as a companion in presenting promotional content, annulling negative content, and making positive efforts to reconcile if there was bad communication in the WhatsApp messenger group. Health workers could combine messages with images so that the messages conveyed would be easier to work with, easier to

understand, and would not cause boredom. The relevant agencies should include good food processing materials in every SME training involving SMEs of the food processing sector.

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Strategi Komunikasi Informasi dan Edukasi Covid-19 Muhammadiyah Provinsi DKI Jakarta terhadap Adaptasi Perilaku Baru

Information Communication and Education Strategy of Muhammadiyah Covid-19 DKI Jakarta Province Toward Behavioral Change

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ABSTRACT

Background: Muhammadiyah members are the information communication and education (ICE) strategy segments from Muhammadiyah COVID-19 Command Center (MCCC). MCCC aims to deliver education and campaign programs to control COVID-19 specialized for the Muhammadiyah members. **Objective:** This research aims to determine social marketing strategies through the effectiveness of the MCCC website in changing Muhammadiyah members' behavior in Jakarta Province. **Methods:** This research was quasi-experimental with a non-randomized control group design. The sampling technique was accidental sampling, with 50 people in the intervention group and 50 in the control group. For one week, the intervention was to provide COVID-19 prevention material in PDFs, videos, and links sourced from the MCCC website. **Results:** The results show a significant difference in scores of behavior before and after website media intervention (p -value = 0.015). There was no significant difference before and after (p -value = 0.331). **Conclusion:** The intervention of media sourced from the MCCC website was able to impact the adaptation of Muhammadiyah members DKI Jakarta.

Keywords: ICE strategy, Media, Behavioral Change, MCCC

INTRODUCTION

The Coronavirus has shaken the world at the beginning of 2020. Coronavirus disease 2019 (COVID-19) is a disease caused by a new virus, called Coronavirus (SARS-CoV-2). COVID-19 is known to originate from Wuhan, Tiongkok, and be discovered by the end of December 2019. The transmission of COVID-19 occurs rapidly and spreads since it can be transmitted through contact from human to human. As of now, the news of COVID-19 is still the main concern of all nations in order to be cautious and alert in facing the COVID-19 while medicines and vaccines still have not been found (WHO, 2020a).

According to data from the World Health Organization, by May 20th, 2020, COVID-19 has attacked 179 nations all over the world, globally there were confirmed positive COVID-19 cases of 2,719,897 people, 187,705 deaths. Cases in Southeast Asia were (41,073) people with a death rate of 1658 people. Indonesia became the

second-highest in Southeast Asia with 8,211 after India. WHO stated that the current situation risk assessment reached a very high risk (WHO, 2020a).

Preventing the spread of COVID-19 can be conducted by always washing hands with soap and flowing water or hand sanitizer. Applying the coughing and sneezing etiquette, as well as always maintaining hand hygiene. Another effort that can be implemented is social distancing by at least one meter with others, particularly those with symptoms. Trying to avoid touching eyes, nose, and mouth before washing hands. Wearing a mask can be done by everyone, not just people with symptoms, cloth masks are the solution to prevent the scarcity of medical masks (Kemenkes RI, 2020a).

Preventing the spread of COVID-19 can be conducted through online media. Efforts to prevent COVID-19 transmission may be in the form of washing hands all the time, wearing a mask, keeping a distance, consuming nutritious food, and exercising

regularly (Kemenkes RI, 2020b). In general, health promotion can be implemented through social media, television, film video, VCD, and powerpoint, or printed media like books, storybooks, leaflets, brochures (Quattrin, 2015).

Information Communication and Education (ICE) is already widely known by society, including activists/cadres. The CIE aims to allow the activists to choose, develop, and produce ICE materials according to the needs of the society. And the most important is how to utilize the ICE materials effectively for the efforts of increasing awareness and planting values of change that are more child responsive in the respective communities or work target regions (Sispanyadi, Antik and dkk, 2018). Behavioral change communication is an inseparable part of health promotion and one of the highly important strategies that must be implemented by health promoters in order to achieve public health goals (Yulia, 2018). Information Communication and Education (ICE) in public health is an approach to spread information widely. This has given a huge impact since the last few years to address social problems in public health. The problems were namely the danger of tobacco or smoking, stopping the spread of HIV/AIDS, malaria, and health problems (Nancy R. Lee, 2011).

ICE aims to improve knowledge, change attitudes, beliefs, values, and behaviors of an individual or group. Actively support a problem/issue and attempt to get support from other parties with children, parents, families, teachers, and members, as targets. (Sispanyadi, Antik and dkk, 2018).

According to research by Chin and Mansori conducted in 2018, social marketing intervention in society gave sufficient opportunity for a behavioral change. There was a relation between social marketing campaign success with the Theory of Planned Behavior, Social Cognitive Theory, Protection Motivation Theory, Health Belief Model, and Model of Communication, as the first step that needs to be understood (Chin and Mansori, 2018). Moreover, research about the impact of web media on students' balanced nutritional knowledge had an impact on students' balanced nutritional knowledge, balanced nutritional attitude, and balanced nutritional practice (Lathifa and Mahmudiono, 2019).

Social media is one of the platforms that can be utilized in ICE strategy. The

most popular social media in Indonesia is Youtube in the first place (43%), followed by Facebook (41%), and WhatsApp (40%) (Yulia, 2018). Optimizing social media users in the field of health promotion is done by planning and segmenting the target audience. As well as conducting evaluations that assess health outcomes which are still relatively limited (Firestone *et al.*, 2017).

Muhammadiyah as an organization of Islamic and humanitarian movements attempts with the government in various sectors and supports every existing protocol. Based on the Declaration of the Central Leadership of Muhammadiyah Number 02/MLM/1.0/H/2020 about the Coronavirus Disease 2019 Outbreak that has formed the Muhammadiyah COVID-19 Command Center (MCCC) on March 14th, 2020 (MCCC, 2020). Muhammadiyah COVID-19 Command Center (MCCC) has been spread over 26 regions in Indonesia.

The DKI Jakarta region has become the main focus for COVID-19 development since the discovery of a positive patient for the first time in Depok. DKI Jakarta consists of Central Jakarta, East Jakarta, West Jakarta, North Jakarta, South Jakarta. Muhammadiyah regional administrator or Aisyiah was elected to be the administrator of the MCCC DKI Jakarta. This management is hoped to be able to help Muhammadiyah members in improving knowledge of prevention of COVID-19 transmission and reduction of food issues (Muhammadiyah COVID-19 Command Center, 2020).

Improving knowledge through online and offline information is being called out by the center MCCC to regions and areas. Website is one of the platform media provided by MCCC in hope that it can improve the knowledge and alertness of Muhammadiyah members in an attempt to prevent transmission and spread of COVID-19.

Based on the explanation above, one of the media produced by MCCC about behavioral change is a website. The website covers general knowledge on COVID-19 such as definition, symptoms, impacts, spread, prevention, and how to deal with the COVID-19. With this website, the researcher wanted to find out how the media intervention is able to improve knowledge and behavioral change of Muhammadiyah members in preventing the spread of COVID-19.

METHODS

Quasi-experimental with a pre-test and post-test non-randomized control group design. The sampling technique was accidental sampling. The population was Muhammadiyah members residing in Jakarta. Based on sample calculation, 50 people were in the intervention group and 50 people were in the control group.

This research was done in Central Jakarta, North Jakarta, South Jakarta, East Jakarta, and West Jakarta in July 2020. The inclusion criteria were Muhammadiyah members (Muhammadiyah college students in Jakarta region and regional/area Muhammadiyah members administrators), active in 1-2 years membership (both college students and regional/area administrators), active in social media (used internet), and willing to be respondents. The exclusion criteria were Muhammadiyah members DKI Jakarta inactive in an organization for less than 1 year.

Data were primary data collected from the results of filling out Google Form. The variables were behavioral change adaptation, age, sex, and information source that was the most often heard within the last 1 week.

In the intervention group, respondents were given materials on COVID-19 prevention in the form of PDF, video, and link sourced from the MCCC website for 1 week. The topics of the materials were comics on general guidelines for COVID-19, guidelines for congregational worship, guidelines for wearing cloth masks, guidance on caring for the corpses of COVID-19 patients, tips for maintaining mental health during the COVID-19 pandemic, COVID-19 is not a disgrace, stop stigma, tips for being physically and mentally healthy during the COVID-19 outbreak. The control group was given an education in the form of a short summary of the prevention efforts of COVID-19, introducing the MCCC website.

The mechanism to provide intervention to the intervention group was in several stages. The first stage consisted of filling out a Google Form questionnaire (pre-test). In the second stage, respondents were given materials through short education on COVID-19 and an introduction to the MCCC website. In the third stage, intervention was given through WhatsApp. The intervention was according to the information on the MCCC website. One week later, in the fourth stage, respondents were asked to fill out a post-test.

The intervention for the control group was in 3 stages. The first stage was a post-test conducted by filling out a Google Form questionnaire. The second stage was material provision through short education on COVID-19. A week after the education, respondents were asked to fill out another Google Form questionnaire (post-test).

RESULTS AND DISCUSSION

Respondent characteristics in this research included area, sex, education, occupation, as follows. These characteristics are presented in Table 1.

Table 1. Respondent Characteristics According to Sex, Age, Education

Respondent Characteristic s	Website Media Treatment (Experiment)		Education Treatment (Control)	
	n	%	N	%
Sex				
Female	28	56	33	66
Male	22	44	17	34
Age				
Adult	24	48	40	80
Elder	26	52	10	20
Education				
Junior High School	1	2	0	0
Senior High School	9	18	3	6
College	40	80	47	94

According to sex, the majority of subjects in the experimental group were female as many as 28 people (56%), likewise in the control group were 33 people (66%). Meanwhile, according to age, in the experimental group, the average were adults (21-45 years old) as many as 24 people (48%), elders (above 46 years old) as many as 26 people (52%), different from the control group where the majority were adults as many as 40 people (80%).

According to education, the majority in the experimental group had a high education of college, namely 40 people (80%), the same as the control group by 47 people (94%). It is shown in the

control group that there was no respondent with the education of only junior high school.

Table. 2 Respondent Characteristics According to Area, Occupation

Respondent Characteristics	Website Media Treatment (Experiment)		Education Treatment (Control)	
	N	%	N	%
Area				
Central Jakarta	5	10	11	22
North Jakarta	12	24	16	32
West Jakarta	7	14	6	12
South Jakarta	14	28	12	24
East Jakarta	12	24	5	10
Occupation				
Health Worker	4	8	10	20
Teacher/Lecturer	22	44	18	36
Civil Servant	1	2	4	8
Private Employee	6	12	5	10
Entrepreneur	10	20	0	0
Freelance	0	0	2	4

Respondent characteristics in the experimental group according to area show that the majority were from South Jakarta by 14 people (28%), while the least respondents were from West Jakarta by 7 people (1%). In the control group, the most were from East Jakarta as many as 16 people (32%), and the least respondents were from East Jakarta as many as 5 people (10%). According to education, the majority of subjects in the experimental group had a high education of college by 40 people (80%).

In the experimental group, the subject occupation of teacher/lecturer amounted to 22 people (44%), while entrepreneur amounted to 10 people (20%). For the control group, teacher/lecturer was 18 people (36%), while health worker was 10 people (20%). It is shown in the control group that there was no respondent of private employee occupation.

Table 3. Behavioral Change

Behavioral Change Adaptation	Intervention Group (Website)				Control Group (Education)			
	Pre-test				Post-test			
	n	%	n	%	n	%	N	%
Wearing a Mask								
Never	1	2	1	2	1	2	1	2
Seldom	14	28	3	6	2	4	2	4
Often	35	70	19	38	15	30	18	36
Always	1	2	27	54	32	64	29	58
Washing Hands								
Never					1	2	1	2
Seldom	10	20	4	8	5	10	2	4
Often	24	48	16	32	20	40	23	46
Always	16	32	30	60	24	48	24	48
Shaking Hands								
Never		8						
Seldom	34	68	12	24	5	10	5	10
Often	12	24	30	60	29	58	35	70
Always	4	8	8	16	16	32	10	20
Joining a Gathering								
Never			12	24				
Seldom	5	10	28	56	12	24	9	18
Often	30	60	9	18	26	52	29	58
Always	15	30	1	2	12	24	12	24
Using Transportation								
Never		6	28	56	1	2	1	2
Seldom	5	10	11	22	8	16	7	14
Often	12	24	5	10	15	30	15	30
Always	30	60	6	12	26	52	27	54

Table 3 displays that the habit of wearing a mask in the intervention group was different in value from pre-test and post-test. On pre-test of the intervention group, the majority of Muhammadiyah members who often used a mask were 35 people (70%), and on post-test, the majority who always used a mask were 27 people (54%). In the control group, on pre-test and post-test, there was 1 person (2%) who never wore a mask, while on the always category was 32 people (64%) and post-test was 29 people (58%). This might happen because the post-test group tended to choose not to use a mask, whereas, in reality, they already received information. The delivery of promotional materials was influenced by an attractive presentation.

The intervention group on the habit of washing hands had the most prominent score in the pre-test group by as many as 24 people (48%), on the post-test of always washing hands was 30 people (60%).

Meanwhile, in the control group there was 1 person (2%) who never washed their hands precisely on pre-test and post-test. Even though the improvement of behavioral change was not that significant, it is evident that there was a change in the understanding of the habit of washing hands which in the end resulted in behavioral change.

The habit of shaking hands in the intervention group on pre-test of never was 4 people (8%), while on post-test of still often shaking hands was 30 people (60%). In the control group, often was 29 people (58%), and always was 10 people (20%). In the intervention group on the question of joining a gathering, Muhammadiyah members on post-test of never amounted to 12 people (24%). Meanwhile, in the control group, the majority of often was 26 people (52%) on pre-test, and on post-test was 29 people (58%). In the intervention group, the majority of Muhammadiyah members

always used transportation as many as 30 people (60%) on pre-test, while never used public transportation as many as 28 people (56%) on post-test. The many choices of transportation made Muhammadiyah

members chose to use transportation for convenience in activities.

Table 4. Behavioral Change Adaptation of Muhammadiyah Members

Variable	Website Media Treatment (Intervention)		Education Treatment (Control)	
	n	%	n	%
Pre-test				
Adequate Behavioral Adaptation	25	50	20	40
Good Behavioral Adaptation	25	50	30	60
Post-test				
Adequate Behavioral Adaptation	17	34	26	34
Good Behavioral Adaptation	33	66	24	66

In Table 4 of behavioral adaptation categories on pre-test of the intervention group (Pratamawati and Alfiah, 2017), website media had the same percentage which was adequate behavioral adaptation of 50 people (50%). On the results of post-test in the intervention group, there was a difference between adequate behavioral adaptation of 17 people (34%) and good adaptation of 33 people (66%). In the control group, it is shown that pre-test for adequate behavioral adaptation was 20 people (40%), good behavioral adaptation was 30 people (60%). Meanwhile, on post-test, adequate behavioral adaptation was 26 people (34%), and good behavioral adaptation was 24 people (66%).

Table 5 Most Accessed Information Source in the Last One Week

Type of Media	Intervention Group (Website)				Control Group (Education)			
	Pre-test		Post-test		Pre-test		Post-test	
	n	%	n	%	N	%	n	%
Television								
Never	1	2	2	4	6	12	7	14
Seldom	16	32	14	28	12	24	12	24
Often	25	50	24	48	22	44	22	44
Always	8	16	10	20	10	20	9	18
Radio								
Never	20	40	19	38	20	40	19	38
Seldom	22	44	22	44	20	40	20	40
Often	6	12	5	10	7	14	10	20
Always	2	4	4	8	3	6	1	2
Social Media Online News								
Never	0	0	0	0	3	6	3	6

Type of Media	Intervention Group (Website)				Control Group (Education)			
	Pre-test		Post-test		Pre-test		Post-test	
	n	%	n	%	N	%	n	%
Seldom	10	20	9	18	2	4	3	6
Often	24	48	22	44	24	48	25	5
Always	16	32	19	38	21	42	19	38
Printed Media								
Never	16	32	14	28	10	20	10	20
Seldom	21	42	20	40	28	56	27	54
Often	10	20	13	26	10	20	11	22
Always	3	6	3	6	2	4	2	4
WHO								
Never	11	22	12	24	5	10	5	10
Seldom	23	46	18	36	23	46	20	40
Often	13	26	16	32	17	34	22	44
Always	3	6	4	8	5	10	3	6
Indonesian Ministry of Health								
Never	5	10	4	8	3	6	3	6
Seldom	19	38	17	34	17	34	15	30
Often	22	44	25	50	21	42	25	50
Always	4	8	4	8	9	18	7	14
Indonesian National Board for Disaster Management								
Never	1	2	1	2	2	4	2	4
Seldom	17	34	15	30	15	30	16	32
Often	24	48	27	54	24	48	25	50
Always	8	16	7	14	9	18	7	14
MCCC								
Never	11	22	5	10	10	20	11	22
Seldom	17	34	15	30	20	40	18	36
Often	18	36	24	48	16	32	17	34
Always	4	8	6	12	4	8	4	8
Community Leader/Religious Leader								
Never	4	8	7	14	10	20	10	20
Seldom	44	88	19	38	26	52	24	48
Often	2	4	22	44	11	22	13	26
Always	4	8	2	4	3	6	3	6
Government Spokesperson								
Never	10	20	8	16	7	14	7	14
Seldom	15	30	16	32	19	38	18	36
Often	20	40	19	38	23	46	24	48
Always	5	10	7	14	1	2	1	2
Influencer								
Never	8	16	10	20	7	14	7	14

Type of Media	Intervention Group (Website)				Control Group (Education)			
	Pre-test		Post-test		Pre-test		Post-test	
	n	%	n	%	N	%	n	%
Seldom	17	34	17	34	26	52	23	46
Often	20	40	18	36	14	28	17	34
Always	5	10	5	10	3	6	3	6
Peer								
Never	10	20	11	22	16	32	2	4
Seldom	18	36	18	36	21	42	23	46
Often	18	36	16	32	8	16	18	36
Always	4	8	5	10	5	10	7	14

According to Table 5, it is shown that the majority of Muhammadiyah members in DKI Jakarta seldom listened to the radio, both in the intervention group on pre-test 44% and post-test 44%, and in the control group on pre-test and post-test, which was 40%, within the last one week. In addition, Muhammadiyah members in DKI Jakarta generally never listened to the radio. In the intervention group on pre-test of often reading online news was 48% and post-test of always reading online news was 38%. In the control group, Muhammadiyah members in DKI Jakarta generally often read online news as many as 48% on pre-test, and 50% on post-test.

In the intervention group, pre-test of never reading printed media was 32% and post-test of always reading online media was 28%. In the control group, Muhammadiyah members in DKI Jakarta generally often read online media as many as 56% on pre-test, and 54% on post-test.

In the intervention group on pre-test, seldom sourcing WHO was 46%, post-test was 36%. Meanwhile, in the control group, Muhammadiyah members in DKI Jakarta generally often utilized WHO information as many as 34% on pre-test, and 44% on post-test. Muhammadiyah members in the intervention group on pre-test for information source of Indonesian Ministry of Health were 46% and post-test were 36%. In the control group, Muhammadiyah members in DKI Jakarta often sourcing the Indonesian Ministry of Health were 42% on pre-test, and 50% on post-test. In the intervention group for often utilizing Indonesian National Board for Disaster Management as information source on pre-test amounted to 48% and 54% on post-test. In the control group,

Muhammadiyah members in DKI Jakarta generally had the same percentages in often utilizing Indonesian National Board for Disaster Management as information source by 48% on pre-test, and 54% on post-test.

In the intervention group on pre-test, often utilizing MCCC as an information source was 36%, and post-test was 48%. Meanwhile, on pre-test, there were still some who never utilized MCCC by 22%, and on post-test by 10%. In the control group, Muhammadiyah members in DKI Jakarta generally seldom utilized MCCC as an information source, as many as 40% on pre-test, and 36% on post-test. Often utilizing information from a spokesperson as a source was 40% in the intervention group on pre-test, and 38% on post-test. Also, on pre-test of always utilizing information from a spokesperson was 10%, and post-test was 14%.

Muhammadiyah members in DKI Jakarta in the intervention group on pre-test seldom utilized information from a religious leader and community leader by 88%, and on post-test by 38%. Also, on pre-test, never utilized information amounted to 8%, and on post-test amounted to 14%. In the intervention group on post-test, seldom and often utilizing information from a peer were both 36%, and post-test of often was 36%. Also on pre-test of never utilizing information was 8%, and on post-test was 14%. In the control group, Muhammadiyah members in DKI Jakarta generally seldom discussed with a peer as an information source as many as 42% on pre-test and 46% on post-test.

Due to the many information media, Muhammadiyah members could choose freely which information source to refer to. Research results indicated that accessing television, social media online

news, Indonesian Ministry of Health, community leader/religious leader resulted in an almost similar interest to access MCCC.

Table 6. Results of Variable Analysis with Wilcoxon Test

	Interventio n	Control
Sig. pre- post Z	0.015 -2.424b	0.331 -.972b

Results of Wilcoxon test show that scores of pre-test and post-test in the intervention group can be concluded that the intervention group had a difference before and after being given Website Media information for 1 week. Meanwhile, scores of pre-test and post-test of the control group can be concluded that the control group had no difference before and after education was conducted.

a. Behavioral Change Adaptation

Muhammadiyah has become one of the organizations that took a serious step in preventing the spread of COVID-19 (MCCC, 2020). A control effort is shown from the Government's appeal to solve the outbreak together. In reality, there is still a lot in society, particularly Muhammadiyah members in DKI Jakarta, that does not respect the appeal (Buana, 2017).

During the pandemic, Indonesian members must live according to a new life order, which is able to make peace with COVID-19. The new life order is also known as New Normal with the purpose of keeping society productive and safe from COVID-19 in the pandemic (Kemenkes RI, 2020a). Adaptation of a new habit is believed to be powerful in preventing COVID-19 transmission by wearing a mask, washing hands, keeping distance, not shaking hands, as well as not gathering with many people (WHO, 2020b)

Muhammadiyah COVID-19 Command Center (MCCC) exists to help Muhammadiyah members to adapt by giving up-to-date information through a website, social media, and virtual activities. The wide coverage of Muhammadiyah members in DKI Jakarta requires the formation of regional MCCC, which is for DKI Jakarta. In observing the optimization of the role of regional MCCC, particularly in the spread of information on COVID-19 prevention, it is

hoped to be able to result in a new good habit.

The majority of Muhammadiyah members in DKI Jakarta that participated in this research already had pretty good scores of behavioral adaptation. This is shown from the results of pre-test of the intervention group, which was that Website Media had an adequate behavioral adaptation, by 50%. It was proven that after giving intervention for 1 week, there was an increase in the post-test scores by 66%. Based on research by Maher *et al.* (2017), there was simple proof that intervention with social media may be effective. However, further research is needed to determine the maximization of media retention and its involvement or whether behavioral change is sustainable in the long term (Giordano *et al.*, 2017).

Research by Nazir *et al* in 2020 stated that social media exposure did not have a significant and direct impact on prevention behavior. Social media exposure impacted prevention behavior indirectly through awareness and information exchange (Nazir *et al.*, 2020). A different thing is evident in the results of this research, that there was a significant impact on behavioral adaptation after giving website media information for 1 week, where this became a time limitation in the research.

The contribution of social media in giving an impact to behavioral change adaptation shows a positive relation. Whereas in research by Allington *et al.* (2020), a positive relation was found between health protection behavior and the use of broadcasting media as an information source (Allington *et al.*, 2020). Not only helping with health protection, but Tseo *et al.* (2020) also initiated teeth health and mouth health information during the COVID-19 pandemic, by facilitating mouth health communication and efficiently forming public care through social media (Tao *et al.*, 2020).

Furthermore, awareness and information exchange had a significant and direct impact on prevention behavior (Nazir *et al.*, 2020). In a pandemic situation like the COVID-19 outbreak, social media becomes the most sought-after information collection source. However, thousands of people spread information, sensationalism, rumors, misinformation, and disinformation, hence it is very important for the government and experts to fight the

pandemic and infodemic (Duraismy, Brindha, Jayaseelan Rathinaswamy, 2020).

The many types of information made Muhammadiyah members in DKI Jakarta use television more often than radio, online news, and printed media. The variety of information is susceptible to misinformation and hoax, therefore active and effective professionals and health authorities are needed to be on social media. As the development of social media users compared to only education. During a crisis, public health literacy improvement for the long term is the most recommended strategy to address problems related to misinformation (Bastani and Bahrami, 2020).

The peculiarity of this pandemic is not only that the virus itself spreads very quickly, but also there is information—and misinformation—about the outbreak (Larson, 2018). Therefore, the panic that arises among the public has triggered the situation to be more of a crisis (Wilson and Chen, 2020). WHO has created a website page functional to bust the myths for addressing and correcting misinformation on COVID-19. Misinformation often results in mass panic, which can only be countered with information (The Lancet, 2020). However, as a consideration, this research can be used as a support in making decisions.

CONCLUSION

MCCC media was able to provide increased knowledge according to the obtained results, as follows; in the intervention group, there was a difference in scores of behavior before and after being given website media intervention for 1 week. The hope that the website can give an impact on respondent behavioral change became one of the achieved indicators that the website and the many interventions outside the research also impacted the behavior of Muhammadiyah members in getting COVID-19 information.

During the preparation and implementation of activities in DKI regional MCCC, there was a lack of collaboration with various parties such the Aisyiah Health Council and PCA. The provision of education and information was already good and optimum for Muhammadiyah members who owned communication devices, however, special

attention for Muhammadiyah members who could not access it was needed.

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Dampak Model Promosi Kesehatan Nola J Pender Terhadap Tingkat Kepatuhan Masyarakat Dalam Pelaksanaan Protokol Kesehatan COVID-19

Impact of the 'Nola J Pender' Health Promotion Model Towards the Level of Community Compliance in Implementing COVID-19 Health Protocols

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ABSTRACT

Background: Indonesia is facing COVID-19 waves in almost all provinces. Based on data from the COVID-19 Response Acceleration Task Force, there were 57 districts with a compliance level of wearing a mask by less than 60%, while 51 districts had a compliance level of keeping distance and avoiding crowds by less than 60%. **Objective:** The aim of this study is to analyze the effect of the Health Promotion Model (HPM) in increasing people's compliance level on the implementation of COVID-19 health protocols. **Methods:** Quasi-experiment with a single-group interrupted time-series design was conducted in June-September 2021 in West Lombok district and Central Lombok district, West Nusa Tenggara Province. The samples were 326 respondents from purposive sampling with criteria: adult group or elderly of the healthy category and not being positively confirmed of COVID-19. **Results:** There was a significant effect of HPM in increasing people's compliance level on the implementation of the health protocols (5M) measured by the Wilcoxon Signed Rank Test (p -value $< 0,05$). The health protocols (5M) included wearing a mask ($p=0,000$), keeping distance ($p=0,000$), cleaning hands ($p=0,000$), avoiding crowds ($p=0,000$), and reducing mobility ($p=0,000$). **Conclusion:** The Health Promotion Model (HPM) is a strategy to conduct health promotion activities that can influence the attitudes and behaviors of community groups marked by increasing knowledge and awareness of people in the Lombok area for the implementation of the 5M COVID-19 health protocols.

Keyword: COVID-19; Compliance; Health Protocols; Health Promotion Model

INTRODUCTION

The World Health Organization (WHO) has established COVID-19 as a global pandemic since March 2020 (Dong & Bouey, 2020; WHO, 2020). The SARS-CoV-2 virus was first discovered in Wuhan in December 2019. The spread of COVID-19, which initially only occurred in China, has since expanded to almost all countries in the world, including Indonesia (Hozhabri et al., 2020; Khan et al., 2020). Based on data from worldometers.info on November 7th, 2021, COVID-19 cases reached 250,252,390 cases, the US ranked first with 47,312,631 cases, while Indonesia reached 4,247,721 cases in November 2021 (Kementerian Kesehatan Republik Indonesia et al., 2020; Worldometers.info, 2021). The

transmission rate is still all over the provinces of Indonesia, although the Community Activities Restrictions Enforcement or CARE has been conducted for 8 months. The cases have significantly increased in some provinces with a high transmission risk. It also happens in Nusa Tenggara Barat Province (NTB) with 27,699 cases reported in November 2021 (Dinkes Prov.NTB, 2021). From the results of a preliminary study by the team on the level of community compliance in two districts of Lombok island, it ranged between 52-56%.

Based on data from the COVID-19 Response Acceleration Task Force, there were 57 districts with a compliance level of wearing a mask by less than 60%, while 51 districts had a compliance level of keeping distance and avoiding crowds by

less than 60%. The spokesperson of COVID-19 said that the increase of COVID-19 cases in June 2021 was caused by the low compliance level (Kementerian Kesehatan Republik Indonesia et al., 2020). It was proven by research conducted by Wiranti et al. (2020), which showed that 44,6% of people in Depok city had less understanding on the implementation of the health protocols of wearing a mask, cleaning hands, and keeping distance (Wiranti et al., 2020). Sagala, et al. (2020) reported that people's awareness was low (Sagala et al., 2020).

Therefore, a strategic approach to the community is needed with an activity to increase public understanding and change their behaviors towards promotive and preventive health behaviors. Health Promotion Model (HPM) is a model based on the efforts of empowerment of individual abilities to increase the quality of health of people. The HPM model can help health workers to protect individuals and groups that are at risk of getting infected by COVID-19 (Habibzadeh et al., 2021; Pender, 2015). This model also can identify the risk factors to health and behavior possessed by individuals, groups or people in the case of health protocols of COVID-19 (Liveng et al., 2018; Tong et al., 2020). Research study from Agustina (2017) showed that the HPM model affected the increase of perception about the benefit in helping to overcome obstacles, the increase of attitude, and support of family that could increase the respondent's knowledge about pulmonary tuberculosis transmission (Agustina et al., 2017). Imanis (2019) found that there was an effect of family support with the HPM approach to the compliance of medicine consumption of the client. The implementation of HPM focused on the increase of patient abilities of behavioral change (Nadhilah, 2019).

Based on the above phenomena, the concept of the Health Promotion Model (HPM) was used as an intervention strategy to provide health information education related to the prevention of COVID-19 transmission. This study aims to analyze the effect of HPM in increasing people's compliance level in implementing health protocols of COVID-19 (5M), such as "wearing a mask" (M1), "keeping distance" (M2), "cleaning hand" (M3), "avoiding crowds" (M4), and "reducing mobility" (M5).

METHODS

Quasi-experimental with a single-group interrupted time-series design was used to determine the effectiveness of treatment assessed by comparing pretest and posttest. The Health Promotion Model (HPM) was used as an intervention strategy of the health protocol model to measure people's compliance in implementing the health protocols of COVID-19 (5M). The HPM is a concept of empowerment strategy for individuals or groups in the community to change their health behavior, which is implemented by forming groups in the community, then the formed groups are given health education and training, with the aim that they can carry out health promotion activities in the community. The population was determined from the group of adults and elderly, with the samples of 326 respondents consisting of 96 men and 230 women. Purposive sampling technique was used with criteria: a group of adults or elderly included as healthy and not positively confirmed of COVID-19. Furthermore, inclusion criteria in this study were as follows; early adulthood (21-30) to late adulthood (31-60); elderly group (60-75); then respondents who could read.

This study began in June 2021 by preparation for a group formation helped by health cadres groups in 2 research locations, Beleka Village Lombok Barat District and Bagu Village Lombok Tengah District. The intervention was the implementation of the HPM program in order to increase the people's compliance level in implementing health protocols of COVID-19 (5M) by giving research modules of HPM+5M before the intervention. The HPM+5M (Health Promotion Model + 5M) module was an intervention tool to ease the team in conducting data collection. This model consisted of 5M: Wearing mask (M1), Keeping distance (M2), Cleaning hands (M3), Avoiding crowds (M4), and Reducing mobility (M5). This module was a guidebook for respondents to comprehend this HPM research and 5M health protocols. It was also equipped by daily TSM (*Target Sehat Mandiri* or Independent Health Targets) as a healthy lifestyle goal that must be implemented by respondents during COVID-19. This intervention was conducted 8 times in 2 months, the meeting design with the respondents was

a direct meeting with health protocols and physical checking before the activity started. Before conducting the HPM research activity, the researchers coordinated with the community, community leaders, and heads of local villages. Then during the research activity, the team was accompanied by health cadres in the process of data collection. The overall activity process has been described in Table 1 below.

Data collection was conducted in July-September 2021. The characters of research respondents were measured with a questionnaire-based paper during the visit in the research location. The questionnaire was independently developed to determine the respondent's compliance level in implementing the 5M health protocols, such as Wearing a mask (M1), Keeping distance (M2), Cleaning hands (M3), Avoiding crowds (M4), and Reducing mobility (M5). This questionnaire consisted of 25 items, then the scores obtained were categorized into

3 criteria of compliance level; (score 0-8 was categorized as low), (score 9-16 was categorized as medium), and (score 17-25 was categorized as high). Data collected were analyzed for validity using the Pearson correlation test with the lowest value of 0.534 and the highest value of 0.910, while the reliability test showed a consistency value of Alpha Cronbach of 0.81.

Data analysis was processed using the SPSS 25 version. Univariate test was used to describe the respondent characteristics (age, gender, education level), while bivariate test was used to analyze the differences of pretest and posttest means with the Wilcoxon signed-ranks test (p value < 0,05). This study was conducted after getting the permission and ethical clearance from the Research Ethics Committee of Faculty of Health of Universitas Qamarul Huda Badaruddin Bagu (No. 045/EC/FKES-UNIQHBA/YPPQH/V/2021).

Table 1. Stages of Implementation of HPM Program

The table below describes the process of HPM research activities.

Activity	Duration
Session 1: Orientation session - Pre-test of health protocol compliance (5M) instrument	40 Minutes
Session 2: Group Formation - Forming a cadre group, "the HPM group cares about COVID-19"	60 Minutes
Session 3: Discussion session - Giving explanation to the respondents about research instrument and transmission mechanisms of COVID-19	60 Minutes
Session 4: Discussion session - Giving explanation to the respondents about 5M health protocols	60 Minutes
Session 5: Discussion session - Giving explanation about how to implement healthy lifestyle (TSM) during pandemic COVID-19	60 Minutes
Session 6: Exercise Session - Giving training to respondents to implement 5M health protocols	90 Minutes
Session 7: Implementation session - The "HPM group" implements health education or promotion about HPM+6M to the public directly	90 Minutes
Session 8: Evaluating HPM Program - Post-test of health protocol compliance (5M) instrument	40 Minutes

RESULT AND DISCUSSION

Table 2. Respondent Characteristics

The table below describes the characteristics of the respondents, such as; age, gender, and education level.

Variable View	Minimum -Maximum (Years)	Mean \pm SD
Age	30-68	48,33 \pm 8,07
	F	%
Gender		
Men	96	29,4
Women	230	70,6
Education		
Elementary School	30	9,2
Junior High School	57	17,5
Senior High School	185	56,7
Diploma	24	7,4
Bachelor	30	9,2
Total	326	100

Table 2 shows that the respondent characteristics with the age range of 30-68 years had a mean value of 48,33 years with a deviation standard of (8,07). The gender of the respondents was dominated by women by 230 respondents (70,6%) then men by 96 respondents (29,4%). The majority had an education level of Senior High School by 185 respondents (56,7%).

Respondents' level of compliance with the COVID-19 health protocols

Table 3 shows that the level of compliance with the health protocol of wearing a mask at pre-test was dominated by the high category of 236 respondents (72,7%) and increased during the post-test to 296 respondents (90,8%). Keeping distance at pre-test was dominated by the medium category of 182 respondents (55,8%) and post-test was dominated by the high category of 248 respondents (76,1%). Cleaning hands during pre-test was dominated by the medium category of 182 respondents (55,8%) and post-test was dominated by the high category of 293 respondents (89,9%). Avoiding crowds during pre-test was dominated by the medium category of 171 respondents (52,5%) and post-test was dominated by the high category of 290 respondents (89%). Reducing mobility during pre-test was dominated by the medium category of 171 respondents (52,5%) and post-test was dominated by the high category of 264 respondents (81%).

Table 3. The Distribution of Compliance with Health Protocols

Health Protocols	Category	Pre-test		Post-test	
		F	%	F	%
Wearing a Mask (M1)	Low	6	1,8	0	0
	Medium	83	25,5	30	9,2
	High	237	72,7	296	90,8
Keeping Distance (M2)	Low	12	3,7	3	0,9
	Medium	182	55,8	75	23
	High	132	40,5	248	76,1
Cleaning Hands (M3)	Low	3	0,9	0	0
	Medium	182	55,8	33	10,1
	High	141	43,3	293	89,9
Avoiding Crowds (M4)	Low	12	3,7	0	0
	Medium	171	52,5	36	11
	High	143	43,9	290	89
Reducing Mobility (M5)	Low	12	3,7	3	0,9
	Medium	171	52,5	59	18,1
	High	143	43,9	264	81

Tabel 4. The Differences of “Mean of Pretest and Posttest” of Compliance Level in Implementing Health Protocols in Lombok

	Analysis Results of Wilcoxon Signed Rank Test			
	Information	N	Mean \pm SD	P Value
HPM - Health Protocol 5M				
1. Wearing a Mask	Pre-test	326	18,31 \pm 3,2	0,000
	Post-test	326	20,81 \pm 2,91	
2. Keeping Distance	Pre-test	326	16,45 \pm 3,31	0,000
	Post-test	326	19,4 \pm 3,36	
3. Cleaning Hands	Pre-test	326	16,96 \pm 2,82	0,000
	Post-test	326	20,66 \pm 2,77	
4. Avoiding Crowds	Pre-test	326	16,6 \pm 3,23	0,000
	Post-test	326	20,66 \pm 2,89	
5. Reducing Mobility	Pre-test	326	16,65 \pm 3,24	0,000
	Post-test	326	20,18 \pm 3,2	

Table 4 shows that there were positive influences to successful level in giving health promotion model to increase Lombok people's compliance in implementing the 5M health protocols measured by the Wilcoxon signed rank test to differ the mean of pretest and posttest with p-value $< 0,05$: (1) Wearing a mask with $p = 0,000 < 0,05$; (2) Keeping distance with $p=0,000 < 0,05$; (3) Cleaning hands with $p=0,000 < 0,05$; (4) Avoiding Crowds with $p=0,000 < 0,05$; and (5) Reducing Mobility with $p=0,000 < 0,05$, which means all hypothesis were accepted.

The implementation of the HPM Program was a strategy used by the researcher as a health promotion model given to the respondents to increase their compliance in implementing health protocols of COVID-19 (5M). Furthermore, this HPM model was also able to identify the risk factors of respondents to the health behavior that has been conducted

and TSM (*Target Sehat Mandiri*) that should be reached in the case of compliance of 5M health protocols. It was explained in the HPM+5M module which was made as an activity guidebook of the research to the respondents.

Research results showed that respondent's compliance level in implementing the 5M health protocols before the HPM activity started, was mostly in the “medium” category with a mean value of 16,99. This indicates that most individuals have realized the benefits if they implemented the health protocols. It is in accordance with the report of Kaim et al (2021) that more than a half of people in Israel have realized the importance of health protocols, proven by the compliance level of people in Israel that was categorized as medium (53,9%) and high (40,6%) (Kaim et al., 2021). While the main factor reported by the respondents who resisted the compliance of health protocols was the desire to maintain

normal lives before COVID-19, followed by the fear of economic loss. The least common factor was because of the lack of trust in the effectiveness of the government's policy (Kaim et al., 2021). It is also in accordance with the statement of Regi et al (2020) that the majority of people would feel very easy to avoid getting infected by coronavirus if they implemented health protocols required by the government (Jose et al., 2021).

During 2 months of the activity of the HPM program, there was an increase in the mean value of compliance level (20,34). Most of the respondents were categorized as "high" in implementing health protocol of COVID-19 (5M) which consisted of: Wearing a mask (M1), Keeping distance (M2), Cleaning hands (M3), Avoiding crowds (M4), and Reducing mobility (M5). It shows that there was an increase of most respondents' knowledge accompanied by attitude and behavior changes in an effort to prevent COVID-10. This finding is in accordance with the study conducted by Madan *et al* (2021) about implementing health protocols and lockdown policy in India, that 78% of respondents preferred strict restrictions, 82% of respondents preferred cleaning hands regularly as the best way to decrease the spread of COVID-19, 60% of respondents assumed that staying at home was the important way to keep distance, and 67% of respondents felt that wearing a mask and gloves was the significant way to decrease the probability of getting COVID-19 infection (Madan et al., 2021). It is in accordance with the research of Afro (2021) in East Java Province, Indonesia, which identified that perception of benefits was the most influential factor to people's compliance behavior in better implementing health protocols, because it was obtained by people when they implemented health protocols such as wearing a mask, keeping distance, and cleaning hands thus it would give significant benefits to avoid COVID-19 infection and would result in a high compliance level of health (Afro, 2021). It is in line with the statement of Hall (2012) that people would take action to prevent illness if they believed that the benefits of the action taken were bigger than the resistance felt or the cost needed (Chen et al., 2021).

Health promotion has a long tradition in helping communities to

increase the control on the factors that determine people's health. Ottawa charter emphasized the importance of direct community involvement in the health need analysis, problem priority setting, empowerment program, partnerships strengthening, and health policy support (Aung et al., 2020; Barmania & Reiss, 2020; Cortez et al., 2020; van den Broucke, 2021). Model innovation, intervention strategy, and people empowerment activity that can be done by the researcher and health promotion practitioners may provide guidance for people to face the COVID-19 pandemic (Rahmatina & Erawati, 2020; Ratima, 2019). Then, it is adopted in this study related to the Health Promotion Model (HPM) that the activity combines education and training and is closed by the formation of health cadres group, since people's involvement as direct respondents can determine substantial differences in the results of the HPM activity and strengthen their capacity to overcome problems of TSM that must be reached for health behavior changes to prevent the spread of COVID-19 (Khoshnood et al., 2018; Pender, 2015; Wiguna et al., 2021).

CONCLUSION

The Health Promotion Model (HPM) is an intervention strategy allowing the team to conduct health promotion activity that aims at attitude and behavior changes of people, which indirectly makes the respondent group a model of health promotion. As a health promotion, respondents can forward benefits information about how to prevent COVID-19 in their environment. This activity also affects other people's awareness within the region of the research location in implementing the health protocols of COVID-19 (5M). For further research, the authors hope that it will be conducted to a bigger population from all age categories and be able to analyze the dominant factors that affect people's compliance level in implementing the newest policy of the Government of Indonesia, which is the 6M health protocols.

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Faktor Risiko Penularan Virus SARS-Cov 2 pada Tenaga Kesehatan

Risk Factors for Transmission of the SARS-Cov 2 Virus in Health Workers

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ABSTRACT

Background: Healthcare workers (HCWs) serve as front liners in the battle against COVID-19. They are often expected to be in constant contact with infected patients, posing higher risk of transmission. To date, literature on risk factors of COVID-19 transmission in HCWs are still limited. **Purpose:** We conducted this systematic review to identify the risk factors for SARS-CoV-2 virus transmission among HCWs. **Methods:** We conducted a systematic review using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses protocol. Four internet databases were searched using predefined search terms. The keywords used were {"COVID-19" OR "SARS-CoV-2"}, {"transmission" OR "transmission risk"}}, and {"healthcare professionals" OR "healthcare workers" OR "healthcare staff"}. All English articles which were published from January 2020 to June 2021 involving HCWs in hospitals treating COVID-19 were included into the study. **Results:** Out of initial 636 studies found using the predefined search terms, 18 studies fulfilled the inclusion criteria and were subsequently analyzed. We found that risk factors for COVID-19 could be divided into 5 categories: use of personal protective equipment (PPE), infection control procedures, unsafe workplace practices, provision of institutional support, and presence of individual risk factors in healthcare workers. Good hospital governance is necessary to establish policies regarding control of COVID-19 infection which will protect the patients and HCWs. **Conclusion:** Proper use of PPE, compliance to proper infection control procedures, establishment of safe workplace practices, provision of institutional support for prevention measures, and lack of individual risk factors may reduce the transmission risk of SARS-CoV-2 virus among healthcare workers. Further studies are warranted to identify methods for reducing incidence and mortality rate due to COVID-19 at HCWs.

Keyword: COVID-19, healthcare workers, risk factors, transmission

INTRODUCTION

Coronavirus Disease 2019, abbreviated as COVID-19, started with a series of clusters of pneumonia-like symptoms in December 2019 in China (Xiao *et al.*, 2020). The disease has rapidly evolved into a pandemic encompassing the entire world (Bandyopadhyay *et al.*, 2020). As of June 2021, the number of confirmed cases reported globally now exceeds 175 million, with 3 million confirmed deaths (The World Health Organization, 2021). Healthcare workers (HCWs), including doctors, nurses, laboratory technicians, physiotherapists, and many others are responsible for the treatment and patient care (Xiao *et al.*, 2020). In their line of work, HCWs were expected to be constantly in close contact with patients, including patients confirmed as having COVID-19, posing for

them higher risks for transmission than normal populations. One previous study reported a mortality rate of 37.2 deaths per 100 infections for HCWs, especially those belonging to the elderly age group. As of May 2020, a total of 152.888 HCWs have been infected with COVID-19, accounting for 3.9% of the population worldwide. Among these, 1413 HCWs were reported dead due to COVID-19, making up 0.5% of the number of deaths worldwide (Bandyopadhyay *et al.*, 2020). Previous study also reported that at least 90,000 healthcare workers worldwide have been infected by COVID-19. The study showed a rate of 5.62% (273 out of 4854 cases) infection among HCW in Iran (Sabetian *et al.*, 2021).

Healthcare workers working on the front lines in the battle against COVID-19 face challenges in providing treatment for their

patients. They have to prevent the spread of infection, develop short-term management strategies, and establish long-term plans of care for patients with COVID-19, in addition to their regular work with non-COVID-19 patients and taking care of their personal affairs (Shreffler, Petrey and Huecker, 2020). In addition to battling fears of COVID-19 exposure and infection, HCWs were also exposed to psychological stress related to shortages of personal protective equipment (PPE) and other essential supplies. They may have irregular working hours due to the pandemic, as well as higher workload and new responsibilities due to new clinical roles, which may be unfamiliar to them (Blake *et al.*, 2020).

To date, several scientific literature have reported risk factors for COVID-19 transmission risk on both general populations and medical workers, but little studies were conducted to identify the risk factors for transmission in HCWs. Studies available on the risk factors for HCWs were focusing on different aspects of healthcare, necessitating a synthesis of their findings. This systematic review aims to synthesize the risk factors for COVID-19 transmissions among HCWs working in hospitals providing care for COVID-19 patients, as reported in previous studies.

METHODS

This was a systematic review conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methods. The search for relevant literature was conducted using several electronic databases; namely MEDLINE (PubMed), EMBASE, SCOPUS, and MedSci. The following keywords combinations were used in our search: (i) {"COVID-19" OR "SARS-CoV-2"} AND (ii) {"transmission" OR "transmission risk"} AND (iii) ("healthcare professionals" OR "healthcare workers" OR "healthcare staff"). All articles published in English from January 2020 to June 2021 and were available for free in full text were included in our search. Article types included systematic reviews, reviews, clinical trials, meta-analyses, and randomized clinical trials.

Inclusion criteria for this systematic review included: Articles published in English, Articles were available in full text without additional cost (free full text),

articles published in January 2020 to June 2021, studies conducted in hospitals treating COVID-19 patients, study participants included HCWs working in hospitals treating COVID-19 patients, and study were conducted on the risk factors for SARS-CoV-2 transmission among healthcare professionals.

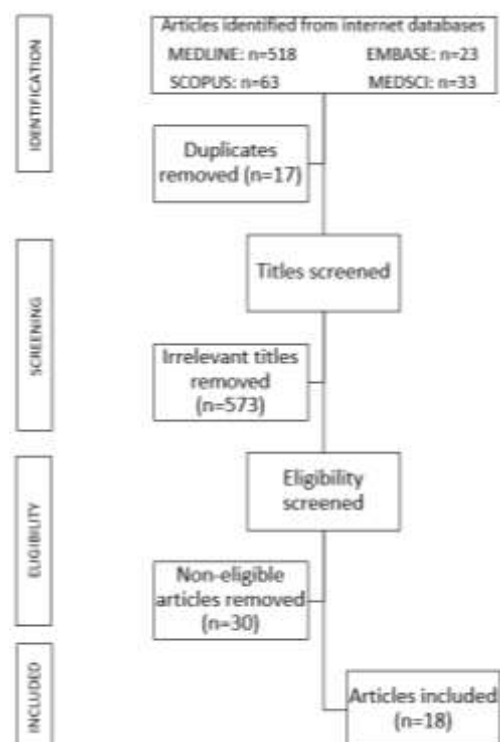
Articles not published fully in English, articles not available free in full text, articles not published in January 2020 to June 2021, and articles containing protocols, discussion, opinions, and editorial letters were excluded. Studies not conducted in hospitals treating COVID-19 patients, studies not conducted with healthcare professionals as their focus, and studies not focusing on the risk factors for SARS-CoV-2 transmission among healthcare professionals were excluded from the review.

An initial literature search was conducted on four databases, the results of which were screened for duplication. Duplicates were excluded and the remaining articles were screened for abstracts and titles relevant to our research question. Articles with titles and abstracts not relevant to our research questions were excluded, and the remaining articles were reviewed in full text. Data were extracted, including study sample size and characteristics, aims, research methods and designs, and risk factors for SARS-CoV-2 transmission among healthcare professionals.

A total of 637 articles were identified using the predetermined search keywords on four scientific journal databases. After screening for duplications, 17 articles were removed. Subsequently, title screening was performed to determine the articles' relevance to our research question, after 573 articles were removed due to them being irrelevant to our research questions. Abstract screening was performed on the remaining 48 articles, and 18 articles were found to be eligible and retained for analysis.

Descriptive summary statistics were used to report the number of published studies. The search results are presented in a PRISMA diagram below (Figure 1). All studies were analyzed descriptively, and the findings were synthesized.

Figure 1. PRISMA Flow Chart



RESULTS AND DISCUSSION

Study Characteristics

Out of 18 total articles that were reviewed and analyzed, the study designs of the eligible articles mainly included retrospective cohort study (n=1), literature reviews (n=10) and systematic reviews (n=7). Countries where the articles originated included: 4 studies from China; 2 studies from India; 2 studies from Various African Countries as aggregate data; 2 studies from the Netherlands; and one study each from Turkey, Canada, Nepal, United Arab Emirates, Germany, France, USA, and Indonesia. All studies except one were exclusively focused on HCWs. The findings were summarized in Table 1.

Table 1. Findings from eligible articles

Author/Year	Country	Sample Characteristics	Design	Risk Factors Identified
(Ağalar and Öztürk Engin, 2020)	Turkey	Healthcare Providers (HCP); particularly lab workers	Literature Review	Use of personal PPE, hand hygiene, and precautions against close contact in high-risk procedures. In the laboratory setting: cleaning and disinfection of equipment, manual touchpoints
(Arora, Sardana and Sinha, 2020)	India	HCWs; particularly in dermatology practices	Literature Review	Proper use of PPE, adherence to social distancing protocols
(Bandyopadhyay <i>et al.</i> , 2020)	India	HCWs	Systematic Review	Shortage of HCW, lack of protocols and operating procedures to ensure the safety of HCW increase the risk of transmission of COVID-19 in HCWs
(Chersich <i>et al.</i> , 2020)	Various African Countries	HCWs	Systematic Review	Adequate protection against transmission (proper PPE, hand hygiene, infection control), systemic support such as the provision of proper PPE, establishment of policies prioritizing HCP for testing, treatment, and research for reducing transmission.
(Carlsten <i>et al.</i> , 2021)	Canada	HCWs	Literature Review	Hazardous work characteristics (including exposure to infected aerosols, lack of proper PPE, poorly-

Author/Year	Country	Sample Characteristics	Design	Risk Factors Identified
(Du <i>et al.</i> , 2021)	China	HCP	Literature Review	designed/poorly-ventilated workspace that did not facilitate social distancing, prolonged face-to-face contact); Being in high-risk demographics (elderly, comorbidities) Lack of PPE and lack of awareness on the importance of personal protection were the main contributing factors in the early stage of the pandemics.
(Eijkholt <i>et al.</i> , 2021)	Netherlands	HCWs	Literature Review	Availability of proper PPE, potential duration of exposure to COVID-19, individual factors (age, body mass index (BMI), comorbidities).
(Giri <i>et al.</i> , 2021)	Nepal	HCP	Systematic Review	Inadequate and improper use of PPE increased the risk of transmission
(Gholami <i>et al.</i> , 2021)	United Arab Emirates	HCWs	Systematic Review	PPE, workplace setting, profession, exposure, contacts, and testing
(Gross, Mohren and Erren, 2021)	Germany	HCWs	Systematic Review	Shortage of PPE, insufficient knowledge and training related to safety precautions. Longer working hours were also reported to be associated with high risk of transmission
(Li <i>et al.</i> , 2020)	China	General populations, HCWs as subgroup	Systematic Review and Meta-Analysis	For the HCWs group, wearing masks was shown to have a reduced risk of infection by nearly 70%.
(Kaur <i>et al.</i> , 2020)	USA	HCWs	Literature review	Standard droplet and contact precautions (gowns, gloves, mask), working in high-exposure department, performing aerosol-generating procedures
(Patel <i>et al.</i> , 2021)	African Countries	HCWs	Literature review	Training and education on IPC played an important role in reducing the risk of transmission of COVID-19 among HCW
(Ran <i>et al.</i> , 2020)	China	HCWs	Retrospective Cohort Study	Working in high-risk department, longer work hours, suboptimal hand-hygiene after contact were associated with increased risk of COVID-19 transmission
(Romano-Bertrand <i>et al.</i> , 2020)	France	HCWs	Literature review	Lack of/inadequate PPE, high exposure to infected patients, work overload, poor infection control, presence of individual risk factors

Author/Year	Country	Sample Characteristics	Design	Risk Factors Identified
(Verbeek <i>et al.</i> , 2021)	Netherlands	HCWs	Systematic Review	Proper use of PPE
(Widjaja, Shatri and Putranto, 2020)	Indonesia	HCWs	Literature review	Longer duty hours, performing high-risk medical or surgical procedures, hand hygiene
(Xiao <i>et al.</i> , 2020)	China	HCWs	Literature review	Poor institutional infection control measures, lack of awareness, lack of training in terms of infection control, poor compliance with PPE requirements, close contact in physical examination and therapy, performing procedures involving direct contact with patients' bodily fluid

Healthcare workers, as defined by the World Health Organization (WHO), refers to “all people engaged in actions whose primary intent is to enhance health” (Olum *et al.*, 2020). This group includes “doctors, nurses, midwives, paramedical staff, hospital administrators and support staff and community workers”. They are more often expected to be in constant contact with the patients, sometimes in prolonged duration based on their specialty and unit (Eijkholt *et al.*, 2021). During the COVID-19 pandemic, the term HCWs has become synonymous with ‘front-liners’ in the battle against COVID-19. This poses occupational hazard of being infected with COVID-19 or even death (Bandyopadhyay *et al.*, 2020).

In this rapid systematic review, it was found that factors affecting the risk of transmission of COVID-19 can be divided into 5 categories. Those categories were use of personal protective equipment, proper infection control procedures, workplace practices, institutional support, and individual risk factors.

Use of Personal Protective Equipment

Fourteen out of the remaining 18 articles listed the use of personal protective equipment as a factor in the transmission risk of COVID-19 among healthcare providers. A previous study noted that wearing PPE in a proper and appropriate manner is paramount to reduce the risk of transmission. Properly-worn personal protective equipment provides protection against pathogenic agents in otherwise-exposed areas of the body and thus limiting the entryway for pathogenic agents to enter into the body

(Arora, Sardana and Sinha, 2020). Standard protective equipment for droplet precautions, including gowns, masks, and gloves, could reduce the transmission risk of the SARS viruses (Kaur *et al.*, 2020). Another study reported that the risk of infection in HCWs could be reduced by 70% by wearing protective equipment, particularly masks (Li *et al.*, 2020). However, there was a report that while the use of PPE might reduce the risk of transmission, it did not fully eliminate the risk of transmission (Ağalar and Öztürk Engin, 2020).

The World Health Organization recommended the use of contact and droplet precautions when caring for patients with suspected, probable, and confirmed COVID-19. For aerosol-generating procedures, the WHO further recommended the use of airborne precautions (The World Health Organization, 2020). However, the transmission of COVID-19 among HCWs was also reported to be higher with improper and inadequate use of PPE (Giri *et al.*, 2021). This is due to the fact that PPE provides protection against pathogenic agents by covering otherwise-exposed areas of the body.

Proper Infection Control Procedures

Proper infection control procedures, particularly hand hygiene, has also been associated with SARS-CoV-2 virus transmission, as proper hand hygiene is expected to limit the number of bacteria transferred through physical skin contact. In our study, 7 studies listed proper infection control procedures as playing a role in lowering the COVID-19 transmission in HCWs. For example, a previous study

found that poor hand hygiene practice following patient contact, especially in high-risk departments, poses a higher transmission risk of COVID-19 among HCWs (Ran *et al.*, 2020). Lack of other infection control procedures was also associated with higher risk among HCWs for transmission of COVID-19 (Bandyopadhyay *et al.*, 2020; Chersich *et al.*, 2020; Widjaja, Shatri and Putranto, 2020).

The WHO recommended the use of the 5 Moments of Hand Hygiene to prevent HCWs from spreading infectious agents through skin contacts (Nguyen *et al.*, 2020). As such, an increased transmission risk for infectious disease, especially COVID-19, has been linked to poor hand hygiene. Other infection control measures might include proper waste management and proper cleaning and disinfection of equipment (Ağalar and Öztürk Engin, 2020). Due to frequent medical procedures, equipment, surface and healthcare environment in general were at an increased risk of contamination with pathogens, especially the SARS-CoV-2 virus. Therefore, the healthcare environment should always be cleaned and disinfected properly in order to prevent transmission (Ye *et al.*, 2020).

Workplace Practices

Several factors related to workplace practices were also reported as risk factors for COVID-19 transmission among HCWs. Hazardous work conditions, such as poorly-designed and poorly-ventilated workspace, as well as workspace that did not facilitate social distancing presenting a clear transmission risk of the SARS-CoV-2 virus (Carlsten *et al.*, 2021). Similarly, another study also reported that workplace setting is a risk factor for COVID-19 transmission among HCWs (Gholami *et al.*, 2021).

In addition to poor workplace settings, shortages of staff were also found to be associated with the transmission risk of COVID-19 (Bandyopadhyay *et al.*, 2020). Shortages of staff necessitated healthcare professionals to work longer hours with increasing workload, which were already risk factors for the transmission of COVID-19 among healthcare providers (Ran *et al.*, 2020; Romano-Bertrand *et al.*, 2020; Widjaja, Shatri and Putranto, 2020).

Working in high-risk departments and performing high-risk medical and surgical procedures were also reported by 10 out of the analyzed 18 studies as risk

factors for COVID-19 transmission among HCWs. High-risk procedures might include, among others, aerosol-generating procedures such as intubation, suctioning, bronchoscopy, bag mask ventilation, invasive and non-invasive ventilation (NIV), and nebulization (Kaur *et al.*, 2020). Moreover, the duration of the high-risk procedure itself contributed to COVID-19 transmission among HCWs (Eijkholt *et al.*, 2021).

Previous reports suggested that hazardous workplace characteristics might present an increased risk of transmission, especially for vulnerable HCWs. These hazardous workplace characteristics included densely populated workplace, poorly-ventilated workplace, and poorly-designed work environment that hinders social distancing (Carlsten *et al.*, 2021). Previous studies found that transmission of the COVID-19 was linked to close contact between individuals in closed settings, and therefore a work environment that did not facilitate social distancing and provide proper air circulation further increased the risk of transmission (Fisher *et al.*, 2020).

Research conducted in 2016 showed that hypertension occurrence is linear with aging (Artiyaningrum, 2015). Age groups > 40 years old have a high risk of uncontrolled hypertension compared to the 18 - 40 years old age group. The elasticity of the arteries begins to decrease at > 40 years old, making it easier to narrow or stiffen due to plaque buildup and are susceptible to high blood pressure. During 18-40 years old, physical condition is still stable, the enthusiasm for doing physical activities is better, so that the health condition tend to be normal (Sutanto, 2011).

Institutional Support

Institutional support is also an important risk factor for COVID-19 transmission among HCWs. Provision of proper personal protective equipment and establishment of proper infection control protocols were reported to be associated with lower risk of transmission (Chersich *et al.*, 2020). In addition, lack of awareness on the transmission risk and health protocols were associated with higher risk of transmission among HCWs (Du *et al.*, 2021). Another study also reported risk of transmission tended to be higher in HCWs with lack of training and knowledge in terms of infection control measures (Gross,

Mohren and Erren, 2021). Lack of testing for HCWs might also lead to asymptomatic workers spreading COVID-19 to patients and other HCWs, thus increasing the risk of transmission (Gholami *et al.*, 2021).

Previous study reported that institutional support was important in preventing COVID-19 among healthcare providers. Provision of proper PPE in adequate numbers, as mentioned before, might reduce the risk of transmission from HCWs to patients, and from HCWs to other HCWs as well. Prioritizing HCWs in testing, treatment and research related to COVID-19 would help reduce the number of asymptomatic carriers and in turn would reduce the risk of transmissions among HCWs (Chersich *et al.*, 2020). Institutional support in the form of providing training and sufficient knowledge for HCWs related to infection control and safety procedures has also been found to lower transmission risks, as HCWs who have been trained were more likely to be compliant with the established health protocols (Gross, Mohren and Erren, 2021).

Individual Risk Factors

There are three out of 18 analyzed studies that listed individual risk factors in HCWs. These studies concluded individual risk factors as risk factors for the transmission of COVID-19 among HCWs. These individual risk factors included age, BMI, and the presence of other comorbidities (Carlsten *et al.*, 2021; Eijkholt *et al.*, 2021).

Individual risk factors for COVID-19 transmission were especially in vulnerable populations. COVID-19 tended to be more severe in old age and with people with other comorbidities such as obesity, diabetes mellitus, hypertension, cardiovascular disease, kidney disease, COPD, asthma, etc, and thus, HCWs with these conditions were at a higher risk of being infected with COVID-19 (Carlsten *et al.*, 2021). Other individual risk factors that might also affect the risk of transmission included individual compliance to health protocols. Lack of individual compliance was associated with higher risk of transmission among HCWs (Xiao *et al.*, 2020).

Reported Infection and Mortality Rates

There have been 152.888 cases of COVID-19 infection in HCWs, with 1413 among them resulting in death (Bandyopadhyay *et al.*, 2020). Another study reported that as of April 2020, there

were 10.000 cases of COVID-19 infection in Italian HCWs, with 74 cases resulting in death (Chersich *et al.*, 2020). Similar study also cited that 3300 HCWs in China have been infected, and the rate was approximately 20% in Italy (Gross, Mohren and Erren, 2021). Similarly, a total of 1716 HCWs were infected by COVID-19 in China by February 2020 (Ran *et al.*, 2020). A report from the China CDC reported 3387 cases of COVID-19 infection among HCWs. They also cited WHO situation report stating that 22,073 cases of COVID-19 infection in HCWs have been reported globally (Xiao *et al.*, 2020). Another study reported 515 HCWs deaths due to COVID-19 as of July 2020 (Kaur *et al.*, 2020), while another reported in 2020 that at least 40 HCWs have died due to COVID-19 in Indonesia (Widjaja, Shatri and Putranto, 2020). Unfortunately, none of the analyzed articles reported the exact prevalence of COVID-19 infections among healthcare workers.

The results of this review highlight the need for special attention to those risks in clinical practice, especially regarding the proper use of PPE, and proper infection control procedures. From administration point of view, hospital leadership are recommended to create policies that ensure safe practices in their organizations, including practices in line with droplet precautions and COVID-19-related health protocols as determined by the Ministry of Health. Policies to ensure the provision of adequate and proper protective equipment, and policies to ensure that workspace and building requirements were in line with health protocols were also needed. Lastly, it may be necessary to mitigate risks for high-risk HCWs by limiting their exposure to the SARS-CoV-2 virus.

This study is not without limitation. First, only a little number of articles were analyzed in this study. However, the articles were screened using the PRISMA methods. Second, this systematic review did not particularly look at randomized clinical trials that provided quantifiable statistics for measuring risk factors, and as such could not be properly objectively quantified. Further studies are required to delve deeper into risk factors for COVID-19 transmission to stave off the infection and mortality rate among HCWs, especially considering that the pandemic remains ongoing with no end in sight.

CONCLUSION

The use of PPE, infection control procedures, workplace practices, institutional support, and individual risk factors were the main risk factors for COVID-19 transmission among HCW. Every stakeholder should be involved to manage these risk factors in order to reduce COVID-19 transmission. Proper use of PPE, compliance to proper infection control procedures, establishment of safe workplace practices, provision of institutional support for prevention measures, and lack of individual risk factors should be encouraged as prevention measures.

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