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Innovation on Preventing the Covid-19 Spread Using "Cool" Personal Protective Clothing for Healthcare Workers

Inovasi Pakaian Pelindung Diri "Sejuk" untuk Tenaga Kesehatan Sebagai Upaya Pencegahan Penularan Covid-19

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ABSTRACT

Healthcare workers need Personal Protective Equipment (PPE) that can protect them, to be safer and more comfortable with handling COVID-19 patients. One important PPE is the Personal Protective Clothing (PPC), where the PPC design has to comply with regulatory requirements, in terms of application, safety, comfort, and cost. A disadvantage is that PPC can be hot and poorly ventilated. The objective of innovation research was to develop a new design of PPC with safe, cool, and comfortable personal protective clothing. PPC is made with 100% polyester coverall according to WHO standards and with ice pack design. This product was subsequently analyzed for material morphology and penetration (water-repellent). Further, relevant information was captured from 14 participants in several health professions, using questionnaires. The laboratory test results of the sample materials reportedly surpassed the specifications and were also incorporated into level-3 PPC. Based on the survey data, the personal protective clothing with ice pack was simple, comfortable, and not hot to use for healthcare workers.

ABSTRAK

Tenaga kesehatan membutuhkan Alat Pelindung Diri (APD) yang dapat melindungi diri, agar lebih aman dan nyaman saat menangani pasien COVID-19. Salah satu APD yang penting adalah Pakaian Pelindung Diri, desain pakaian pelindung diri harus memenuhi syarat peraturan penggunaannya antara lain, tingkat keamanan penggunaan, kenyamanan dan biaya. Salah satu kekurangan pada pakaian pelindung diri adalah rasa panas saat penggunaan dan kurangnya ventilasi udara. Tujuan dari pembuatan inovasi pakaian pelindung diri ini adalah membuat desain baru pakaian pelindung yang aman, sejuk dan nyaman saat digunakan. Pakaian pelindung diri terbuat dari bahan polyester 100% tipe terusan (coverall) sesuai standar dari WHO dengan penambahan desain kantong es (ice pack). Bahan dilakukan uji morfologi dan penetrasi bahan (water repellent). Selanjutnya pakaian pelindung diri di uji coba oleh 14 responden dari beberapa profesi tenaga kesehatan, menggunakan kusioner. Hasil uji laboratorium bahan sampel melampaui spesifikasi dan termasuk pakaian pelindung diri level 3. Berdasarkan data survei, pakaian pelindung diri dengan kantong es sederhana, nyaman dan sejuk digunakan oleh petugas kesehatan.

INTRODUCTION

Indonesia first reported COVID-19 cases on March 2, 2020.¹ It spread fast across the community, particularly among healthcare workers because medical facilities (i.e., clinics, health centers, and hospitals) are highly vulnerable. Coronavirus is mainly transmitted through the respiratory tract with specific symptoms of cough, fever, flu, breathing difficulties, anosmia (loss of smell), shortness of breath, and spotting or pneumonia infiltrates in the lungs.² This viral infection is possibly due to droplets or direct hand-to-hand contact.³ Person-to-person transmission has also been reported in healthcare workers.⁴

Healthcare workers who care for COVID-19 patients in hospitals and quarantine centers are at high risk of getting infected, which is confirmed by a high viral load found in the blood due to frequent contact with patients.⁵ WHO reported that transmission to clinical staff reached 3000 cases. Meanwhile, 989 medical personnel worldwide died by May 7, 2020.³ Other data from the Center for Disease Control and Prevention (CDC) reported that approximately 11% of COVID-19 cases infected Healthcare workers.⁶ A study found that uninfected healthcare workers wore protective clothing more frequently than the infected ones.⁷ A major risk factor for the rapid spread of infection is compliance with stipulated professional standards of the use of Personal Protective Equipment (PPE), including Personal Protective Clothing (PPC), eye goggles, and masks or respirators. Therefore, the effective use of personal protective clothing for healthcare workers will reduce the risk of COVID-19 transmission.⁸ Personal Protective Clothing (PPC) is among the standard protective equipment to evade COVID-19 infection.⁹

The use of PPC is mandatory for health workers. However, various factors including the inconvenience (e.g., the discomfort of wearing, heat) and the insufficiency (i.e., repeated use) can lead to non-optimal utilization.¹⁰ For the long-term use, the healthcare workers can suffer from overheating or can fall unconscious.¹¹ Those problems could influence the performance and reduce productivity. Therefore, a better solution for easy-to-install and detachable equipment is needed.

The first objective of this study is to initiate innovations of personal protective clothing (i.e.,

cool and comfort) for healthcare workers to prevent COVID-19 infection. Second, the productivity of manufacturing SMEs should be increased to focus on generating decontaminated fabrics to meet high PPE demands.

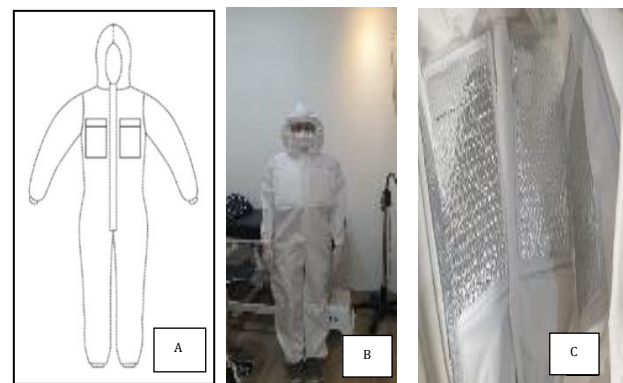
MATERIAL AND METHOD

This study was a retrospective observational one, using a healthcare workers' perspective (i.e., doctor, specialist, dentist, and nurse) and qualitative database within a single population or sample with questionnaires (11 questions) from June 2020 to May 2021 at several health facilities (i.e., hospital and polyclinic) in Jakarta and Bekasi, West Java, Indonesia. This study also analyzed several Laboratory tests of personal protective clothing materials.

Producing a Prototype of Personal Protective Clothing

The methods and stages of technological development in manufacturing personal protective clothing are as follows:

Building a prototype of personal protective clothing; making fabric materials using non-woven milky waterproof polyester fabric coating 100%, Gramasi 0.75 Taslan, and storage bag sample from 2-sided bubble aluminum metalizing foil + PE Bubble thickness: 4 mm, using design for four ice pack pocket and cooling effect. The ice pack type is Unimom with BPA-free and nanosilver plastic packaging as antibacterial & deodorant. It is safe with food-grade standards and harmless in preserving breast milk, food, or cold drinks for +/- 2 hours.



Source: Primary Data, 2020

Figure 1. Personal Protective Equipment Gown Design (A) Perspective Gown Design (B) the Whole Look of Cover-All Type of Protective Clothing, (C) Ice-Pack Inner Design

Laboratory Testing of Personal Protective Clothing Materials

Personal protective clothing was analyzed using three standard tests from the Ministry of Health. First, the use of material morphology was analyzed with Scanning Electron Microscope (SEM) method located in polymer technology laboratory, Agency for the Assessment and Application of Technology, *Badan Pengkajian dan Penerapan Teknologi* (BPPT). Second, a droplet/water repellent test for water resistance was utilized by examining the impact of penetration test results. Third, a hydrostatic pressure test was applied. The fabrics' resistance to water penetration was measured by the standards of the American Association of Textile Chemists and Colorists (AATCC).

Comfort Testing of Personal Protective Clothing

The comfort was tested by a questionnaire consisting of 11 questions regarding suitability and convenience to wear personal protective clothing. This study used a descriptive research method. Fourteen health workers from various professional fields, including general practitioners, specialists, general dentists, specialist dentists, nurses, and midwives, enrolled as participants. These respondents were requested to wear the personal protective clothing with four ice packs of silver nano type divided into 2 ice bags, each on the front (chest), at the right, and left, and 2 ice bags on the back (back) at the right and left, for 2 hours during patients' handling.

RESULTS

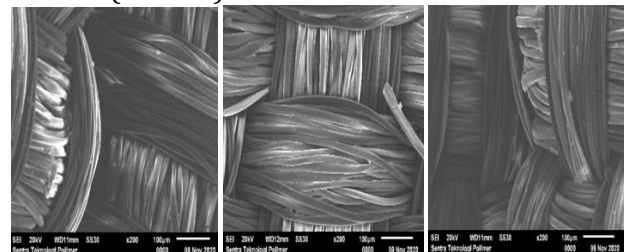
Morphological Analysis Test Results

The prototype test results for personal protective clothing using a Scanning Electron Microscope (SEM) were conducted in the polymer technology laboratory, Agency for the Assessment and Application of Technology (BPPT). This microstructure analysis was expected to observe the structure or pore density of the sample fabric with a magnification of up to 200x. Figure 2 shows the material micrograph with unbroken webbing of the intact polyester yarn of 15-30 μ m thickness without pores.

Droplet/Water-Repellent Analysis Results

In the droplet analysis, related to the classification of personal protective clothing, parameters based on the WHO standards were involved, including a standardized test of the American Association of Textile Chemists and Colorists (AATCC) and the Association for the Advancement of Medical Instrumentation (AAMI). However, the water-resistance test has two parts: the Impact penetration test (AATCC 42) and the Hydrostatic Pressure test (AATCC 127). The Impact penetration test (AATCC 42) defines how fast and deep the fluid travels to the fabrics and quantifies the impact penetration of water under spray. The Hydrostatic pressure test (AATCC 127) determine the ability of fabric material to resist water penetration under increasing hydrostatic water pressure, while the pre-wash results matched the requirements. Moreover, the second parameter assessed the penetration-resistance level, based on AAMI classification.

The first inspection indicator outcome was dependent on the Acceptable Quality Level (AQL) requirements with spray impact value ≤ 1.0 g and hydrostatic pressure ≥ 50 cm H₂O. Meanwhile, the second referred to the classification of exposure risk prevention categorized into first (low), second (moderate), and third (high) levels. Further, the results of this personal protective clothing test were included in the third level (high) classification. According to the AATCC, 42 impact penetration test and hydrostatic pressure test (AATCC 127) results showed that fabrics sample could resist the initial water impact and have hydrostatic resistance from high-pressure water contact (Table 1).



Source: Primary Data, 2020

Figure 2. Morphological Analysis of 100% Milky Waterproof Polyester Coating Material Using a Scanning Electron Microscope (SEM) With 200x Magnification and 100 μ m Bar Scale Information

Table 1. The Results of Test Parameter Water Repellent Analysis

No	Test Parameter	Result
1	Before washing AATCC 42	Pass
2	Before washing AATCC 127	Pass

Source: Primary Data, 2020

Personal Protective Clothing Comfort Test Results

A total of 14 respondents were included in this survey. These data show the comfort test results using a questionnaire. According to the results of this questionnaire, the average time for wearing personal protective clothing was 2 hours. Most healthcare workers feel wearing PPC was simple or easy-to-use, comfortable, not-hot-to-use, and has no allergy effect including itching, redness, and soreness on their skins (Table 2).

DISCUSSION

Healthcare workers have an increased risk of contamination with COVID-19 due to exposure to disease with COVID-19 patients.¹² Effective use of Personal Protective Equipment (PPE) is a major potential effort in tackling COVID-19 spread, according to WHO. The set comprises personal protective clothing (PPC), eye protection (goggles and face shield), gloves, and masks.¹³ Moreover, healthcare facilities are required to provide clinical security guarantees for both medical workers and the public.¹⁴ An important principle of quality health service institutions is the protection of patients, health workers, support personnel, and the surrounding community from disease transmission, particularly, coronavirus. This effort is only realized by implementing effective and efficient disease prevention and control.¹⁵ Also, infection control is highlighted in the 6th and 7th Millennium Developmental Goals (MDGs), including proper cross-infection control, which is needed to prevent infectious diseases during patient care. In 2020, WHO targeted an increase in the number of competent services to recognize and reduce the transmission risk of contagious ailments in dental and oral health services.³

The general goal of PPC is to inhibit disease transmission by filtering or mitigating a person from exposure to hazardous substances, including body fluids, harmful microorganisms (bacteria or viruses) and to minimize the risk of cross-

infection.¹⁶ PPC is usually made of synthetic fiber, using several types of fabrics with the help of non-woven, weaving, or knitting technologies. Non-woven fabrics are the most valuable for PPC and have a high level of sterility, infection control, and are cheap to manufacture.¹⁷ PPC can be either single-use (disposable), multi-use (reusable), or can be washed after use. Reusable PPC is usually made of 100% cotton, 100% polyester, or with a polyester/cotton blend.¹⁸ This study used personal protective clothing material made of synthetic fiber or non-woven waterproof polyester coating material due to its better liquid barrier properties. The material design in this innovation is a 100% polyester cover-all with possible reuse after washing and sterilization. Non-woven fabrics have a semi-porous layer with selective pores, a non-porous state, as well as hydrophobic properties, which means that they are not wet with liquids, or are water-repellent.

Samples in this innovative protective clothing were laboratory-tested, with hydrophobic properties. However, pathogenic microorganisms, including viruses, tend to instigate disease transmission through exposed skin from direct contact with infected body fluids. Further, the increasing concern of health workers with the exposure to pathogenic microorganisms originating from blood, body fluids, and other contagious sources requires safe and comfortable personal protective equipment.¹⁹ One aspect of PPE is decontamination of clothes (protective clothing), which aims to prevent contamination in certain body regions, commencing from the head and other parts, designed according to the Association for the Advancement of Medical Instrumentation (AAMI) standards and American Association of Textile Chemists and Colorists (AATCC).²⁰ In 1945, the American Association of Textile Chemists and Colorists (AATCC) is a test for measuring the resistance of garment material to the impact of water penetration and, in 1968, the AATCC used hydrostatic pressure to evaluate fabrics' specimens in a penetration cell.^{21,22} This criterion passed with AATCC 42 and 127 laboratory tests, showing that the fabrics sample could resist the initial water impact and demonstrating hydrostatic resistance to high-pressure water contact (Table 1).

Table 2. The Results of the Questionnaire on Respondents After Wearing Personal Protective Clothing for 2 Hours While Handling Patients

Questionnaire about Suitability and Comfort of Personal Protective Equipment (PPE) Form of Personal Protective Clothing (PPC)	Statement			
	Strongly Agree	Agree	Less Agree	Disagree
I feel the use of cool PPE in the form of PPC is based on the personal protection requirements of health workers	71.4%	28.6%	-	-
I feel using a cool PPE in the form of PPC tends to increase work productivity while rendering services to patients	64.3%	35.7%	-	-
I feel the use of cool PPE in the form of PPC does not interfere in service delivery	42.9%	57.1%	-	-
I find the use of cool PPE in the form of PPC very easy to use	28.6%	64.3%	7.1%	-
I feel no obstacles in moving my limbs when using the cool PPE in the form of hazmat,	42.9%	50%	7.1%	-
I feel that using a cool PPC appears more comfortable, compared to any regular type	57.1%	42.9%	-	-
I don't feel hot after using cool PPC for more than 2 hours	71.4%	28.6%	-	-
I feel that using the cool PPE has no effects, including itching, redness, and soreness on my skin	64.3%	35.7%	-	-
I feel that the use of a cool PPC doesn't appear light	-	14.3%	64.3%	21.4%
I use cool PPC and headgear comfortably while performing tasks	50%	50%	-	-
Cool PPC stays in sound conditions (doesn't tear easily)	78.6%	21.4%	-	-

Source: Primary Data, 2020

The design of personal protective clothing is expected to meet the regulatory factors of use, protection level, comfort, and cost. Decontamination clothes require a barrier effect capable of avoiding liquid penetration, with high functionality or mobility, comfortable, not easily torn, fitting the body size of health workers, bio-compatible, flammable, and displaying sound maintenance.²³ Further, certain manufacturers of personal protective clothing are encouraged to incorporate safety, reusability, high comfort. The level of comfort is very significant in satisfying the requirements for personal protective clothing, both in terms of use (function) and temperature (not hot).²³ Personal protective equipment (PPE) can potentiate heat stress, which may harm the healthcare workers' performance, comfort, and safety.²⁴ The temperature in the operating room is usually 15 to 25 °C and humidity 30% to 60%. The temperature of the operating room could increase during the treatment. Additionally, healthcare workers with high-stress situations can release their body heat and discomfort.²⁵ However, reusable clothing demonstrates higher thickness, compared to the disposable faction, causing unnecessary discomfort as air

circulation produces less heat.¹⁹ Therefore, reusable clothes are innovated while creating a feeling of comfort.

This innovative design of personal protective clothing was produced with nano silver-type ice storage bags on 2 fronts and 2 backs. The interior was coated with 2-sided bubble aluminum metalizing foil with 4mm thickness of 4mm, showing excellent capacity to store ice pack, without any wetness. Liquid cooling is a common strategy for the thermal protection of thermal PPCs. Compared to other studies, PPC uses a cooling system called water-containing channels in a liquid cooling garment.²⁶ This study uses high electrical voltage to accelerate the circulation of dielectric coolant in a stretchable pump. Using this system, the liquid cooling garment could resist temperature rise.²⁷ According to our study, we want to create not only simple but also low-cost and comfortable PPC. The results of the comfort test using a questionnaire from 14 healthcare workers from various medical fields generally showed that the end product was more comfortable by creating a cool atmosphere (Table 2). Therefore, healthcare workers are expected to be more relaxed and safer.

CONCLUSION AND RECOMMENDATION

This study concludes that the personal protective clothing with ice pack was simple, comfortable, and not hot to use. The recommendation for this study is not to limit personal protective clothing to health services but use it in various types of clothing designs (fire suits, field vests, etc).

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Knowledge, Motivation, and Attitudes of Truck Drivers Performing First Aid

Pengetahuan, Motivasi, dan Sikap Pengemudi Truk dalam Melakukan Pertolongan Pertama

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ABSTRACT

Cross-provincial lanes in Majalengka are often passed by truck drivers, and they often encounter accidents in which their help is required. The aim of this study was to determine the direct and indirect effects of truck drivers' knowledge, motivation, and attitudes when performing first aid and the most dominant influencing factors. The research followed a cross-sectional design, and 55 respondents were chosen using total sampling. Partial Least Squares Structural Equation Modeling was used for data analysis. In relation to the practice of first aid, the direct effect of knowledge was found to be significant ($p=0.001$), motivation was insignificant ($p=0.341$), and attitude was significant ($p=0.017$). The indirect effects resulting from the intervention of knowledge motivation was found to be insignificant in the practice of first aid ($t_{\text{statistik}} 0.530 < t_{\text{table}} 1.96$), and attitude was also not significant ($t_{\text{statistik}} 0.758 < t_{\text{table}} 1.96$). Attitude was found to be the most dominant factor.

ABSTRAK

Jalur lintas provinsi di Majalengka sering dilalui oleh pengemudi truk, dan sering mengalami kecelakaan yang membutuhkan pertolongan. Tujuan dari penelitian ini adalah untuk mengetahui pengaruh langsung dan tidak langsung dari pengetahuan, motivasi, dan sikap pengemudi truk saat melakukan pertolongan pertama dan faktor yang paling dominan mempengaruhi. Penelitian ini menggunakan desain cross sectional, dan 55 responden dipilih dengan menggunakan total sampling. Analisa data menggunakan Structural Equation Modeling-Partial Least Square. Berkaitan dengan praktik pertolongan pertama, pengaruh langsung pengetahuan ditemukan sig ($p=0,001$), motivasi tidak signifikan ($p=0,341$), dan sikap signifikan ($p=0,017$). Pengaruh tidak langsung yang dihasilkan dari intervensi motivasi pengetahuan ditemukan tidak signifikan dalam praktik pertolongan pertama, ($t_{\text{statistik}} 0,530 < t_{\text{tabel}} 1,96$), dan sikap tidak signifikan ($t_{\text{statistik}} 0,758 < t_{\text{tabel}} 1,96$). Sikap ditemukan menjadi faktor yang paling dominan.

INTRODUCTION

In 2021, 150 accidents occurred on arterial roads in Majalengka Regency and were mainly caused by a large number of vehicles competing with each other.¹ Cross-provincial routes are often traversed by many large vehicles such as night buses and trucks. As night buses usually carry passengers who must arrive at their destination on time, first aid is often administered by truck drivers. However, the aid provided is not optimal because drivers still have limited knowledge about first aid in an accident.²

When first aid is administered to the victim within 30 minutes after the accident, the consequences are 0.99 times less severe.³ Some countries such as the Czech Republic have made it necessary for all drivers to have basic first aid skills,⁴ so that they can provide assistance in the event of an accident. A past study investigated a total of 500 drivers and found that 32.8% had the courage to help in an accident 6 months post training. This is closely related to knowledge, motivation, and attitude in practicing first aid.⁵

Knowledge can increase one's motivation to take an action.⁶ Research also shows that first aid training for laypeople can improve psychomotor skills,⁷ maximize resources and reduce mortality.⁸ Helpers can be motivated by the teaching method at the time of training; specifically, practical teaching patterns can provide motivation and positive feedback.⁹ In addition to knowledge and motivation, attitude is a factor that influences the practice of first aid among truck drivers. Research in the Czech Republic shows that as many as 41% of the truck drivers display an attitude of not wanting to take risks, and 14% just watch when an accident occurs.¹⁰ Another study on truck driver attitudes conducted in Zambia revealed that 50.4% of drivers show a positive attitude and 35.7% show a negative attitude.¹¹

Based on the aforementioned background, the current study was conducted to understand the direct and indirect effects of intervening motivational knowledge, motivation, and attitude on the practice of first aid in accidents by truck drivers and the most dominant factors influencing these three aspects.

MATERIAL AND METHOD

The participants in this study were truck drivers at PT. Surya Gemilang Transport (SGT) and PT. Kreasi Bangun Langgeng (KBL) in Majalengka Regency. A cross-sectional approach was used for the research design, and the participants were chosen using the total sampling technique. The research was carried out in Majalengka from April 2021 to May 2021. Data were obtained from questionnaires about knowledge, motivation, attitude and first aid that were filled out by 55 respondents. The validity and reliability of the questionnaire were tested using SPSS 26. In terms of latent variable indicators, convergent validity and discriminant validity were determined using SEM-PLS analysis with Smart-PLS 4.4.

Partial Least Squares Structural Equation Modeling (PLS-SEM) was used for bivariate and multivariate analyses to measure the direct and indirect relationships between the variables of knowledge, motivation, and attitude and the practice of first aid in accidents by truck drivers as well as to determine the dominant factors. The analysis was conducted using Smart PLS 4.4 software with a 95% confidence interval (0.05). An ethical feasibility test was carried out at Stikes Mahardika Cirebon, West Java, with the number 007/KEPK.STIKMA/III/2021.

RESULTS

The truck drivers in this study were all male; the majority (85.5%) were 25–65 years of age; 40% had attained the junior secondary education level; and 41.8% had 5–10 years of driving experience (Table 1).

Table 1. Characteristic of Respondents

Characteristic	n=55	%
Gender		
Male	55	100
Female	0	0
Age (Years)		
18-25	8	14.5
25-65	47	85.5
> 65	0	0
Education		
Primary School	14	25.5
Junior High School	22	40.0
Senior High School	19	34.5
Driving Experience (Years)		
≤ 5	16	29.1
5-10	23	41.8
≥ 10	16	29.1

Source: Primary Data, 2021

Direct Influence Hypothesis Testing

Analyzing the influence of knowledge on first-aid practice resulted in a path coefficient of -0.335 and a p-value of 0.000, which was below the level of significance (alpha 0.05); this indicates a significant negative relationship between knowledge and first-aid practice during accidents. Analyzing the influence of motivation on first-aid practice produced a path coefficient of -0.155 with a p-value of 0.354, which was greater than the level of significance (alpha 0.05); this means that there is no significant negative relationship between motivation and first-aid practice during accidents.

Finally, analyzing the influence of attitude on first-aid practice resulted in a path coefficient of 0.400 with a p-value of 0.013, which was below the level of significance (alpha 0.05); this means that there is a significant positive relationship between attitudes and first-aid practice during accidents (Table 2).

Indirect Influence Hypothesis Testing

It was found that knowledge significantly influences the practice of first aid through motivational intervention, producing a path coefficient of 0.022 with $t_{\text{statistic}}$ 0.517. No significant relationship was found between attitudes and first-aid practice through motivational intervention; the path coefficient was -0.072 with $t_{\text{statistic}}$ 0.452 (Table 3).

Table 2. Path Coefficients and p-values for Direct Influence of Knowledge, Motivation, and Attitudes on First-Aid Practice

Exogenous	Endogenous	Path Coefficient	p-value
Knowledge	First-Aid Practice	-0.335	0.000
Motivation	First-Aid Practice	-0.155	0.354
Attitude	First-Aid Practice	0.400	0.013

Source: Primary Data, 2021

Table 3. Path Coefficients and p-values for Indirect Influence of Knowledge, Motivation, and Attitude on First-Aid Practice

Exogenous	Intervening	Endogenous	Indirect	$t_{\text{statistic}}$
Knowledge	Motivation	First-Aid Practice	0,022	0,517
Attitude	Motivation	First-Aid Practice	-0,072	0,452

Source: Primary Data, 2021

Dominant Factor

Attitude was the variable having the strongest influence, with the total coefficient = 0.328. This value shows that attitude has the most dominant relationship with first aid (Table 4).

DISCUSSION

Knowledge has a strong negative influence on first-aid practice, that is, the higher the knowledge, the lower the first-aid practice. Knowledge gained both from formal training and from information that can be accessed through various sources should be able to decrease involvement in first-aid practice.¹² Research in Nigeria shows a significant difference in increasing knowledge of a driver's first-aid practices, with the assessment carried out before training, after training, and 3 months after training. The results of this study indicate that better knowledge indeed improves the practice of first aid.¹³

The results obtained in the present study differ from the abovementioned research: the higher the knowledge, the lower the involvement of truck drivers in practicing first aid. This was also the result of research in Karacasu,¹⁴ which showed that although drivers had gained knowledge, first-aid practices were not carried out. Some participants underwent refresher training or first-aid knowledge courses for other needs and as a condition for driving license renewal.¹⁵ Fear of making mistakes when providing assistance is a notable factor in the negative relationship between knowledge and first-aid practice.¹⁶

Table 4. Dominant Factor

Exogenous	Intervening	Endogenous	Total Coefficient
Knowledge		First-Aid Practice	-0,313
Motivation		First-Aid Practice	-0,155
Attitude		First-Aid Practice	0,328
Knowledge	Motivation	First-Aid Practice	0,022
Attitude	Motivation	First-Aid Practice	-0,072

Source: Primary Data, 2021

Motivation is not significantly related to the practice of first aid. The magnitude of influence,¹⁷ according to the values in this study, is very low in strength. Research has shown that truck drivers have low motivation to perform first aid.¹⁸ The motivation levels of truck drivers in Majalengka Regency are low because of a lack of training or first-aid experience that can help motivate the driver. Motivation is formed by experience, objects, and situational factors.¹⁹

Situational factors may also result in low motivation.¹² For instance, drivers with heavy workloads, fatigue, stringent time targets, and the fear of being a witness or even a suspect have low motivation to do things unrelated to their main job and tend to avoid direct involvement in handling accidents.

Beliefs about the importance of first aid can change attitudes toward first aid. Azjen mentioned that perceived attitude in health behavior will shape people's behaviors and intentions.²⁰

Based on the present study's results from the indirect influence hypothesis testing, t statistic value was less than t table; this shows that there is no significant indirect influence of knowledge of first-aid practice through motivational intervention variables. Research shows that knowledge can increase motivation to engage in an action.²¹ However, this study found that although knowledge was strengthened by motivation, it did not change the practice of first aid among the truck drivers. There is no significant influence due to the lack of information and first-aid training; thus, there is no complex process of knowledge entry and motivation rise to practice skills.²²

Furthermore, attitude was found to have no significant indirect influence even though it was strengthened by motivation to perform first aid. A past study found that individuals who have knowledge tend to require the need to motivate themselves in order to perform a skill.²³ First aid can still be performed if one has a positive attitude without being influenced by motivation.

CONCLUSION AND RECOMMENDATION

Knowledge is directly related to the practice of first aid; motivation is not directly related to the practice of first aid; and attitude is directly related to the practice of first aid as well as the most strongly related factor. Although drivers'

knowledge and attitudes are strengthened by motivation in an indirect relationship, motivation is insignificant in encouraging truck drivers to practice first aid. Possible solutions in this regard are to (i) increase first-aid knowledge among truck drivers through continuous training and (ii) provide safety protection for drivers who provide assistance at the accident site.

The current study was conducted with a sample of truck drivers from a single district. It was limited by the lack of first-aid knowledge and attitudinal differences. This study also focused only on one intervening variable, namely motivation. Furthermore, the process of filling out the questionnaire was influenced by differences in comprehension due to varying levels of education, which could have led to interpretative bias. It is, therefore, recommended that further researchers perform in-depth analyses of the causal factors that can hinder knowledge, motivation, and attitudes of truck driver with regard to first aid, considering different intervening variables.

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Smoking Cessation Experience and Socioeconomic Status of Online Motorcycle Taxi Drivers in Surabaya

Pengalaman Berhenti Merokok dan Status Sosial Ekonomi Pengemudi Ojek Online di Surabaya

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ABSTRACT

Online motorcycle taxi drivers are at risk of experiencing exposure to air pollution, and smoking habits can exacerbate the risk of decreased lung function. The success of smoking cessation could be influenced by the experience of cessation and socioeconomic status. In this regard, the study aimed to investigate the success of smoking cessation of online motorcycle taxi drivers in Surabaya, Indonesia, using a cross-sectional design from May–December 2020. A questionnaire was used to collect data through interviews, and the data were analyzed using a chi-square test. The number of respondents was 92. Among the respondents, 43.5% failed to quit smoking, while 56.5% of them succeeded. The chi-square test results demonstrated a relationship between all experience factors and the success of smoking cessation. Additionally, a relationship between education level ($p < 0.001$) and income level ($p < 0.001$) with socioeconomic status was observed. Further research is needed to observe how other factors such as knowledge, motivation, and environmental factors affect smoking cessation.

ABSTRAK

Pengemudi ojek online berisiko mengalami paparan polusi udara, dan kebiasaan merokok dapat memperparah risiko penurunan fungsi paru-paru. Keberhasilan berhenti merokok dapat dipengaruhi oleh pengalaman berhenti merokok dan status sosial ekonomi. Berkenaan dengan hal tersebut, penelitian ini bertujuan untuk mengetahui keberhasilan berhenti merokok pada pengemudi ojek online di Surabaya, Indonesia, dengan menggunakan desain cross sectional dari Mei-Desember 2020. Kuesioner digunakan untuk mengumpulkan data melalui wawancara, dan data dianalisis menggunakan uji chi-square. Jumlah responden adalah 92. Diantara responden, 43,5% gagal berhenti merokok, sedangkan 56,5% berhasil. Hasil uji chi-square menunjukkan hubungan antara semua faktor pengalaman dan keberhasilan berhenti merokok. Selain itu, hubungan antara tingkat pendidikan ($p < 0,001$) dan tingkat pendapatan ($p < 0,001$) dengan status sosial ekonomi. Diperlukan penelitian lebih lanjut untuk mengamati bagaimana faktor lain seperti tingkat pengetahuan, motivasi, dan faktor lingkungan mempengaruhi berhenti merokok.

INTRODUCTION

Surabaya is the second metropolitan city in Indonesia after Jakarta city. As its population grows, the number of vehicles (i.e., motorcycles) increases, and this places Surabaya city among the cities with the highest number of motor vehicles in East Java.¹ In this regard, the city witnessed a breakthrough in transportation called Online Motorcycle Taxis, which is an application-based technology that works via smartphones. However, the profession of a driver (i.e., online driver) may put the individual at risk of experiencing fatigue and air pollution exposure, which can cause respiratory health problems such as coughing or shortness of breath.² Additionally, exposure to air pollution can increase the risk of decreased lung function.^{3,4}

Moreover, respiratory health problems can also be affected by smoking. Ninety percent of online motorcycle taxi drivers smoke while waiting for passengers. Cigarette smoke can be dangerous because of nicotine, tar, CO (carbon monoxide), and various heavy metals. Additionally, it can also reduce lung function and can trigger other serious diseases such as stroke, lung cancer, impotence, COPD, throat cancer, and oral cancer.^{7,8} On this note, smoking cessation requires people to be aware of their health, which helps them to avoid harmful diseases, know the health risks of smoking, and have a correct perception of smoking.^{7,9,10}

The urge to smoke mostly comes from curiosity and the environment (e.g., family and friends).⁸ Nicotine is the main substance in cigarettes and is primarily responsible for the dependence on cigarettes. By stimulating the acetylcholine receptors on dopamine-containing neurons, it causes an abundance of dopamine in the brain's reward system, which generates the addictive pleasure that smokers crave. Without this, smokers feel anxious and depressed. The longer nicotine is in the body, the more assertive the smoking behavior becomes, and this poses a huge challenge for people who want to quit smoking.^{11,12,13}

People who smoke will have the corresponding attitude and tendency for smoking whether they continue to smoke or not.^{14,15} Therefore, their opinions and attitudes could affect smoking cessation.⁹

This research, thus, aimed to investigate the experience of smoking cessation and the impact of the socioeconomic status on the success of smoking cessation of online motorcycle taxi drivers in Surabaya, Indonesia.

MATERIAL AND METHOD

This research was a cross-sectional study conducted in May–December 2020 in Surabaya, Indonesia, and it was approved by the University of Surabaya Ethics Committee Number 016-OL/KE.VII/2020. On one hand, the experience of smoking cessation included the factors that provoke smoking and smoking cessation,^{16,17,18} the steps and the changes experienced after cessation,^{8,19} and the duration of cessation.²⁰ On the other hand, the socioeconomic status consisted of education level and income level.^{21,22} Respondents were characterized by cigarette consumption per day,²³ and smokers were classified based on the Brinkman Index (BI).²⁴

The population was online motorcycle taxi drivers, and the minimum sample required by the Lemeshow formula was 49 respondents. The inclusion criteria for the sample were being male, over 18 years of age, an active smoker, and assigned informed consent. The data collection methods consisted of a validation and reliability test of the questionnaire and the respondents who met the inclusion criteria using purposive and snowball sampling techniques. The internal validity developed according to the relevant theory was empirical facts. The reliability test used a coefficient value (Cronbach's Alpha); the results were in a range of good reliability (0.96 > 0.6).

Accordingly, content and construction validation were employed. In this regard, content validity is a validity test that focuses on the content of the research instrument to ensure that it follows the circumstances to be measured. The questionnaire was adapted from previous research and was tested on 30 online motorcycle taxi drivers according to subject criteria at the Rungkut base. Furthermore, validation was also examined using SPSS 24, and the results were 0.3061 and this indicates the validity of the data. Additionally, the result of the reliability test was 0.988, which indicated that the data was reliable. The data were analyzed using a chi-square test

to examine the association between smoking cessation experience and socioeconomic status with smoking cessation success.

RESULTS

The number of respondents involved was 170. However, only 92 respondents met the criteria for being included in the sample of this study.

Characteristics of Respondents

The respondents were male, with most belonging to the age range of 25–35 years old; 81.52% of them had graduated from senior high school. The income level was mostly moderate at 34.78%. The level of cigarette consumption per day was moderate at 40.22% (Table 1).

Experience and Success with Smoking Cessation

Most respondents answered that the first incidence of consuming cigarettes involved family and friends (92.39%).

Table 1. Characteristics of Respondents

Characteristics	n=92	%
Age (Years)		
17–25	19	20.65
26–35	41	44.57
36–45	28	30.61
45–55	4	4.08
Education Level		
Elementary School	6	6.52
Junior High School	2	2.17
Senior High School	75	81.52
Undergraduate Studies	9	9.78
Income Level (IDR)		
Very High (> 3.5 x 10 ⁵)	9	9.78
High (2.5–3.5 x 10 ⁵)	23	25.00
Medium (1.5–2.5 x 10 ⁵)	32	34.78
Low (< 1.5 x 10 ⁵)	28	30.43
Consumption of Cigarettes/Day		
Non-daily	25	27.17
Light daily (1–10)	37	40.22
Heavy daily (> 10)	30	32.61
Classification of Smokers based on the Brinkman Index (BI)		
Mild (0–200)	66	71.74
Moderate (200–600)	26	28.26

Source: Primary Data, 2020

On the other hand, factors that triggered respondents to quit smoking were health factors (47.83%), economic factors (34.78%), social factors (14.13%), and family factors (2.17%). Most respondents quit smoking by diverting their focus to activities such as work or hobbies (55.43%). Respondents also experienced discomfort in the mouth after quitting smoking (35.87%). A high percentage of the respondents (58.69%) ceased smoking for a period of 1–3 months (Table 2).

Table 2. Experience of Participants about Smoking Cessation

Experience of Smoking Cessation	n=92	%
Factors Provoking Smoking Behavior		
By Others	85	92.39
By Own Self	6	6.52
Factor Affecting Smoking Cessation		
Economic Factor	32	34.78
Health Factor	44	47.83
Family Factor	2	2.17
Social Factor	13	14.13
The Steps of Cessation		
It was Distracting	51	55.43
Changing My Mindset	14	15.22
Self-Resistance	10	10.87
Feeling the Change While Quitting	16	17.39
The Change After Quitting		
Mouth Feels Uncomfortable	33	35.87
Feel Dizzy	4	4.35
Body Feels Fresher	11	11.96
Weight Gain	10	10.87
Weight Loss	8	8.69
Feel Calm	12	13.04
Breathing Feels Easier	14	15.22
The Longest Duration of Cessation		
< 1 Week	12	13.04
< 1 Month	14	15.21
1–3 Months	54	58.69
3–6 Months	7	7.61
< 6 Months–1 Year	5	5.43

Source: Primary Data, 2020

Among the respondents, 43.5% were unsuccessful in quitting smoking, while 56.5% of them succeeded (Table 3). In this regard, most of the respondents who succeeded in smoking cessation did so due to economic factors (17 of 40) and were able to divert their attention (23 of 40). Moreover, most of the respondents who succeeded in smoking cessation experienced changes, including feeling fresher and more relaxed and finding breathing more comfortable (25 of 40), and they lasted for a duration of 1–3 months (24 of 40) (Table 4).

Cross Tabulation of Smoking Cessation Experience with Socioeconomic Status

The results of the chi-square test demonstrated an association between all experience factors and the success of smoking cessation

(Table 4), and a relationship between education level ($p < 0.001$) and income level ($p < 0.001$) with socioeconomic status was noted (Table 5).

Table 3. The Success of the Smoking Cessation

Do You Think Your Smoking Cessation Efforts Have Been Successful?	n=92	%
Success	40	43.48
Not successful	52	56.52
Reason?		
Can't Restrain	45	86.54
Environmental Influence	7	13.46
Have There Been Any Changes?		
There is No Change	29	55.77
The Number of Cigarettes Consumed/Day Decreases	15	28.85
The Number of Cigarettes Consumed/Day Indeed Increases	8	15.38

Source: Primary Data, 2020

Table 4. Cross Tabulation of Experience and Success of the Smoking Cessation

Experience of Smoking Cessation	Smoking Cessation Experience		Total	<i>p-value</i>
	Success (n = 40)	Not Successful (n = 52)		
Factors Provoking Smoking Behavior				
By Others	39	46	85	0.017*
By Own Self	1	5	6	
Factor Affecting Smoking Cessation				
Economic Factor	17	15	32	0.000*
Health Factor	11	33	44	
Family Factor	0	2	2	
Social Factor	9	4	13	
The Steps of Cessation				
Using Distractions	23	28	51	0.000*
Changing My Mindset	9	5	14	
Self-Resistance	3	7	10	
Feeling the Change While Quitting	5	11	16	
The Change After Quitting				
Mouth Feels Uncomfortable	9	24	33	0.000*
Feel Dizzy	0	4	4	
Body Feels Fresher	7	4	11	
Weight Gain	6	4	10	
Weight Loss	0	8	8	
Feel Calm	7	5	12	
Breathing Feels Easier	11	3	14	
The Longest Duration of Cessation				
< 1 week	3	9	12	0.000*
< 1 month	1	13	14	
1–3 months	24	30	54	
3–6 months	7	0	7	
< 6 months–1 year	5	0	5	

Source: Primary Data, 2020

*If the *p-value* < 0.05, then this means that there is a relationship

Table 5. Cross Tabulation of Smoking Cessation Experience with Socioeconomic Status

Socioeconomic Status	Smoking Cessation Experience		Total	<i>p-value</i>
	Success (n = 40)	Not Successful (n = 52)		
Education Level				
Elementary School & Junior High School	2	6	8	0.000*
Senior High School	33	42	75	
Undergraduate Studies	5	4	9	
Income level (IDR)				
Very high (> 3.5 x 10 ⁵)	6	3	9	0.000*
High (2.5–3.5 x 10 ⁵)	17	6	23	
Medium (1.5–2.5 x 10 ⁵)	9	23	32	
Low (< 1.5 x 10 ⁵)	8	20	28	

Source: Primary Data, 2020

*If the *p-value* < 0.05, then this means that there is a relationship

DISCUSSION

In principle, cigarettes with nicotine, be it high or low, will increase the diastolic and systolic pressure, increase the heart rate, and supply the oxygen demand in the heart muscle. In return, this increase causes local release of norepinephrine from the terminals of the adrenergic axon, resulting in the release of catecholamines from the adrenal medulla and chromaffin tissue in the heart. Nicotine acts on chemoreceptors in the carotid body and aorta, inducing pulse reflex and arterial pressure; therefore, the low nicotine levels can still stimulate sympathetic ganglion cells.^{25,26}

Lorensia et al. demonstrated that smoking cessation is tough and challenging.⁸ For example, most studies reported respondents had understood the effect of smoking on health and its impact on the economy but they still continue to smoking. Further, several alternatives could divert smoking behavior, including pharmacological therapy and non-pharmacological therapy. In this study, the respondents quit smoking by changing their habits or mindset without drug therapy, and most of the methods used involved distractions. Meanwhile, the most success was caused by the diversion method. On another note, some of the drugs that are used for pharmacological therapy include bupropion, varenicline, clonidine.^{27,28} However, the cost may be the main consideration while using this therapy, particularly when the cost of spending on drugs is higher than the cost of living.²⁹

Moreover, the most common change that respondents experienced in smoking cessation is mouth discomfort and also likely associated with body weight. As theory explains, smokers have a

lower ability to taste than non-smokers. There is a change in the shape and number of papillae in a tongue, decreasing the ability to taste in smokers. Furthermore, it can possibly affect an individual's appetite and weight.³⁰

During smoking cessation, respondents reported that breathing felt lighter and easier (14 of 92). The possible reason is inflammation in the respiratory tract and increased sputum that induces coughing symptoms. Coughing is one of the most common and observable symptoms of smoking. The frequency of cough in smokers is high because smoking is a determinant of most respiratory diseases, starting with cough and potentially leading to respiratory tract inflammation, mucus hypersecretion, and cilia dysfunction.³¹

The effects of smoking addiction can include weight loss because of low appetite. Therefore, smokers will have a lower Body Mass Index (BMI) than non-smokers.¹⁸ Burning a cigarette will make nicotine enter the brain through blood circulation for approximately 10 seconds. It will then be received by the acetylcholine receptors and stimulate the dopaminergic pathway system that can suppress the appetite and provoke malnutrition.³²

Furthermore, the results of this study indicate that smokers' level of education may affect the success of smoking cessation. This aligns with previous research by Zhuang et al. that reported a significant difference in cessation rate between the lower and the higher education groups over the last two decades.³³ Additionally, income level also affects the success of smoking cessation. In this regard, smoking prevalence rates were higher in developing and low-income countries.

Conversely, in the economic view, smoking cessation at low incomes is easier than higher incomes.³⁴

Continued motivational techniques and support are needed in the action stage when the individual stops smoking. Group or individual behavioral counseling can facilitate smoking cessation and improve success rates. Similarly, combined behavioral and drug therapies can also enhance the chance of smoking cessation success. Additionally, the five-stage transtheoretical model can be applied for smoking-induced addictive behaviors that consist of pre-contemplation, contemplation, preparation, action, and maintenance.^{35,36}

On another note, the limitation of this study is the situation of the COVID-19 pandemic that possibly affects the obscure change of socioeconomic status. We cannot prove how significant the change is in the pandemic situation.

CONCLUSION AND RECOMMENDATION

Among the respondents in this study, 43.5% failed to quit smoking, while 56.5% of them succeeded. The chi-square test results demonstrated that there was a relationship between all experience factors and the success of smoking cessation. Additionally, a relationship between education level ($p < 0.001$) and income level ($p < 0.001$) with socioeconomic status was noted. Further research is needed to observe how other factors such as knowledge, motivation, and environmental factors affect smoking cessation.

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Differences in Help-Seeking Behavior in Adolescents with Anxiety Disorder During the COVID-19 Pandemic

Perbedaan Perilaku Pencarian Bantuan pada Remaja yang Mengalami Gangguan Kecemasan Saat Pandemi Covid-19

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ABSTRACT

Adolescents represent one of the vulnerable groups that could suffer from mental and psychosocial health during the COVID-19 pandemic. This study aims to analyze behavioral differences in adolescents who have experienced anxiety disorders during the COVID-19 pandemic. The study used a cross-sectional design on 122 adolescents in East Java during the pandemic. Data was collected through a questionnaire via Google Forms in May 2021. Data analysis in this study used the Mann-Whitney test on SPSS Statistics 26. The current study found that male respondents (80%) show a higher tendency to have anxiety disorders compared with female respondents (74%). Meanwhile, there was no difference in the help-seeking behavior based on the gender of adolescent respondents' who experienced anxiety disorders during the COVID-19 pandemic ($p=0.291$). The current study also found that there is no difference in help-seeking behavior between adolescents who experience anxiety disorders or those who do not experience anxiety disorder ($p=0.449$). Most adolescents with anxiety disorders tend to discuss their issues with friends and family to relieve anxiety, whereas some do not seek help because they can cope with anxiety disorders on their own, they think they do not really need help, they feel that no one cares about their problems, and there is a lack of supporting health facilities in the youth environment. Teenagers in East Java are advised to consult their mental health problems with experts to find relevant solutions.

ABSTRAK

Remaja merupakan salah satu kelompok rentan yang dapat mengalami gangguan kesehatan mental dan psikososial saat Pandemi Covid-19. Penelitian ini bertujuan untuk menganalisis perbedaan perilaku remaja yang pernah mengalami gangguan kecemasan saat Pandemi Covid-19. Penelitian ini menggunakan desain cross-sectional pada 122 remaja di Jawa Timur pada masa pandemi. Pengumpulan data dilakukan menggunakan kuesioner melalui Google Form pada bulan Mei 2021. Analisis data pada penelitian ini menggunakan uji Mann-Whitney test pada SPSS Statistic 26. Temuan pada penelitian ini menunjukkan bahwa responden laki-laki (80%) cenderung mengalami gangguan kecemasan dibandingkan dengan responden perempuan (74%). Sementara itu, tidak terdapat perbedaan perilaku pencarian bantuan antara remaja laki-laki dan remaja perempuan yang mengalami gangguan kecemasan saat Pandemi Covid-19 ($p=0,291$). Penelitian saat ini juga menemukan bahwa tidak ada perbedaan perilaku mencari bantuan antara remaja yang mengalami gangguan kecemasan atau yang tidak mengalami gangguan kecemasan ($p=0,449$). Mayoritas remaja dengan gangguan kecemasan cenderung untuk bercerita kepada teman dan keluarga untuk menghilangkan kecemasan, sedangkan beberapa lainnya tidak mencari bantuan dikarenakan remaja dapat mengatasi gangguan kecemasan sendiri, remaja merasa tidak terlalu membutuhkan bantuan, remaja merasa tidak ada yang peduli terhadap permasalahan yang mereka hadapi, dan ketidakterediaan fasilitas kesehatan penunjang di lingkungan remaja. Remaja di Jawa Timur disarankan untuk melakukan konsultasi permasalahan kesehatan mentalnya kepada tenaga ahli untuk mendapatkan solusi yang relevan.

INTRODUCTION

Since the outbreak of COVID-19 (Coronavirus Disease), the number of COVID-19 cases worldwide has increased. As of December 31st, 2020, COVID-19 cases reached 81.485.119 cases globally, resulting in 1.798.154 deaths.¹ In Indonesia, the number of confirmed cases of COVID-19 reached 743.198 cases, causing 22.138 deaths.² became the region (in Indonesia) with the most number of cases reported. In May 2020, East Java was in the first rank of COVID-19 cases.³

The COVID-19 pandemic has also affected the psychological wellbeing of survivors or society.⁴ The pandemic had varied psychological impacts such as anxiety, frustration, fear of contracting the infection, insomnia, irritability, changes in eating patterns, and substance abuse.^{4,5} Vulnerable groups that can suffer from psychosocial health issues during the COVID-19 pandemic include women, the elderly, children, and adolescents.⁶ In Indonesia, 72% of 3.686 respondents admitted experienced anxiety and the remaining 23% reported being unhappy during the COVID-19 Pandemic.⁷ In addition, the results of the mental health survey conducted independently by *Perhimpunan Dokter Spesialis Kedokteran Jiwa Indonesia* (PDSKJI) found that the age groups that experienced the most psychological problems during the pandemic in Indonesia included individuals aged 17–29 years and over 60 years.⁸

Adolescence is a period characterized by vulnerability to mental health disorders.⁹ A literature review explained that the COVID-19 pandemic could negatively impact adolescents' mental health.¹⁰ In addition, adolescents were vulnerable and were going through a difficult transition period.¹⁰ Previous studies predicted that difficulties encountered in online education during the pandemic were predictors of depression and anxiety.¹¹ Furthermore, anxiety could be caused by unpleasant experiences during the COVID-19 pandemic such as fear of infection, frustration, loneliness, or limited mobility.¹²

Unfortunately, adolescents with anxiety disorder do not have access to mental health services because medical services are not accessible or are still limited near their place of residence.¹² Loss of peer interaction causes anxiety

in adolescents, meaning they miss out on the way to share their problems.¹³ Every adolescent has a way of dealing with anxiety. Adolescents' ability to seek help to overcome mental health problems, especially anxiety, during the COVID-19 pandemic is a very important issue.⁹ Therefore, this study is aimed at analyzing the differences in help-seeking behavior in adolescents with anxiety disorder during the Covid-19 pandemic.

MATERIAL AND METHOD

This study was conducted in May 2021, and it employed a cross-sectional design. The inclusion criteria in this study were adolescents aged 14–18 years old who lived in districts/cities in East Java province. The study's sample has been gathered using a non-probability sampling technique, namely purposive sampling. The sample in this study comprised 122 adolescents in East Java who used social media. The data was collected using questionnaires via Google Forms. Data analysis was carried out descriptively and the differences in the help-seeking behavior among adolescents who experienced anxiety disorders during the COVID-19 pandemic were identified. This study employed the Mann-Whitney test on SPSS Statistics 26 because the data was not normally distributed. This study was registered in the Health Research Ethical Clearance Commission, Faculty of Dental Medicine, with the Ethical Clearance number 221/HRECC. FODM/V/2021.

RESULTS

Individual Characteristics

Table 1 shows that the majority of respondents in this study were, at the time of participation, 17 years old, with 41 respondents from the total (37%). Most of the respondents in this study were female (80%). According to the school level, the sample was dominated by adolescents in high school, with 99 respondents from a total of 122 (81%).

Table 2 shows the number of respondents who experienced anxiety disorders during the COVID-19 Pandemic as 92 adolescents (75%). By gender, the highest percentage of adolescents who suffered anxiety disorders were male (80%). Based on the school level, the percentage of high school adolescents with anxiety disorders was 1% greater than that of junior high school adolescents.

Table 1. Characteristics of Respondents

Characteristics	n=122	%
Age (Years)		
14	4	3
15	29	24
16	21	17
17	41	37
18	27	22
Gender		
Male	25	20
Female	97	80
School Level		
Junior High School	23	19
Senior High School	99	81

Source: Primary Data, 2021

Help-Seeking Behavior of Adolescents

Based on the homogeneity test, the significant value was greater than 0.05. This indicated that the population variant was homogeneous. Consequently, the requirements of the comparative analysis of homogeneity were fulfilled. Table 3 shows that the analysis results gave a *p*-

value = 0.449. When compared with 0.05, the probability value was greater than 0.05, which indicated that there was no difference between adolescents with anxiety disorders and those without in seeking help. Moreover, Table 3 indicates that the results of data analysis showed that there was no difference in help-seeking behavior between male and female adolescents.

Table 4 indicates adolescents primarily relieved anxiety disorders during the COVID-19 pandemic by telling their friends and family. Meanwhile, only 5 adolescents used medical personnel services to relieve anxiety disorders during the COVID-19 pandemic. Most female adolescents relieved anxiety disorders by telling their problems to friends, while male adolescents shared their problems with their families. Table 5 shows that the reason male and female adolescents did not seek help was that they felt they can cope with or solve their problems on their own.

Table 2. Cross Tabulation of Adolescents with Anxiety Disorders Based on Gender and School Level During Covid-19 Pandemic

Variable	Anxiety Disorders				Total	
	Yes		No		n=122	%
	n=92	%	n=30	%		
Gender						
Male	20	80	5	20	25	100
Female	72	74	25	26	97	100
School Level						
Junior High School	17	74	6	26	23	100
Senior High School	75	76	24	24	99	100

Source: Primary Data, 2021

Table 3. Help-Seeking Behavior Differences of Adolescents with Anxiety Disorder During the COVID-19 Pandemic

Analysis	Help-Seeking Behavior Differences of Adolescents with Anxiety Disorders Without Anxiety Disorders During the Covid-19 Pandemic	Help-Seeking Behavior Differences Between Male and Female Adolescents During the Covid-19 Pandemic
Man-Whitney U	1271.000	949.500
Wilcoxon W	1736.000	1810.500
Z	-0,757	-1,056
<i>p-value</i>	0,449	0,291
Grouping Variable	Anxiety disorder	Gender

Source: Primary Data, 2021

Table 4. Efforts Made by Adolescents with Anxiety Disorders to Relieve Anxiety Disorders During the COVID-19 Pandemic

The Efforts	Gender				Total	
	Male		Female		n	%
	n	%	n	%		
Told problems to friends	2	14	14	86	16	100
Told problems to family	3	33	6	67	9	100
Engaged in spiritual activity	1	20	4	80	5	100
Used medical personnel services	2	40	3	60	5	100
Did counseling at school	1	25	3	75	4	100
Did recreational activity	2	100	0	0	2	100

Source: Primary Data, 2021

Table 5. Reasons for Adolescents with Anxiety Disorders Not Seeking Help To Relieve the Anxiety Disorders During the COVID-19 Pandemic

The Reasons	Gender				Total	
	Male		Female		n	%
	n	%	n	%		
Thought they could cope with it	8	24	26	76	34	100
Felt they do not need any help	1	13	7	87	8	100
Did not know	0	0	3	100	3	100
Felt no one cared for their wellbeing	0	0	5	100	5	100
The unavailability of supporting health facilities	0	0	1	100	1	100

Source: Primary Data, 2021

DISCUSSION

During the COVID-19 pandemic, several obstacles have been experienced by adolescents that are believed to cause anxiety.¹⁴ The majority of the respondents in this study (75%) experienced anxiety during the pandemic. A previous study conducted in Indonesia found that adolescents tend to suffer from a higher incidence of anxiety during the COVID-19 pandemic.¹⁵ In addition, a meta-analysis identified that one in five adolescents experienced elevated anxiety symptoms.¹⁶

Based on gender, male adolescents are more likely to experience anxiety disorders than female adolescents. This is because it is more difficult for male adolescents to depend on social networks to get support for their anxiety than female adolescents.¹³ However, previous research showed that women were generally more likely to experience anxiety during the COVID-19 pandemic.^{16,17}

High school adolescents showed a higher tendency to experience anxiety disorders; the study explained that the higher the school level, the higher the number of students experiencing mental emotional symptoms.¹⁸ In addition, mental health problems in adolescents at higher school levels can be due to puberty and hormonal changes.¹⁶ It needs to be emphasized that age was not a factor determining adolescents' anxiety levels.¹⁶

Based on the assumption test performed for the normality and homogeneity test, the statistical test for analyzing differences that can be used was the Mann-Whitney test. The results showed no significant difference between adolescents who have anxiety disorders and those who do not seek help. However, a previous study mentioned that anxiety could predict someone's help-seeking behavior.¹⁹ The ap-

pearance of symptoms and the increase in mental health problems experienced can make a person more active in seeking help.^{20,21} The results of this study show no significant difference in help-seeking behavior between male and female adolescents during the COVID-19 pandemic. However, in general, male adolescents depend on rational thoughts, while female adolescents cope with anxiety by praying and seeking help from friends.²²

This finding supports another study that suggested that adolescents generally discuss their issues with friends to cope with the anxiety disorders they experienced.²³ Besides, the study results also showed that the second most widely used attempt to relieve anxiety is to share their problems with the family. Adolescents seeking help from their families feel that they receive sufficient support and do not need additional support from mental health services.²⁴ Generally, adolescents will seek help for mental disorders from friends, classmates, and relatives or family.^{25,26} Seeking help from informal sources like friends and family has the potential to decrease adverse psychosocial impact among adolescents.⁹

The results demonstrated that the biggest reason adolescents did not seek help was that they felt like they could cope with their anxiety disorders themselves. This finding supports previous research that stated that students felt there was nothing wrong with their mental health and felt they were not experiencing severe problems.²⁷ The results also showed that one of the reasons adolescents did not get help was the unavailability of mental health services near their place of residence. In providing mental health services, Indonesia is still considered not optimal. Mental health programs are still not a priority in primary healthcare programs in Indonesia.²⁸ On the other hand, men-

tal health services are also limited during the COVID-19 pandemic.²⁹ This study has a research limitation. There was no measurement of the level of adolescent anxiety during the COVID-19 pandemic.

CONCLUSION AND RECOMMENDATION

There is no difference in help-seeking behavior between adolescents who experience anxiety disorders or those who do not experience anxiety disorder. There is no difference in help-seeking behavior between male and female adolescents who experienced anxiety disorders during the COVID-19 Pandemic. The majority of adolescents with anxiety disorders seek help from friends and family. Some adolescents do not seek help because they felt they could cope with their anxiety disorders themselves, they felt they did not need help, they felt that no one cared and understood, and supporting health facilities were unavailable in their environment. Further research is suggested to examine the severity of anxiety experienced by adolescents during the COVID-19 pandemic. Furthermore, health facilities providing mental health services are suggested to provide facilities for adolescents in overcoming perceived mental health problems. In addition, adolescents in East Java are advised to consult their mental health problems with experts to find relevant solutions.

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Self-Efficacy in Relation to Personal Care and The Health-Related Quality of Life of Hemodialysis Patients

Efikasi Diri dalam Hubungannya dengan Perawatan Diri dan Kualitas Hidup Pasien Hemodialisis

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hemodialisis;

ABSTRACT

Self-efficacy is important to ensure self-care to improve the health-related quality of life for hemodialysis patients. This study aimed to determine the relationship between self-efficacy and self-care and the health-related quality of life in hemodialysis patients. The research method was a quantitative correlation design with a cross-sectional approach. The instrument of the study was a questionnaire. A total sampling technique for 64 hemodialysis patients at RSUD (Regional Public Hospital) Wates Kulonprogo was used. Data analysis was conducted through the Kendall Tau test. It showed that 41 respondents (64.1%) were in the moderate category of self-efficacy, while 50 respondents (78.1%) were in the moderate category for the self-care aspect. The results of Kendall Tau analysis showed that self-efficacy was significantly associated with self-care ($p=0.004$) and the health-related quality of life ($p=0.041$) for hemodialysis patients. It is expected that the nurse will periodically assess the biological and psychological aspects of hemodialysis patients.

ABSTRAK

Efikasi diri penting untuk memastikan perawatan diri untuk meningkatkan kualitas hidup pasien hemodialisis. Penelitian ini bertujuan untuk mengetahui hubungan antara efikasi diri dan perawatan diri dengan kualitas hidup pada pasien hemodialisis. Metode penelitian yang digunakan adalah desain kuantitatif korelasi dengan pendekatan cross sectional. Instrumen penelitian adalah kuesioner. Teknik pengambilan sampel menggunakan teknik total sampling berjumlah 64 pasien hemodialisis di RSUD Wates Kulonprogo. Analisis data menggunakan uji Kendall Tau. Hal ini menunjukkan bahwa 41 responden (64,1%) berada pada kategori efikasi diri sedang, sedangkan 50 responden (78,1%) berada pada kategori sedang untuk aspek perawatan diri. Hasil analisis Kendall Tau juga menunjukkan bahwa efikasi diri berhubungan bermakna dengan perawatan diri ($p=0,004$) dan kualitas hidup ($p=0,041$) pasien hemodialisis. Diharapkan perawat secara berkala mengkaji aspek biologis dan psikologis pasien hemodialisis.

INTRODUCTION

Chronic Kidney Disease (CKD) is a condition where kidney function decreases slowly (chronic). CKD is characterized by a glomerular filtration rate of about 15 mL/minute/1.73m².¹ The prevalence of CKD is on the increase year after year, with approximately 2,600,000 patients on dialysis worldwide.² The global increase in this disease is driven mainly by the increased prevalence of diabetes mellitus, hypertension, obesity, and aging. However, in some areas, CKD is caused by other factors such as infection, herbal, and environmental pollution.³ WHO has recognized CKD as a global health problem that has adverse effects on health-related quality of life, cardiovascular health, and results in increased mortality. CKD creates a huge burden on the health care system.⁴

In recent reports from Asia, 40-50% of all cases of renal illness lead to end-stage renal disease (ESRD).⁵ The number of people with kidney failure in Indonesia has also increased. The results of Riset Kesehatan Dasar (Riskesdas) in 2013 and 2018 show that the prevalence of kidney failure based on a doctor's diagnosis in Indonesian patients more than 15-year-old increased from 0.2% in 2013 to 0.38% in 2018.⁶

According to data from DIY (Special Region of Yogyakarta), there are 3,307 hemodialysis patients of whom 98.5% are routine, 1.3% are acute hemodialysis patients, and 0.2% are extra hemodialysis patients.⁷ The prevalence of CKD in the Kulonprogo Regency (0.3%) is the second-highest in DIY, after Yogyakarta City and Gunung Kidul Regency (0.5%).⁸

Hemodialysis therapy is one of the methods of extending the lifespan of CKD patients. This therapy can change the pattern of life, both for the patients and their families, with changes including diet, sleep patterns, drug therapy, and daily activities.⁹ The patient also complains of physical changes such as a blackening of the skin that looks thin and pale. These physical changes have an impact on body image. Previous research also mentions complaints of changes in sexuality, affecting sexual desire and satisfaction. These changes can reduce the patient's health-related quality of life.¹⁰

These changes in the life pattern increase the patients' dependence on family. However, hemo-

dialysis patients should still have the ability to perform self-care independently, though self-care is not fully carried out by the patient concerned alone.

Self-care behavior of a patient involves self-monitoring of current health status. It is expected that hemodialysis patients will be able to evaluate the advantages and disadvantages of their various self-care activities. Self-care has many advantages, namely: (1) patients will have control and freedom in hemodialysis treatment; (2) patients will have the enthusiasm for a better understanding of CKD and how to deal with it; (3) such understanding will then lead to the improvement in their health-related quality of life, and (4) the chance of complications will be reduced, in turn reducing the mortality rate.¹¹

According to the moderate range theory of chronic illness, factors that influence self-care are experience and skills, motivation, beliefs and cultural values, and self-efficacy. Self-efficacy is the belief in a person's ability to successfully achieve something and is very important for managing chronic diseases like CKD.¹²

Good self-efficacy enables hemodialysis patients to be more actively involved in self-care management. It also improves the health-related quality of life, level of cooperation with the family and paramedics, communication, and medication adherence.¹³

Research exists on self-efficacy in hemodialysis patients. Though there are studies that qualitatively measure patients' self-efficacy,¹⁴ connect with self-care,^{15,16} or apply the OREM theory,¹⁵ there are none that link these two factors to the health-related quality of life of hemodialysis patients. Therefore, researchers are interested in measuring these three factors.

The purpose of this study was to determine the relationship between self-efficacy and self-care and health-related quality of life (HRQOL) in hemodialysis patients at RSUD Wates Kulonprogo. The results of this are expected to enable health workers to collaborate with patients to develop strategies for will improving the patient's HRQOL, such as minimizing depression as their disease evolves.¹⁰ Such strategies are developed with a focus on increasing knowledge, understanding, motivation, experience, and self-confidence, which can improve self-efficacy and patient self-care management.

MATERIAL AND METHOD

The research design of this study was a quantitative correlation method with a cross-sectional approach. The samples of this study comprised 64 respondents acquired through the total sampling technique. Saturated sampling was adopted because the total population is less than 100.¹⁸

The instrument of this study was the Generalized Self-efficacy Scale (GSE) questionnaire written in Indonesia;¹⁹ the translated self-care of CKD index,²⁰ and WHOQoL SF-36. Data analysis used the Kendal tau correlation test because the sample size was >60 and the data scale used was categorical (ordinal data scale). Univariate data was presented to determine the frequency distribution, and bivariate data to test the correlation between the two variables.²¹

This research obtained an ethical permit from the Ethics Commission of Universitas 'Aisyiyah Yogyakarta number 763/KEP-UNISA/XII/2018. The study was conducted between 14th and 19th January 2019, in the hemodialysis room of RSUD Wates, Kulonprogo.

RESULTS

Table 1 shows that most of the respondents are in the age range of 46-55 (32.8%) and 56-65 (31.3%), most of the respondents in this study are male (57.80%). Based on the marital status (Table 1), the married respondent's number 60 (93.8%), thirty-three respondents (51.6%) have elementary and junior high school education, and based on occupation, jobless respondents 26.6%.

Table 2 shows that 64.1% of the respondents have a moderate level of self-efficacy and considered their activities not difficult, but also not easy to perform, and most of the respondents also have a moderate level of self-care (78.1%). Table 2 further indicates that the majority of respondents have a moderate HRQOL (67.2%) and none of them have a good HRQOL.

The lowest average value in the self-efficacy questionnaire domain is in the sub-generality, namely the individual's belief and ability to perform various kinds of activities (mean 4.95; Table 3). The physical condition of CKD patients is

one of decreased function, resulting in reduced confidence in their ability to perform daily physical activities. If not treated immediately, this could lead to depression.⁷ Most of the respondents had a high average value of strength, namely 10.20. Table 3 indicates that the domain of self-care management has the lowest value (average of 17.77).

Table 4 shows that the lowest respondents' HRQOL domains are general health (2,090), mental health (2,176), vitality (2,321), and social functioning (2,705).

Table 1. Characteristic of Respondents

Characteristic	n=64	%
Age (Years)		
17-25	1	1.6
26-35	7	10.9
36-45	6	9.4
46-55	21	32.8
56-65	20	31.3
≥ 65	9	14.1
Sex		
Male	37	57.8
Female	27	42.2
Marital Status		
Married	60	93.8
Unmarried	4	6.2
Background of Education		
None	2	3.1
Primary and Moderate School	33	51.6
High School and Higher Education	29	45.3
Occupation		
Unemployed	17	26.6
Housewife	16	25.0
Entrepreneur	11	17.2
Civil Servant/Army Police Officers	5	7.8
Retired	5	7.8
Others	10	15.6

Source: Primary Data, 2019

Table 2. Distribution Frequency of the Self-Efficacy, Self-Care, And Health-Related Quality of Life

Variable	n=64	%
Self-Efficacy		
Low	11	17.1
Moderate	41	64.1
High	12	18.8
Self-Care		
Low	7	10.9
Moderate	50	78.1
High	7	10.9
Health-Related Quality of Life (HRQOL)		
Low	21	32.8
Medium	43	67.2
Good	0	0.0

Source: Primary Data, 2019

Table 3. Respondent's Self-Efficacy and Self-Care Domain

Variable	Mean	Median	SD	Min-Max	95%CI
Self-Efficacy Domain					
Magnitude	9.72	9	3.201	4-16	8.96-10.47
Generality	4.95	5	1.847	2-8	4.49-5.41
Strength	10.20	10	2.824	4-16	9.50-10.91
Self-Care Domain					
Self-Care Maintenance	21.67	21	4.511	13-35	20.55-22.80
Self-Care Management	17.77	18	3.903	6-24	16.79-18.74
Self-Care Confidence	24.09	25	5.188	9-34	22.80-25.39

Source: Primary Data, 2019

Table 4. Average Domain of Respondents' Health-Related Quality of Life (HRQOL)

Domain of Life Quality	Mean	SD	SEM
General Health	2.090	16.720	2.090
Physical Function	3.473	27.787	3.473
Physical Role	4.366	34.930	4.366
Body Pain	3.277	26.212	3.277
Vitality	2.321	18.570	2.321
Social Function	2.705	21.644	2.706
Emotional Role	4.311	34.490	4.332
Mental Health	2.176	17.412	2.176

Source: Primary Data, 2019

The results of the correlation analysis in Table 5 show the value of $p=0.041$ ($p<0.05$); Hence, there is a correlation between self-efficacy and the HRQOL of patients undergoing hemodialysis. The results of the Kendall Tau correlation analysis in Table 5 show ($p=0.004 < \text{Level of Significance} = 0.05$) a significant relationship between self-efficacy and self-care.

DISCUSSION

The mean of CKD sufferers is moderate adults (> 45 years and over). Aging would cause a decrease in the mean plasma flow in the glomerular capillaries, due to vascular endothelial dysfunction. Conditions associated with vascular endothelial dysfunction are: (1) increased oxidative stress that initiates systemic inflammation; (2) the presence of glycocalyx disassembly; (3) the presence of endothelial cell death that destroys the tissue surface barrier; (4) increased adhesion and extravasation of leukocytes; and (5) the induction of pro-coagulants and anti-fibrinolytics. Many previous studies have found the relationship between CKD and aging to be reciprocal. Chronic diseases such as CKD will also affect the repair of endothelial cells.²²

A previous study also finds that the majority of hemodialysis patients are male, numbering 4.17% per mil.²³ Men suffer from CKD more than women due to several factors, such as (1) ana-

tomy of the male urinary system and related diseases, such as benign prostate hypertrophy; (2) lifestyle; (3) the presence of the hormone estrogen and (4) the presence of matrix metalloprotease (MMP) which accelerates glomerular basement membrane damage, renal scarring, and fibrosis during the development of kidney disease. MMP is an important factor causing microalbuminemia.²⁴

Hemodialysis patients who had a partner or were married would have higher self-esteem and have an adequate coping mechanism through their partners.²⁵ Married hemodialysis patients were proven to have higher hemoglobin levels and more successful management of their disease.²⁶

Previous research had shown that the higher the level of education, the higher are the level of knowledge, mindsets, attitudes, and behavior. Higher levels of education are associated with the increased survival of dialysis patients and a decrease in mortality.²⁴

One of the changing social roles in hemodialysis patients is job changes. The physical condition of the respondents becomes weak due to chronic kidney failure. It is also initiated by factors associated with unemployment such as lower education level, older age, female gender, and comorbidities.²⁵

Self-efficacy in hemodialysis CKD patients is the patient's confidence to communicate with caregivers and have partnerships in caring. Thus, other people were still needed in making every decision to increase confidence in every activity. Self-confidence had a positive impact on medication adherence, effective disease control, and reducing mortality.²⁶

There were several factors related to the self-efficacy of hemodialysis patients, namely, the level of education, duration of hemodialysis therapy, and adequacy.²⁷ Self-care is one of the

dimensions of self-management behavior which derives partly from the patient empowerment approach. The empowerment perspective revealed the patient’s acquiring knowledge, skills, and responsibility for changing actions and effects that would enhance their personal health care.²⁸

Previous research has found the level of CKD to be closely related to the level of quality of life. Patients with stage 4 CKD have a better quality of life than those with stage 5 CKD. Some reasons for this are physical complaints that increase with the course of the disease, unstable mental conditions associated with toxic uremia, and boredom in undergoing treatment.²⁸

Individuals who have a poor or moderate HRQOL will experience negative symptoms of dialysis therapy, such as pain, sleep disturbances, fluctuations in blood pressure, and abdominal pain, all of which can impact the patients’ ability to do their job and result in socio-economic disturbances. Routine hemodia-lysis therapy carried out for a long time will prompt a sense of saturation in the patient and family. Family support is crucial for CKD patients. Previous studies have shown that the life expectancy of CKD patients is higher when accompanied by family. This support will have an impact on motivation and expectations from the therapy undergone.²⁹

The domain of strength was related to the strength of an individual's trust in his own abilities. Weak trust could be caused by bad experiences. Someone who had a bad experience would have better hopes for the future.³⁰ The strong trust of CKD patients was usually influenced by harmonious relations with their family and environment. Self-care management focuses on efforts to maintain health or a healthy life-

style. The low mean value of self-care management is due to efforts to maintain health such as diet and fluid adherence, still needing assistance from other parties, especially family and nurses. This is due to CKD being a chronic disease involving prolonged treatment, thus requiring significant support and motivation from caregivers.³¹ Nevertheless, patients still need to participate in the treatment and care process to reduce complications and improve their HRQOL.

Table 4 shows that the lowest respondents' HRQOL domains are general health, mental health, vitality, and social functioning. This result is in line with previous research which identified the main factors causing a decline in the quality of life of hemodialysis patients were physical complaints, such as blackened facial skin and pale appearance, damaged teeth, thin/weak body, and being fatigued quickly. In addition, the feelings and emotional turmoil they complain about are non-acceptance and fear of death, a feeling of helplessness and uselessness, and fear of being abandoned by their partner due to decreased sexual and functional abilities in the family.³²

An important part of the treatment process is the maintenance and restoration of independent functions in daily life. Nurses, in this case, as medical personnel who interact with patients most often and for long, must be able to respect patients as independent individuals and make decisions related to their therapy.^{7,32}

In chronic disease, the HRQOL depends on the type of disease, duration of suffering, the intensity of symptoms, treatment options, side effects of treatment, limitations due to disease, patient’s age, and self-care abilities. Good HRQOL will contribute to a better response to treatment and thus a longer life expectancy.⁷

Table 5. The Correlation Between Self-Efficacy, Self-Care and Health-Related Quality of Life with the Kendall Tau Test

Variable	Self-Efficacy						Total	p	Coef. Correlation
	Low		Moderate		High				
	n	%	n	%	n	%			
Self-Care									
Low	2	18.2	4	9.8	1	8.3	7 (10.9%)	0.004	0.208
Moderate	9	81.8	35	85.4	6	50.0	50 (78.1%)		
High	0	0.0	2	4.9	50	41.7	7 (10.9%)		
Health-Related Quality of Life (HRQOL)									
Low	7	63.6	12	29.3	2	16.7	21 (32.8%)	0.041	0.272
Medium	4	36.4	29	70.7	10	83.3	43 (67.2%)		
Good	0	0.0	0	0.0	0	0.0	0 (0.0%)		

Source: Primary Data, 2019

The results of the correlation analysis show there is a correlation between self-efficacy and the HRQOL of patients undergoing hemodialysis. Self-confidence is important in carrying out a variety of treatment regimens to control complications. Patients who have good confidence can accept the disease and try to carry out a well-programmed therapy. Patients with good self-efficacy also showed improved quality of cooperation, self-care, communication, and treatment adherence behavior. The health goals of patients with chronic kidney disease should focus on a level of health that guarantees their independent life.³³

The results of the Kendall Tau correlation analysis a significant relationship between self-efficacy and self-care. Previous research suggests that hemodialysis patients who have high self-efficacy will be able to perform higher physical activity and psychosocial functions than those with low self-efficacy.³⁴

The self-efficacy of hemodialysis patients can improve their self-care. A relationship can be found in this study between self-efficacy and self-care because patients have confidence in their ability to carry out daily self-care to maintain their health status or a healthy lifestyle. Self-efficacy is essential in developing simple and targeted implementations in supporting hemodialysis patients in managing their disease.³⁵

One strategy to improve patients' self-efficacy is to build good communication between them and health workers. Nurses are in a key position to influence patients' self-efficacy and enhance their self-care activities. Therefore, to achieve these goals, nurses can provide necessary ins-

tructions to their patients to control stress and emotional and physical complaints. This strategy is implemented by permanent nurses with due consideration to the aspects of the patient's spiritual and cultural values.¹⁰

Previous research has shown that spiritual therapy can be used as an effective intervention to improve spiritual well-being, self-esteem, and self-efficacy in hemodialysis patients. There is no denying that spirituality plays an important role in shaping one's understanding of oneself and acceptance of one's condition. Meeting the spiritual needs of CKD patients is one way to increase meaning and life expectancy, improve quality of life, and reduce anxiety and fear of death.³⁶

Self-care is the responsibility of the patient. In health care, self-care is a necessary human regulatory function under the control of the individual, is intentional, and self-initiated. Self-care is indispensable for the maintenance of health and well-being. CKD patients should be able to make decisions related to therapy and efforts to reduce their disease complaints.³⁷ Several factors affect self-care, such as information, self-efficacy, intention, support, and insurance. Health workers believe that patient self-care can improve clinical conditions, reduce the number of hospitalizations and the severity and complications of the disease, and improve HRQOL.³⁸ Self-efficacy assessment of patients receiving hemodialysis is very important in clinical practice. Medical personnel are advised to conduct self-efficacy training, to strengthen the confidence of hemodialysis patients in adopting self-care behaviors, which can lead to improvement in their HRQOL.



Source: Sorat W, 2018

Figure 1. Concept of Self-Efficacy, Self-Management (Self-Care) and Health-Related Quality of Life

According to Orem's theory of nursing, self-care is considered to be an activity a person undertakes to maintain, restore, or improve his or her health. Nurses must consider patients not merely as recipients of health services, but as strong, reliable, responsible, and capable of making decisions to take good care of their health.^{39,40}

A limitation of this study is the use of the WHOQoL questionnaire which is less relevant for hemodialysis patients. It is advisable to measure the HRQOL in patients with renal impairment using the KDQoL (Kidney Disease HRQOL) questionnaire.

CONCLUSION AND RECOMMENDATION

There is a correlation between self-efficacy and self-esteem ($p=0.004$) and health-related quality of life ($p=0.041$) in hemodialysis patients at Wates Kulonprogo Hospital. Through the results of this study, nurses are expected to conduct regular assessments of the biological and psychological aspects of hemodialysis patients and improve communication with them to increase their self-efficacy.

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