ISSN 1907-6673

Jurnal Keperawatan Soedirman

Jurnal terbitan berkala dikelola oleh Jurusan Keperawatan Fakultas Ilmu-Ilmu Kesehatan Universitas Jenderal Soedirman

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- VALIDITY AND RELIABILITY OF THE INDONESIAN VERSION OF THE INTERNALIZED STIGMA MENTAL ILLNESS INSTRUMENT: SUBSTANCE ABUSE IN ADOLESCENTS
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Jurnal Keperawatan Soedirman

A scientific journal

Jurnal Keperawatan Soedirman	Volume 19	Nomor 2	Halaman 59-134	Purwokerto Juli 2024	ISSN 1907-6673

Editorial Policies

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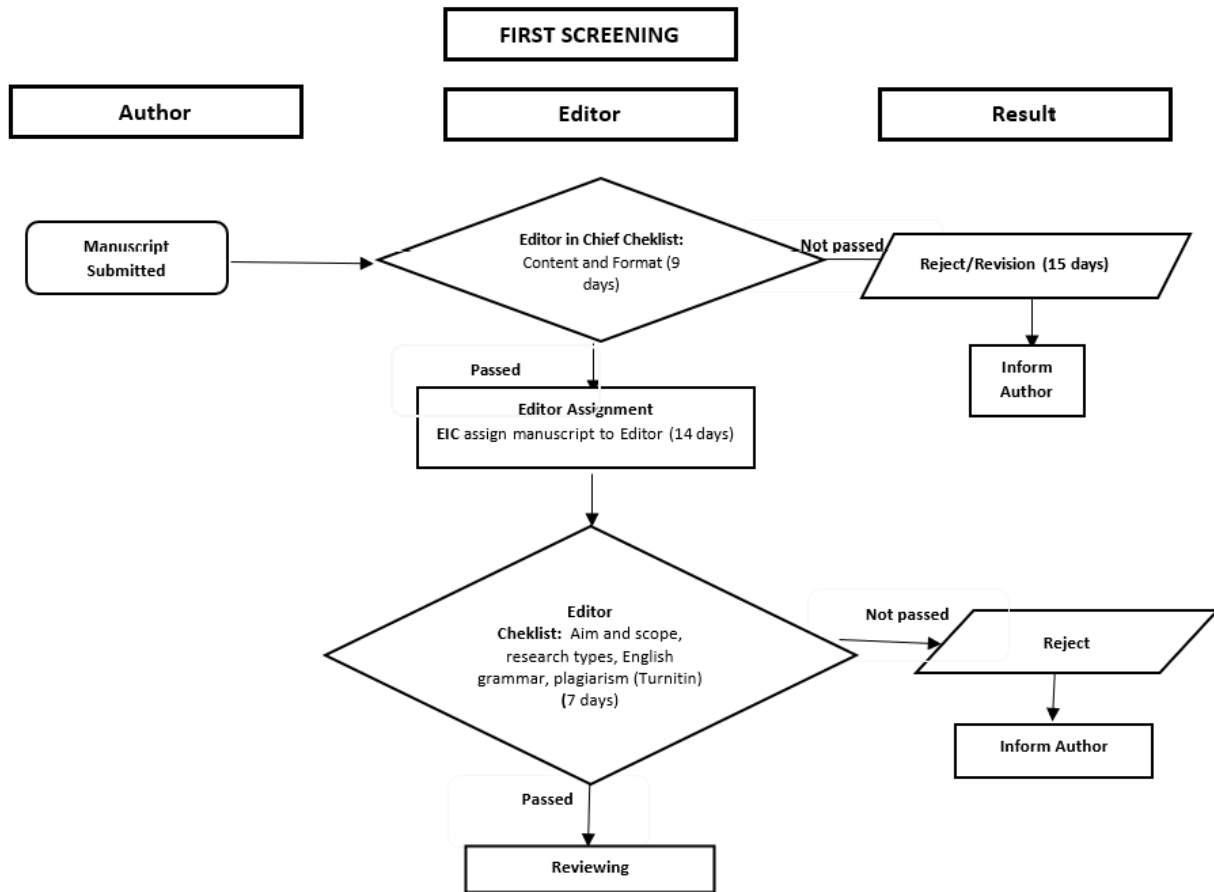

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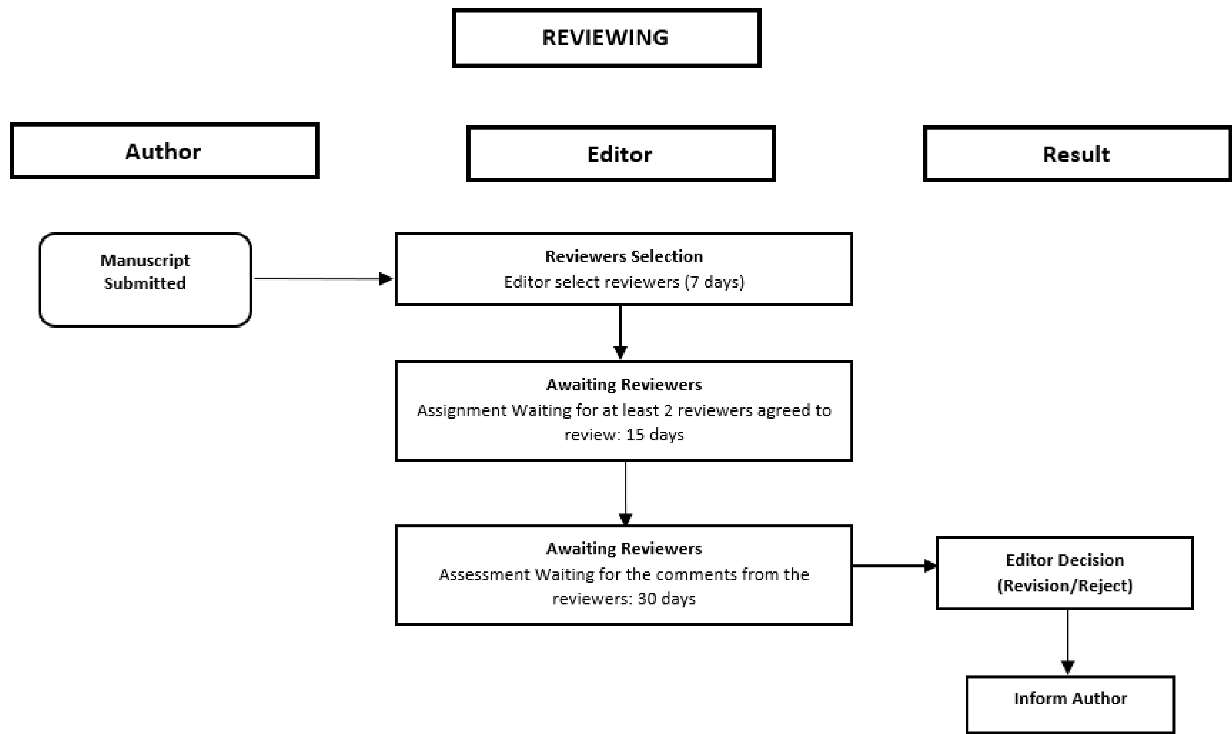

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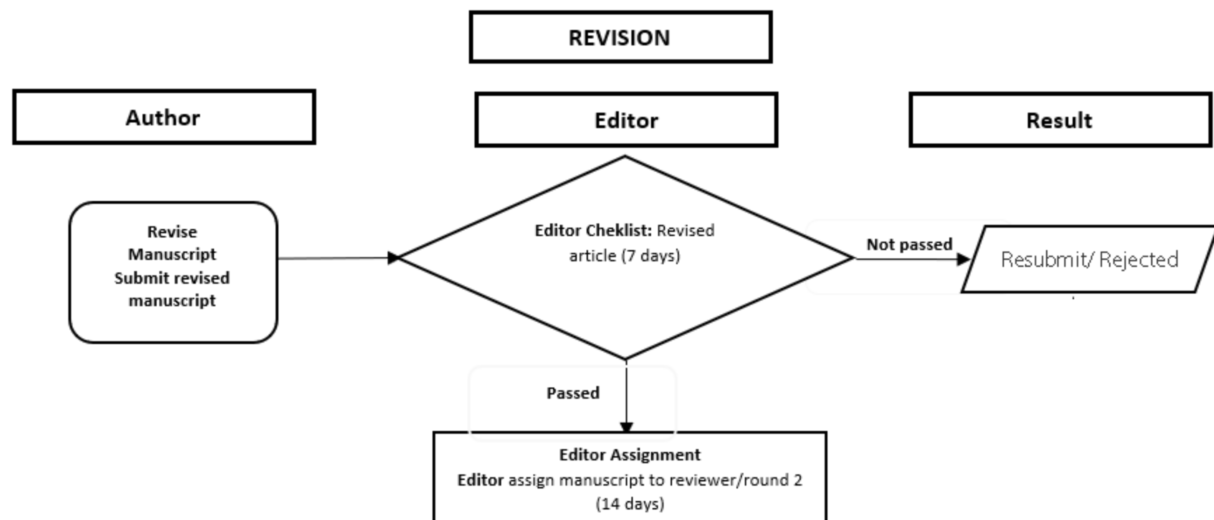

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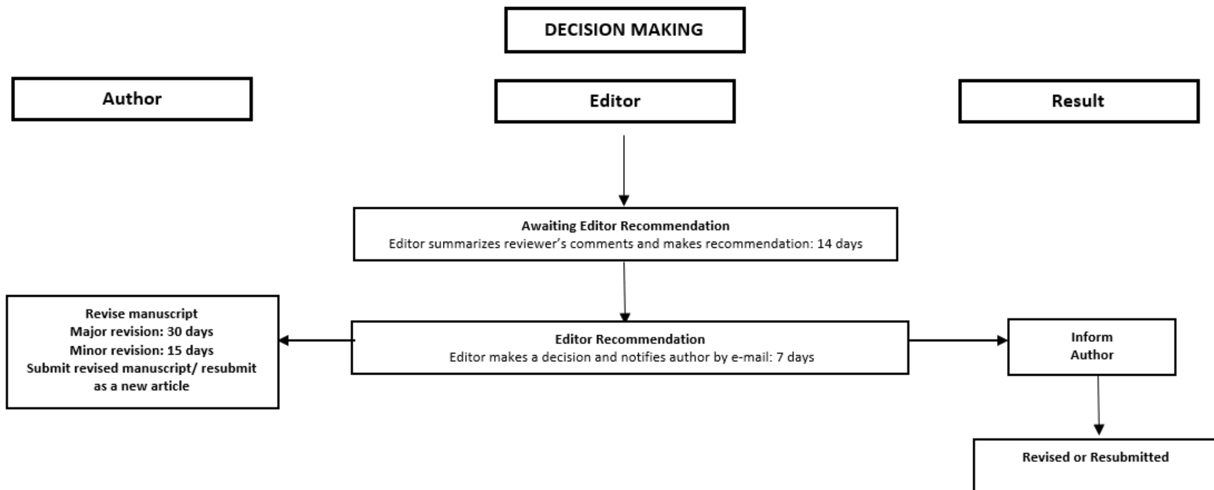

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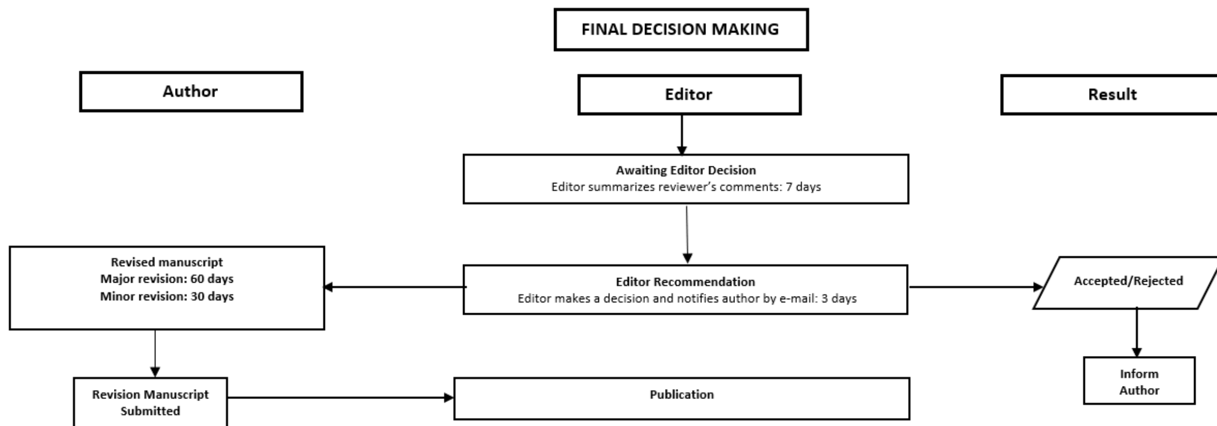

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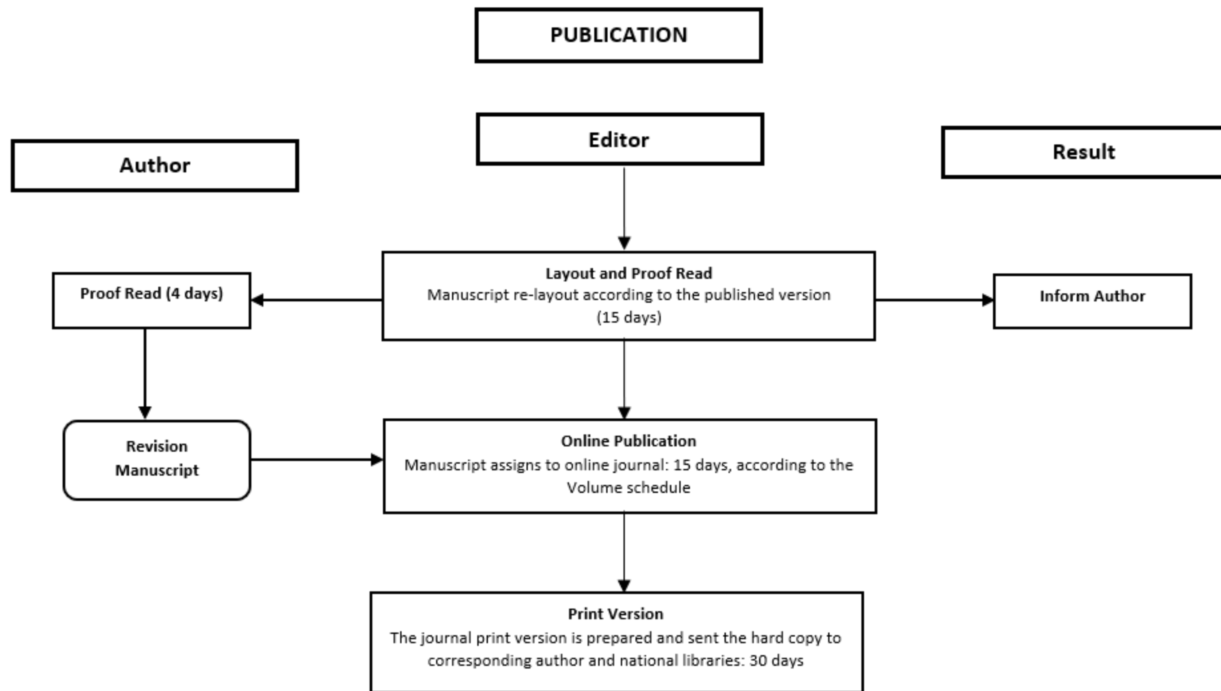

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The Jurnal Keperawatan Soedirman publishes 3 times a year in March, July, and November.

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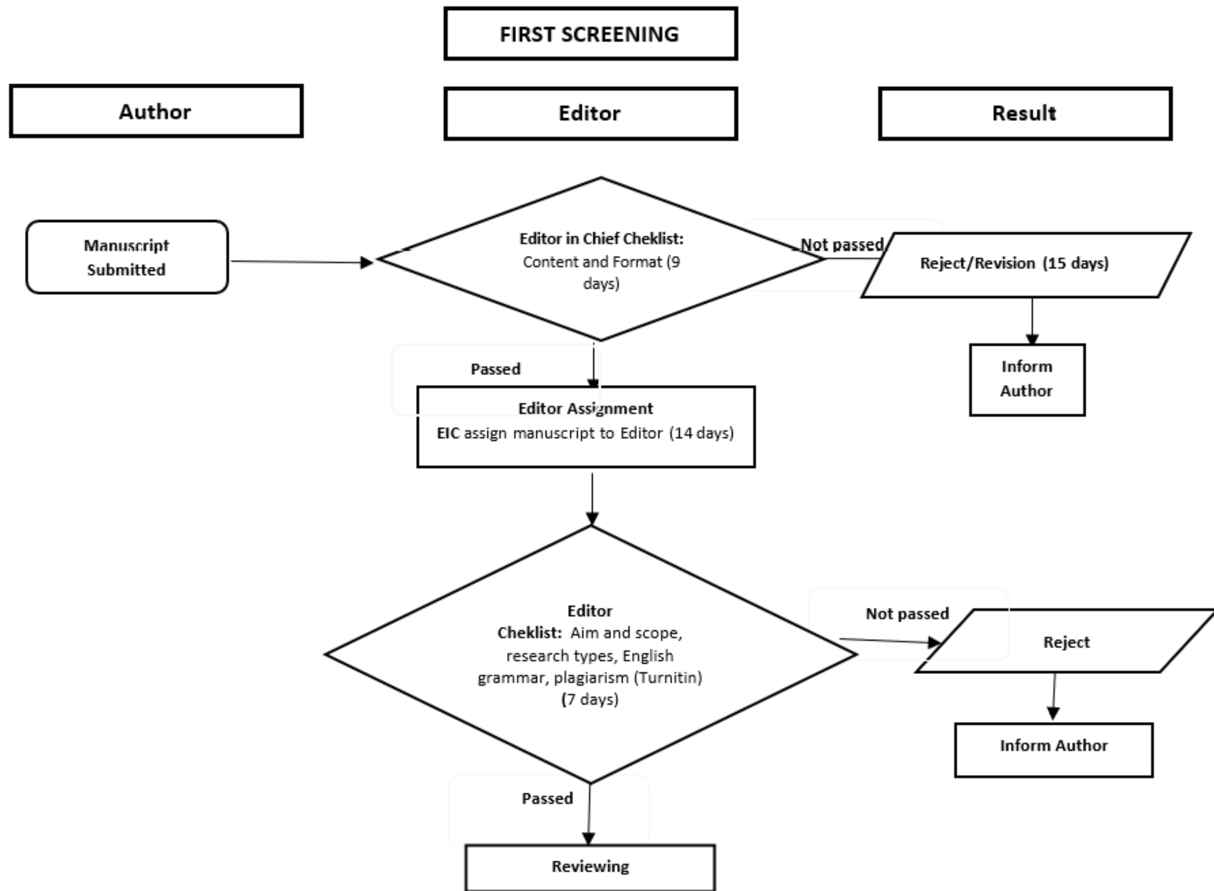

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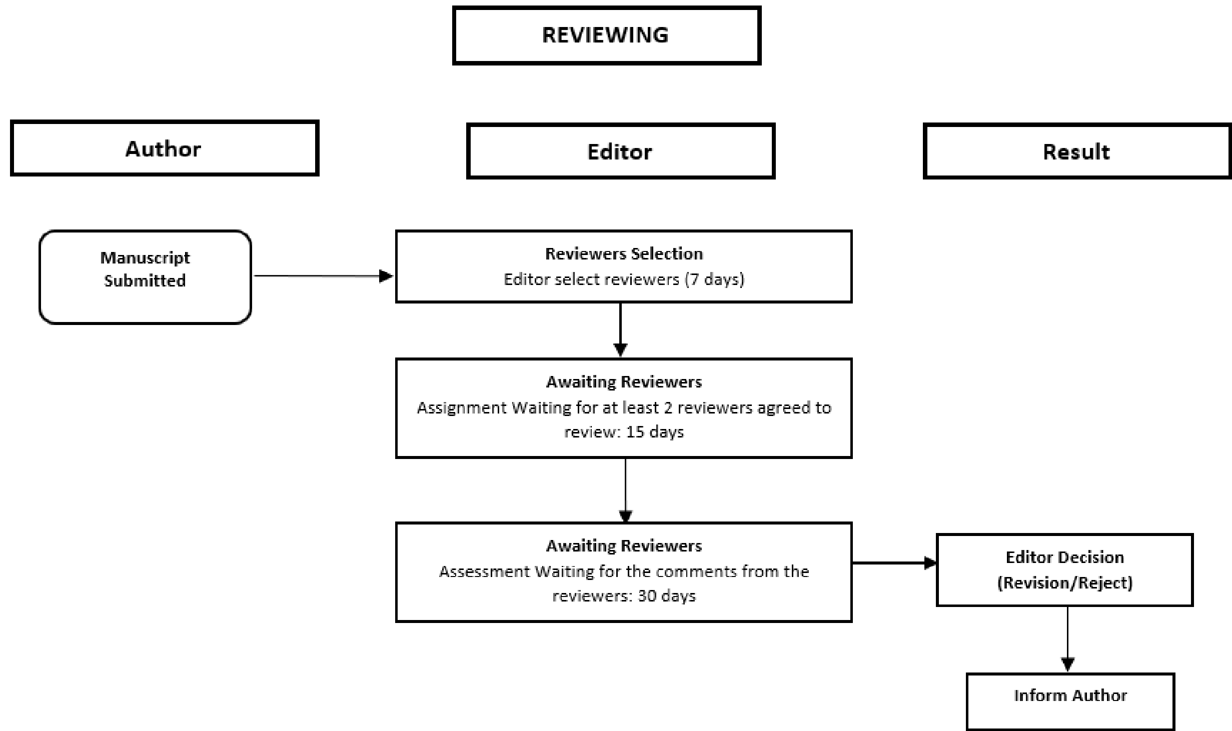

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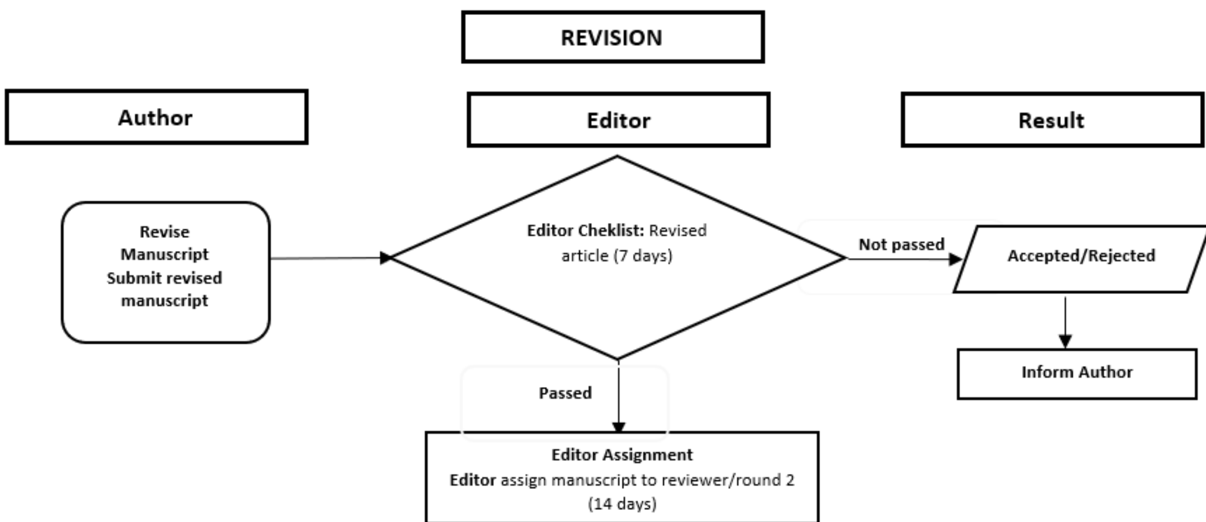

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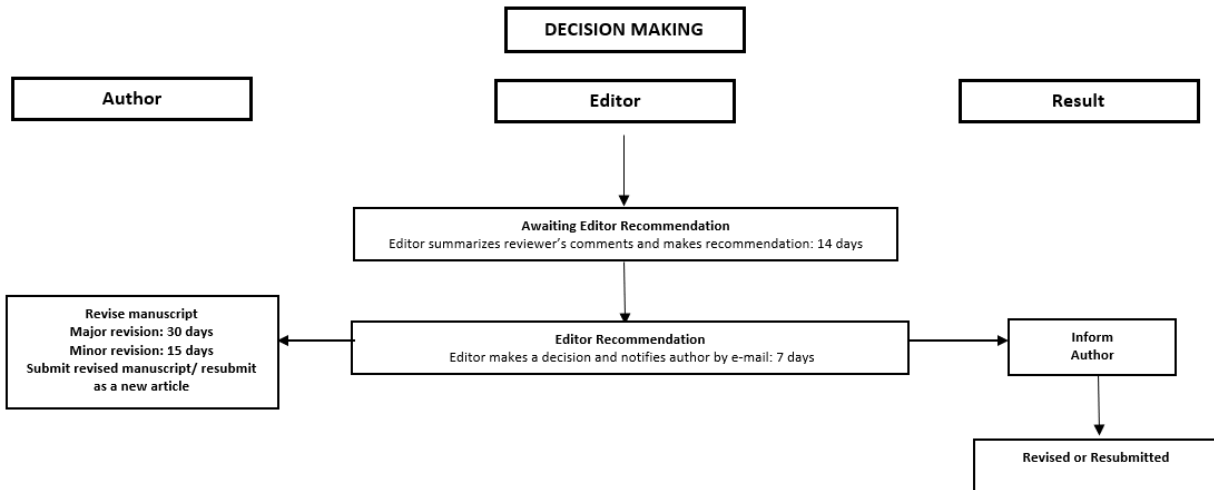

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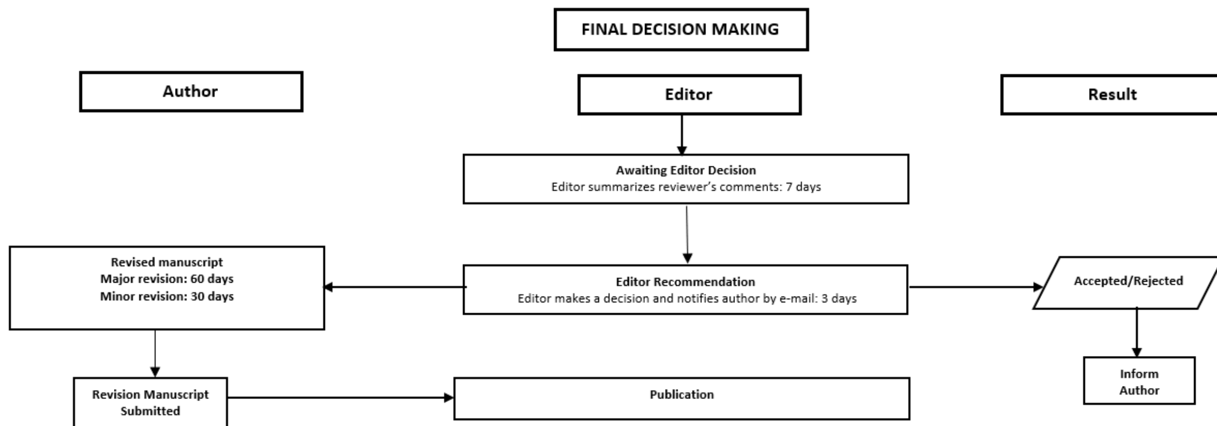

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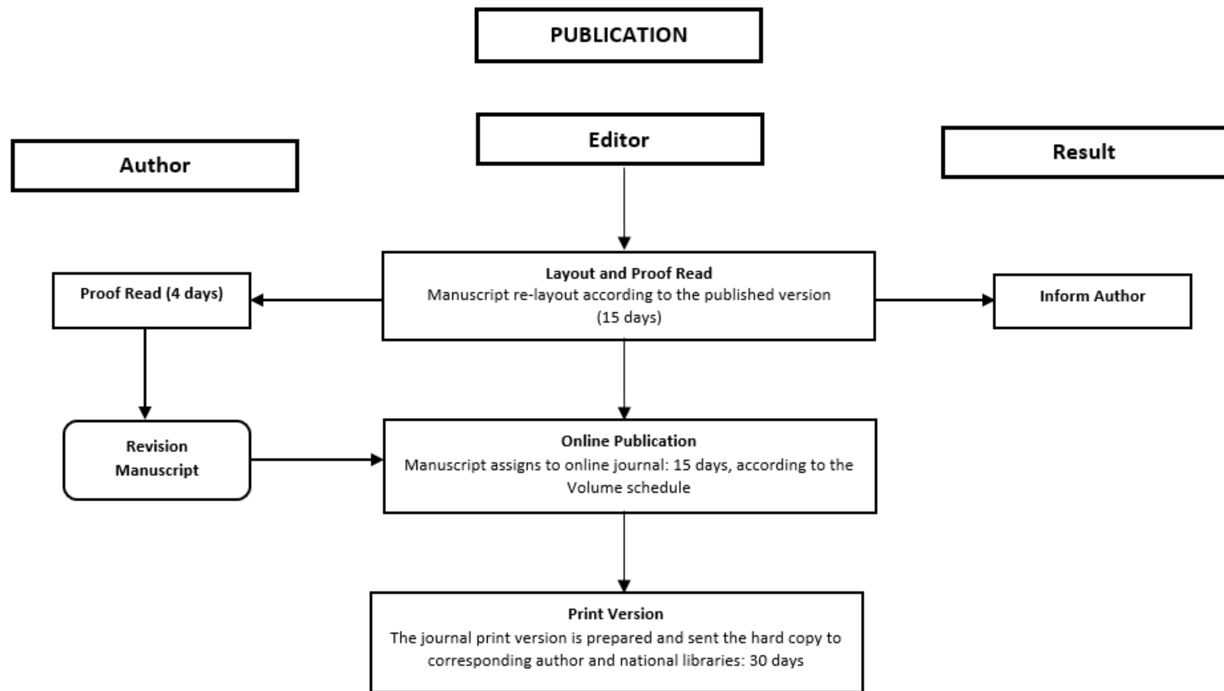

Rabbani, H. & Hidayati, N. O. (2024)
Jurnal Keperawatan Soedirman – Vol 19, No 2 page 59-64
http://jos.unsoed.ac.id/index.php/jks/index

ORIGINAL ARTICLE

OVERCROWDING AND STRESS LEVELS AMONG FEMALE PRISONERS: A CROSS-SECTIONAL STUDY

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Article Information
Received: 3 July 2023
Revised: 28 December 2023
Accepted: 31 May 2024

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DOI
10.20884/1.jks.2024.19.2.9121

ABSTRACT

Overcrowding is when the number of people in a space exceeds its specified capacity. This phenomenon often occurs in prisons and has been recognized as a significant contributor to psychological problems, especially stress among prisoners. This study addresses this gap by narrowing our focus to female prisoners, who exhibit greater physical and psychological vulnerabilities than male prisoners. This study investigates the relationship between overcrowding and stress levels in prisoners. This study used a correlational design with a sample of 82 female prisoners selected using a simple random sampling technique. The Overcrowding Scale and the Perceived Stress Scale-10 were the standardized instruments used in this study. Data were analyzed using Rank Spearman. The analysis revealed a positive relationship between overcrowding and stress levels with $p = 0.000$ and $r = 0.415$. Therefore, nurses can provide education to minimize the prisoners' stress levels, and prison officers can improve prisoner fulfillment of psycho-socio-spiritual needs. Future comparative studies can be conducted across various prison facilities to identify variations in stress levels, assess the effectiveness of interventions, and explore sociocultural influences on the well-being of prisoners.

Keywords: *Overcrowding; prisons; stress; women prisoners*

ISSN : 1907-6637 **e-ISSN : 2579-9320**

INTRODUCTION

Indonesia has the fourth highest number of prisoners in Asia (World Prison Brief, 2022). There is an excess number of prisoners at 109% or twice the total capacity of prisoners in correctional institutions in Indonesia. According to data from the Directorate General of Corrections, there are 276,172 (201%) prisoners in prisons with a total capacity of 132,107 people (Ditjenpas, 2022). Overcrowding occurs when the number of prisoners exceeds the available housing capacity (Sianturi et al., 2022).

Septianis' (2021) research on inmates and detainees in Pekanbaru Prison stated that the prison's average crowding was in the "medium" category with 130 people. This finding aligns with Sunarko's research (2016) on prisoners at Martapura Prison, who stated that there was moderate density in the cells. However, many prisoners felt uncomfortable in their cells due to the limited physical space around them. Moreover, one of the prisons experiencing overcrowding is the women's penitentiary. Currently, there are 455 prisoners registered in Bandung City Class II A Women's Prison with a total capacity of only 227 prisoners. These statistics indicate an excess of prison occupants of 100.44% or twice the specific total capacity.

The overcrowding of a dwelling refers to the ratio between the number of occupants and the area of the house they occupy, measured in square meters (m^2), with a minimum requirement of 8 m^2/person (Mariana & Hairuddin, 2018). In the Bandung City Class II A Women's Prison, there are 47 cell rooms with an average area of around 40 m^2 occupied by 7-10 people. This means that each person only gets 4-5 m^2 of room area instead of what should be a minimum of 8 m^2/person.

According to gender, female and male prisoners can have the same rights and obligations, but psychologically, women are different from men. Female prisoners are known to be more prone to mental disorders than men. When a woman is imprisoned, she tends to experience significant stress, including fear and discomfort, due to negative perceptions of female prisoners. In addition, persistent pressures in prison include torture, beatings, harassment, poor health conditions, lack of adequate facilities, having a social stigma attached

after leaving prison, and women having a higher prevalence of experiencing medical disorders, mental health, and addiction compared to men (Hadi et al., 2018).

Hormonal differences also affect the incidence of stress in women and men. Women will experience premenstrual and postmenstrual phases, marked by an increase in the production of the estrogen hormone. This phase is often accompanied by negative feelings, discomfort, and emotional changes (Arisandi & Setia, 2021). Stress in men is more internal and dominant in behavior, while stress in women is external and the impact can be seen through their emotional aspect, often shown through symptoms such as irritability, cynicism, and even apathy, furthermore, a study conducted by the University of Australia showed that 40% of psychological health problems in prisoners are stress (Kurniasari et al., 2021).

Stress is a condition or event that changes a person's life, encouraging individuals to adjust to their environment (Ernawati & Masnina, 2020). One of the causes of stressful conditions in prisoners is overcrowding, social isolation, and limited personal space, which also limits their behavior. These conditions can make prisoners feel constrained and cramped (Pranata, 2021). If overcrowding is not overcome and allowed to continue, it will cause prisoners to experience continuous stress (Hermawan, 2014).

Recent studies on stress among prisoners have identified a growing recognition of the multifaceted nature of stressors within prisons. Research by Smith et al. (2023) emphasizes the interconnectedness of environmental factors, such as overcrowding, with the mental well-being of inmates. Additionally, a study conducted by Moore et al. (2021) explores the long-term effects of persistent stress in prison environments, shedding light on the enduring psychological impact on individuals.

Although existing research acknowledges the role of factors such as overcrowding in contributing to stress among prisoners, there remains a gap in understanding the specific impact of these conditions on the psychological well-being of female prisoners. Few studies have explored into the distinct vulnerabilities and experiences of female inmates in overcrowded prison settings including Anggit & Ni, (2017); Asnita et al., (2015) research. This study aims to address this gap by explicitly focusing on female prisoners, exploring how overcrowding influences their stress levels, and considering the unique challenges they face in such environments. Nuanced examination of stress in the context of overcrowding among female prisoners is a key aspect that contributes to the novelty and significance of this research.

METHOD

Study design

This is a correlational quantitative study that employed a cross-sectional approach.

Sample

The population in this study was 442 female prisoners who had been in prison for more than one year, did not experience any mental disorders, and were not in isolation. Simple random sampling with Slovin formula ($n = N / (1 + (N \times e^2)$) was used to obtain the sample size of 82 female prisoners from a total of 4 blocks. In blocks that had several prisoners, selection was performed randomly by asking inmates who were willing to participate in the research.

Instrument

The Crowding Scale was used to measure overcrowding levels and the Perceived Stress Scale (PSS-10) was used to measure stress levels. The validity of the Crowding Scale instrument was tested by Anggraeni in 2021 with a professional judgment. As a result, six items of 21 were invalid. Therefore, 15 question items were used and content conformity was ensured by following the indicators. Interpretation of The Crowding Scale based on Azwar (2012) is categorized into high: $x < 33,28$; medium: $33,28 \leqslant x \leqslant 45,76$; low: $x > 45,76$. Meanwhile, the Indonesian version of PSS was conducted through a concurrent validity test. The results stated that the PSS scale was said to correlate with a Cronbach's Alpha value of 0.81. Interpretation of Stress Level Scale based on Azwar, (2012) is categorized into high: $x < 10,81$; medium: $10,81 \leqslant x \leqslant 20,71$; low: $x > 20,71$.

Data collection

After obtaining ethical approval from the relevant parties, informed consent forms were distributed and obtained from willing participants. The data collection process was then conducted offline by directly providing questionnaires, filled out by respondents and coordinated by prison officers to be collected by researchers 2 weeks later.

Data analysis

The data obtained were analyzed using univariate and bivariate techniques with the Spearman rank test using the Statistical Package for Social Sciences (SPSS) software data processing program.

Ethical consideration

This research has received approval from the Padjadjaran University Health Ethics Commission under certificate number 526/UN6.KEP/EC/2023. In addition, the researcher also applied for permission to the Head of the Ministry of Law and Human Rights Regional Office to conduct research at the women's penitentiary. The researchers have been granted permission to carry out research under the number W.11 - UM.01.01 – 1541.

RESULTS

The data collection process obtained the demographic characteristics of the respondents, namely age, level of education, type of crime committed, and length of the prison sentence.

Table 1. The characteristics of the respondents (N = 82)

Demographic Data	n	%
Age		
Adulthood (20-25 years)	12	14.6
Middle adulthood (26-45 years)	50	61.0
Elderly (46-60 years)	20	24.4
Education level		
High education (Associate degree-higher)	13	15.9
Basic education (elementary-high school)	69	84.1
Criminal act		
Violence-Crime	1	1.2
Money Laundering	2	2.4
Narcotics	37	45.1
Murder	4	4.9
Embezzlement	6	7.3
Fraud	7	8.5
Child protection	3	3.7
General crime	19	23.2
Corruption	3	3.7

Demographic Data	n	%
Length of punishment		
1-10 years	64	78.0
10-20 years	16	19.5
Lifetime	2	2.4

Table 1 shows that based on the age range categories of early adulthood, middle adulthood, and elderly, most of the respondents are in the middle adulthood category at 61.0%. Regarding the level of education, most of the respondents had a basic level of education (elementary to high school) of 84.1%. In terms of the type of crime committed, most of the respondents committed narcotics crimes at 45.1%. The data shows that most of the respondents served a criminal sentence of 1-10 years at 78.0%.

Table 2. Score distribution based on the overcrowding category

Category	n	%
High	17	20.7
Medium	58	70.7
Low	7	8.5
Total	82	100

Based on Table 2, there are data on the overcrowding category for female prisoners of women's penitentiary, it is found that most of the respondents are in the medium overcrowding category, namely 58 people with a percentage of 70.7%.

Table 3. Score distribution based on stress level category

Category	n	%
High	17	20.7
Medium	52	63.4
Low	13	15.9
Total	82	100

Table 3 shows data on the stress levels of female prisoners. The majority of the respondents were found to be in the moderate stress level category in 52 people or 63.4% of the respondents.

Table 4. Relationship of overcrowding with stress level

Variable	n	Correlation coefficient (r)	P value
Overcrowding and stress level	82	0.415	0.000

Table 4 presents the results of the Spearman rank correlation analysis. It was carried out to determine whether there is a relationship between overcrowding and stress levels. The significant value obtained is 0.000 with a significant value of <0.05. Therefore, it can be concluded that there is a relationship between overcrowding and stress levels.

In addition, the Spearman correlation coefficient value of 0.415 indicates a very significant positive relationship between the two variables. This positive or unidirectional correlation indicates that the higher the level of overcrowding, the higher the level of stress and vice versa.

DISCUSSION

The findings reveal that a substantial majority of prisoners perceive the level of overcrowding in the prison environment as moderate. A smaller proportion of respondents feel the overcrowding is low, while another segment perceives a high overcrowding. These results align with Sunarko et al.'s (2016) study on residents of the Class II A Children's Prison in Martapura, which stated moderate overcrowding in the cells. However, many prisoners felt uncomfortable in their cells due to the limited physical space around them. As explained in Gifford's theory, overcrowding is influenced by physical environmental factors such as room conditions, buildings, and building architecture. Crowding can affect physiology, social interactions, negative feelings, and how a person deals with problems.

Furthermore, Danyalin and Tantiani (2022) conducted a similar study in an Islamic boarding school. Their results showed that the overcrowding felt by adolescents in Islamic boarding schools was in the medium overcrowding category. Wahyu et al. (2020) also studied a settlement and found that the overcrowding felt by an individual living in a marginal settlement was in the moderate category. This phenomenon occurred because people who have adapted tend to prefer to face their lives in a crowded environment rather than seeing overcrowding as a problem (Ellisa, 2016).

The physical characteristics of the women's prison studied can be considered overcrowded because each occupant only gets 4 m^2 of space in each room, while the minimum requirement is 8 m^2/person. However, the physical environment inside the prison is quite beautiful because there are lots of greenery and trees. There is also a gazebo, which is often used for self-development activities such as dancing and scouting. In addition to that, various other activities are generally carried out by female prisoners in the women's penitentiary, including gardening, raising livestock, various artistic activities, cosmetology, cooking, and crafting various products for sale. These activities are carried out indoors and outdoors, providing a new atmosphere for prisoners living alone in their cells. This can bring physical comfort that can be felt directly by all prisoners.

A person's general feeling of comfort in their environment must be assessed from a wide range of aspects, as it is affected by various stimuli. Feelings will be involved in the assessment of the environment, not just physical and biological matters. The brain processes different stimuli caused by light, temperature, smell, sound, etc. It will then assess whether the condition is comfortable (Prasasto Satwiko, 2009).

This study found that the sampled female prisoners experienced moderate overcrowding in their prison. Other than the inadequate ratio between the number of occupants and the room area, other factors contribute to respondents stating that overcrowding is in the medium category. The length of time served by the prisoners is one of the factors that influence the perception of overcrowding. Most of the respondents were sentenced to prison terms of 1-10 years. As most of the prisoners sampled serve prison terms of more than one year, perhaps this made them able to accept their current living situation. They can adapt to their existing prison environment by coping with their problems more adaptively (Agnesia et al., 2018).

Furthermore, Agnesia et al. (2018) found in their study that more prisoners have adaptive coping techniques than maladaptive coping mechanisms. The high number of respondents who used adaptive coping could be because the respondents were adults to allow them to control themselves, their emotions, and existing problems. Furthermore, their prison sentences were over five years, making them more willing to accept the existing situation. The respondents' term

of more than two years is also long enough for them to adapt to the environment around them. Therefore, they can be more sincere, control themselves, and implement adaptive coping strategies.

This study obtained data from 82 female prisoners in a women's penitentiary and found that most prisoners felt a moderate level of stress in prison, a small number felt a low level of stress, and others felt a high level of stress. A similar study was conducted by Anggit and Ni (2017) on female prisoners in a correctional institution in Bogor. They observed that most of the prisoners experienced stress. Living in a prison, isolated from the outside world, and being apart from people they know and love can cause prisoners to experience psychological disturbances (Anggit & Ni, 2017). These findings are also supported by Ratnasari et al. (2020), who researched a women's penitentiary in Tangerang. The level of stress experienced by the prisoners was mostly moderate stress, a small proportion was severe stress, and some were mild stress. Moreover, Asnita et al. (2015) revealed that most of their respondents from correctional institutions experienced moderate stress, a small number felt mild stress, and others felt severe stress. According to Jaya (2015), the length of the sentence served, the legal problems involved, and the verdict obtained from the court can also affect the prisoner's stress level.

Stress is a general reaction and adjustment that occurs when a person is faced with a stressor. These stressors can be concrete or abstract and can come from internal or external sources (Musradinur, 2016). According to Pranata (2021), one cause of stress experienced by prisoners is their limited personal space due to overcrowding, isolation from society while in prison, and lack of privacy.

Furthermore, in terms of the social environment factor, women prisoners in women's penitentiaries have good social relationships with fellow prisoners, as shown by the absence of seniority in prisons and the fact that all prisoners mingle with one another. Additionally, it is common for female prisoners at women's penitentiaries to be visited by relatives with a maximum of 3 visits a week and they often receive food as gifts. Such gifts can lead to social comfort regarding the interpersonal, family, and social or community relations of prisoners. Social comfort can occur when basic needs of a person are met through comfortable social interactions over a certain space and time. Basic needs are defined as spatial needs that comprise stimulation, security, and identity (Hariyono, 2007).

This research found that the female prisoners in the women's penitentiary studied have a moderate level of stress. This moderate stress level can be attributed to the positive social environment among fellow prisoners and other factors, such as the education level of prisoners. Most of the respondents were elementary-high school graduates. Research by Fijianto et al. (2021) revealed that there is a positive relationship between education level and coping strategies for prison prisoners. Prisoners with a high level of education can manage their emotions, motivate themselves, recognize other people's emotions, and build strong relationships.

The results showed that the level of education of female prisoners in the studied women's penitentiary was moderate. A high level of education is typically accompanied by a high level of knowledge and experience. This statement is supported by Rachmah and Rahmawati (2019), who found that there is a significant relationship between knowledge and the coping mechanisms used by a person. Research explains that people with greater knowledge of stress will implement more adaptive coping mechanisms.

Then, the most common crimes committed in the studied women's penitentiary were narcotics-related crimes at 45.1%. According to Siswati and Abdurrohim (2016), while in detention cells, prisoners involved in drug cases do not receive special therapy to eliminate the effects of drugs in their bodies (detoxification) due to high costs. Instead, religious therapy is emphasized. However, the detoxification process is essential for the overall healing process in cases of psychoactive substances. Therefore, this lack of adequate treatment is one of the causes of high stress in prisoners who commit narcotic crimes. To overcome this issue, prisoners can receive stress management training, as was done by Siregar et al. (2020) for Class I Male Prisoners at Tanjung Gusta Medan Prison. After participating in stress management training, there was a decrease in the number of participants with high stress levels and participants with moderate stress levels. Thus, stress management training can be an option to help prison prisoners reduce stress levels.

Then, the Pearson's correlation test conducted revealed that h_0 is rejected and h_1 is accepted, considering that the significant value obtained in this study is 0.000 with a significant value <0.05. These results indicate that the women prisoners in the studied women's penitentiary have a significant positive relationship between overcrowding and stress levels. The positive correlation between the two variables shows that as the overcrowding increases, the stress levels of the female prisoners will also increase. On the contrary, if the overcrowding decreases in female prisoners, their stress levels will also decrease.

Similar research was conducted by Septianis (2021) with 322 prisoners and detainees in a Detention Center in Pekanbaru. The results showed that there was a crowding effect that resulted, in the stress experienced by prisoners and detainees during the COVID-19 period. However, crowding contributed to 9.3% of prisoner stress, and the remainder was from other factors (Septianis, 2021). Another similar study was conducted by Cholidah et al. (1996) with 80 adolescents living in the Duri Utara subdistrict, West Jakarta, which is a densely populated settlement. The results showed a significant positive relationship between density and overcrowding with stress. The overcrowding and tightness variables also contributed significantly to the resident's stress levels at 17% (Cholidah et al., 1996). Moreover, Feby Fadilla et al. (2022) interviewed 72 women living in flats in Padang City and found a significant relationship between stress and living in flats in Padang City. In addition, the congestion variable also significantly contributed to the resident's stress levels at 19% (Fadilla Feby et al., 2022).

These results align with Welta and Agung's (2017) research, which found that overcrowding plays an important role in the emergence of stress in prisoners. This relationship may be due to the sensitivity of prisoners, who perceive the feeling of overcrowding as a form of pressure. This feeling of pressure can then affect the physiology, psychology, and behavior of prisoners, leading to stress. Adegoke also states (2014) that individuals who live in dense environments tend to feel more anxious and restless, causing them to withdraw from social interactions.

The drawbacks of this study include the limited literature in prison overcrowding and stress levels specifically for female prisoners. Thus, the researcher discussed the study results from a general perspective. Researchers could not directly

observe the physical environment and activities of the prisoners. In addition, the questionnaire that the respondents completed could not be directly monitored by the researchers, making it difficult for the researchers to know the restrictions that they might face when filling out the questionnaires. Furthermore, the questionnaires were distributed by correctional officers. Therefore, respondents may have provided answers that do not reflect their actual conditions.

CONCLUSION AND RECOMMENDATION

Data analysis revealed a strong positive relationship between overcrowding and stress levels in female prisoners in a women's penitentiary. The higher the level of overcrowding, the higher the level of stress experienced, and conversely, the lower the level of overcrowding, the lower the level of stress experienced by prisoners. Additionally, the average category of stress and overcrowding levels for female prisoners at the studied women's penitentiary is in the moderate category.

The results of this study will help to draw attention to the overcrowding factor in prisons, acknowledging it as one of the elements that can influence stress levels in prisoners, especially female prisoners. Overcrowding in prisons can be reduced by decreasing the capacity or quota for the number of prisoners, which would also decrease the number of criminal incidents. Prisons also need to pay special attention to the psychosocial sociospiritual needs of prisoners with the help of existing nurses.

The weakness of the study lies in the inclusion of prisoners who may still be struggling with drug or narcotic addiction. This condition could introduce a confounding variable, as substance addiction is a complex factor that could independently influence participants' stress levels. Individuals with active drug dependence can face challenges in isolating the specific impact of overcrowding on stress, as addiction-related stressors could potentially overshadow or interfere with the effects being studied. Therefore, the study findings may be less precise in attributing stress solely to overcrowding, given the potential influence of ongoing substance dependence among some participants. Future research may benefit from a more refined participant selection process to better isolate the impact of overcrowding on stress levels.

The results of this study can be used as initial data and a reference source for related research. Future researchers can also improve this study by expanding its scope and using additional data collection techniques, such as observations and in-depth interviews, to improve or complement further research. Additionally, further research must consider the relationship between other factors that can affect female prison stress levels of female prisoners, such as sentence length, type of crimes committed, and other factors.

Nurses should be mindful of the higher mental health risks of female prisoners, such as the higher prevalence of medical, mental health and addiction disorders compared to male prisoners. Nurses should facilitate a supportive environment for mental health in prison, such as providing psychological support, counseling, and rehabilitation programs that suit the needs of inmates. Nurses need to collaborate with multidisciplinary teams, such as psychologists, social workers, and prison officers, to provide comprehensive and holistic care in addressing mental health and stress issues in prisoners. Nurses should advocate for improved prison conditions, such as adequate facilities, good health conditions, and prevention of torture or abuse, to reduce the pressure and stress that prisoners experience during their incarceration.

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Jurnal Keperawatan Soedirman – Vol 19, No 2 page 65-71
http://jos.unsoed.ac.id/index.php/jks/index

ORIGINAL ARTICLE

VALIDITY AND RELIABILITY OF THE INDONESIAN VERSION OF THE INTERNALIZED STIGMA MENTAL ILLNESS INSTRUMENT: SUBSTANCE ABUSE IN ADOLESCENTS

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Article Information
Received: 19 January 2023
Revised: 8 January 2024
Accepted: 31 May 2024

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DOI
10.20884/1.jks.2024.19.2.7680

ABSTRACT

The prevalence rate of drug abusers in adolescents in Indonesia is relatively high. There is no valid and reliable instrument in the Indonesian language to measure stigma in drug users in adolescents. Therefore, this study aims to measure the validity and reliability of the self-stigma questionnaire in adolescent drug users. This cross-sectional study involved 59 teenage drug users who, at the time of the study, were in good health and could read and write to answer the questionnaire. Data were collected between March and September 2020 using Internalized Stigma Mental Illness (ISMI): Substance Abuse questionnaire. Pearson's correlation coefficient, r, was used to measure the cross-validity value of the correlation between item scores and total statement scores. Meanwhile, researchers used Cronbach's Alpha to assess the internal consistency of the questionnaire. Pearson's r values for 29 statements showed that 1 statement was invalid. After eliminating the invalid statements, 28 statements with valid results at $r_{count} \geq 0.256$ and Corrected item-total correlation >0.3 with a confidence level of 95% (r_{count} 0.323-0.642) and reliable Cronbach Alpha > 0.700 (Cronbach Alpha If Items Deleted: 0.888-0.895) with a 95% confidence level were used in the instrument. The ISMI is a valid and reliable version of drug abuse that can be used as an assessment and evaluation tool for adolescent drug abusers in clinical, rehabilitation, research, and community settings.

Keywords: *Adolescent; internalized stigma; reliability; substance abuse; validity*

ISSN : 1907-6637 **e-ISSN : 2579-9320**

INTRODUCTION

Stigma is one of the social impacts that will be attached to drug abusers (Vally et al., 2018). Stigma is classified into public and internalized stigma (Silke, Swords, & Heary, 2016; Yu et al., 2021). Studies have shown that almost all drug abusers experience internalized stigma (Ardani & Handayani, 2017). Additionally, 26.5% of adolescents will experience internalized stigma after experiencing public stigma (Pantelic et al., 2017). Internalized stigma, also called self-stigma, perceived stigma, or felt stigma, is a form of internalization of stigma that exists in society against the self (Kao, Lien, Chang, & Wang, 2016; Matthews, Dwyer, & Snoek, 2017; Eaton, Stritzke, Corrigan, & Ohan, 2019). It often manifests itself in drug users as feelings of shame, guilt, and despair (Batchelder et al., 2020). This internalized stigma can become an obstacle to achieving individual life goals.

People with internalized stigma experience difficulties in their daily lives. Internalized stigma leads to feelings of inadequacy, prejudice toward oneself (low self-esteem and self-efficacy), and discriminatory behavior (Silke, Swords, & Heary, 2016). Such attitudes reduce the ability of these individuals to make decisions and receive health care (Hammarlund, Crapanzano, Luce, Mulligan, & Ward, 2018; Gupta, Panda, Parmar, & Bhad, 2019). Moreover, self-stigma can reduce individual productivity and quality of life (Cheng

et al., 2019). Therefore, it is essential to have a valid and credible assessment to evaluate internalized stigma, which could help individuals receive treatment.

Many countries have developed instruments in their languages to assess internalized stigma, such as Arabic, Armenia, Bulgaria, Mandarin, Dutch, and English (Boyd, Adler, Otilingam, & Peters, 2014). These instruments include the Self-Stigma of Mental Illness scale (Corrigan et al., 2013) and the Internalized Stigma of Mental Illness scale (Ritsher, Otilingam, & Grajales, 2003), which were developed for various disease conditions, including substance abuse. Generally, the focus of an individual will decrease with time. Therefore, it is not recommended to have several lengthy questionnaire statements. The Internalized Stigma of Mental Illness Questionnaire has only 29 items, but can represent all components of self-stigma. This questionnaire has also been used in several developed and developing countries (Boyd, Adler, Otilingam, & Peters, 2014), but these instruments were generally developed for adults.

Adolescents are at high risk for drug abuse. The 2016 report shows that of 130 countries worldwide, 5.6% of youth have abused drugs such as cannabis. Adolescents aged 12-17 years are in the critical period of initiation of drug abuse, while 18-25 years are the peak ages for drug abuse (UNODC, 2018a). Indonesia, where a quarter of the population is young, is still in a drug emergency (BPS, 2022). The prevalence of drug abuse among 15-24-year-olds increased from 1.30% in 2019 to 1.87% in 2021 (BNN, 2022), whereas in 2019, the prevalence of drug abuse had reached 24-28% of total teenagers (BNN, 2019). Therefore, drug abuse in Indonesia needs to be addresses through various efforts, one of which is to overcome the impact of self-stigma.

Adolescents have different characteristics than adults. Various life changes and job demands can become a "pile of stressors" that make teenagers increasingly vulnerable to drug use (Levin, 2015; Mclaughlin, Garrad, & Somerville, 2015). Internalized stigma will influence the way adolescents evaluate themselves. The self-assessment phase in adolescents is a critical stage that influences their ability to achieve the main task of their development: forming their self-identity (Mak, Ho, Wong, Law, & Chan, 2015). In addition, internalized stigma can also cause psychological distress, decreased social functioning, and reduced quality of life in adolescents (Cheng et al., 2019; Hippel, Brener, & Horwitz, 2018). It also dramatically influences physical health and ongoing drug abuse behavior (Guerri & Pascual, 2019).

Therefore, developing the internalized stigma measurement instrument for adolescents is crucial because of this growing phenomenon. It is expected to be a tool for assessing and evaluating adolescents with drug abuse. This study aims to measure the validity and reliability of the Indonesian version of the internalized stigma instrument, particularly in adolescents with drug abuse.

METHOD

Study design

This study used a cross-sectional approach by distributing descriptive questionnaires among adolescent drug abusers.

Population and sample

This population of this study was 59 teenager drug abusers in rehabilitation institutions at the National Narcotics Agency (BNN) Bogor, the Special Child Development Institute (LPKA) Jakarta of the Ministry of Law and Human Rights, and the private rehabilitation foundation Al-Islamy Yogyakarta. By selecting rehabilitation institutions, researchers can reach teenagers who have been shown to have used drugs.

Rehabilitation institution officials explained that the COVID-19 pandemic reduced the number of drug abusers in the age group of 16 to 19 years of age undergoing rehabilitation. In addition, the lockdown policy resulted in limited access for researchers to collect data in drug rehabilitation institutions. Due to the limited population and research time, the total sampling technique was used and the entire population of 59 adolescents (10-19 years old, in good health, able to read and write to answer questionnaires) was determined to be the research sample.

Instrument

Participants' age, gender, marital status, education, and ethnic group are the demographic data taken from their medical records. The Internalized Stigma of Mental Illness (ISMI): Development of a Substance Abuse Version by Boyd, Adler, Otilingam, & Peters (2013) was the questionnaire used in this study. This instrument is in English and consists of 29 items of statements (24 favorable and 5 unfavorable) to measure 5 subscales: alienation, stereotype, discrimination experience, social withdrawal, and stigma resistance as presented in Table 1. It also uses a Likert scale with 4 answer options: strongly agree (score 4), agree (score 3), disagree (score 2), and strongly disagree (score 1). The interpretation of questionnaire results is classified into 2 (two) parts based on the average score of answers, where low self-stigma is indicated by an average score of 1.00-2.50 and an average score of 2.51-4.00 indicates high self-stigma.

Table 1. Instructions of the internalized stigma instrument

Subscale	Statement items	Statement items	
		Favorable	Unfavorable
Alienation	1, 5, 8, 16, 17, 21	1, 5, 8, 16, 17, 21	-
Stereotype endorsement	2, 6, 10, 18, 19, 23, 29	2, 6, 10, 18, 19, 23, 29	-
Discrimination experience	3, 15, 22, 25, 28	3, 15, 22, 25, 28	-
Social withdrawal	4, 9, 11, 12, 13, 20	4, 9, 11, 12, 13, 20	-
Stigma resistance	7, 14, 24, 26, 27	-	7, 14, 24, 26, 27

(Source: Boyd, 2013)

To begin the instrument development process, the researcher first obtained permission via email from Jennifer E. Boyd, Ph.D., as the developer of the ISMI: Substance Abuse questionnaire to be translated and used in the population of adolescent drug abusers in Indonesia. The researchers then proceeded to the translation and cultural adaptation process. The instrument was translated according to the WHO Translation and Adaptation of Instrument Process (2020). The instrument's translation process is described as follows:

1. Forward translation: Includes making a reconciliation version from English to Indonesian by three professional nurses with good English competency. The translation results led to the most relevant concepts. All translators translated all statements, instructions, and answer choices from the questionnaire.

2. Expert panel back-translation: This process was carried out by sworn translators with a background and knowledge appropriate to the research content of CILACS UII certified institutions who are experienced in developing and translating instruments to produce a complete version of the instrument. The instrument was then translated back into English by a competent independent translator to obtain translation results that were equivalent both conceptually and linguistically.
3. Pre-testing and cognitive interviewing: This test was distributed to several teenagers with the same characteristics as the research respondents to determine the level of understanding of the phrases in each statement. At this stage, the teenagers said that the questionnaire was easy to understand.
4. Validity and reliability testing: This test was distributed to 59 adolescents. Researchers and research assistants checked the list of adolescents recommended by the team of caregivers based on inclusion and exclusion criteria and then explained the research objectives and procedures directly by word of mouth.
5. Final version: The final version of the instrument was made in Bahasa Indonesia (Indonesian language). After data were collected from 59 respondents, the next stage is data analysis.

Data collection
Data collection was carried out from March to September 2020. The adolescents approached were chosen based on the recommendations of the institution's medical team and the health records of the adolescents. The research activities were explained by word of mouth to the respondents. Respondents received a questionnaire and asked for their willingness to participate in this research (informed consent). Then, they were asked to fill out the questionnaire. Those willing to become respondents were then asked to agree on a time to complete the questionnaire. In this study, all respondents immediately completed the questionnaire after signing the willingness form. The researcher and research assistant checked and ensured that there were no empty questionnaire answers at the time of collection.

Data analysis
All respondents response items were coded and scored. Items with blank, multiple, or unclear answers were removed from the data set. All data entries were checked and analyzed using IBM SPSS version 25. Next, descriptive statistical methods were used to describe the data. There were no items for which the questionnaire answers were empty, duplicated, or unclear.

A validity test was performed to measure the ISMI: Substance Abuse Version instrument's validity in measuring internalized stigma in adolescents. Pearson's Correlation Coefficient test (Pearson's r) was used to determine the cross-validity value between the item's scores and total scores (Begdache, Marhaba, & Chaar, 2019; Gündüz et al., 2019). The statement is classified as valid if the item's score correlates significantly with the total score ($r_{count} > r_{table}$) (Humphreys et al., 2019), with the value of r_{table} 0.2564 (α: 0.05), and the Corrected item-total correlation >0.3 with a confidence level of 95% (Khilmi et al., 2022).

The reliability test was conducted after all items were categorized as valid to show the consistency of the measurement of internalized stigma in adolescents using the ISMI instrument: Substance Abuse Version. The Cronbach Alpha test was used to assess the level of internal consistency of the scale (Clayson et al., 2021). This instrument is declared reliable if the Cronbach Alpha is ≥ 0.700 (Heale & Twycross, 2015).

Ethical consideration
This research has been through ethical approval by the ethics committee of the Faculty of Nursing, Universitas Indonesia, as evidenced by the Certificate of Ethics Review, Number: SK56/UN2.F12.DI.2.I/ETIK 2020. The researcher explained the activities, procedures, objectives, benefits, risks, rights, and obligations of the respondents. The participation of the respondents is voluntary, as evidenced by signing an informed consent form by the adolescent respondents accompanied by their guardians.

RESULTS

Demographic characteristics of the respondents
There were 30 adolescent drug abusers from BNN, 6 adolescents from LPKA, and 23 from Al-Islamy, consisting of 55 men (93.2%) and 4 women (6.8%). The average is 17.59 years (95% CI: 17.24-17.95), with a standard deviation of 1.37 years. The youngest respondent is 14 years old and the oldest is 19 years old. Most of the respondents were unmarried (84.7%), Muslim (83.1%), Javanese (55.9%), and their highest education level was junior high school (66.1%). The distribution of respondents in this study can be seen in Table 2.

Table 2. Distribution of respondents' ages

Variable	Mean	SD	Minimum-maximum	95% CI
Age	17.59	1.37	14-19	17.24-17.95

Validity
The Pearson Correlation test results on the 29 statements from ISMI: Substance Abuse Version in an adolescent with drug abuse (Model 1) shows that there are 28 valid statements and 1 invalid statement. These valid statements consist of five subscales: alienation (6 items), stereotype (6 items), discrimination experience (5 items), social withdrawal (6 items), and stigma resistance (5 items) with $r_{count} \geq 0.256$ (r: -0.036-0.641). The invalid item is 1 of 7 statement items that assess the stereotype subvariable with $r_{count} < 0.256$ (r: -0.036) and a confidence level of 95%, as shown in Table 3.

Based on the results of the Pearson Correlation test, the 1 invalid statement was deleted (Model 2) and the study was continued using 28 statements from the ISMI instrument: Substance Abuse Version in an adolescent with drug abuse has valid results with $r_{count} \geq$ 0,256 (r: 0.323-0.642) and Corrected item-total correlation >0.3 and a confidence level of 95% as shown in Table 3. All valid 28 items also included five subscales of the ISMI instrument: Substance Abuse Version.

Reliability
The Cronbach Alpha value of 29 statements from the ISMI instrument: Substance Abuse Version for an adolescent with drug abuse (Model 1) is 0.892, with the smallest Cronbach Alpha value if an item is deleted being 0.884 and the highest value being 0.891. After 1 invalid statement was deleted (Model 2), the Cronbach Alpha value increased to 3.895, with the smallest value of Cronbach Alpha If an item is deleted being 0.888 and the highest value being 0.894. Both Cronbach Alpha scores of 29 or 28 statements show high reliability (Cronbach Alpha ≥ 0.700). The detailed value of Cronbach Alpha if an item is deleted can be seen in Table 3.

Table 3. Validity and reliability test results of the Internalized Stigma: Substance Abuse Questionnaire

Subscale	Model 1				Model 2			
	No	Corrected item-total correlation	Cronbach Alpha if an item is deleted	Cronbach Alpha	No	Corrected item-total correlation	Cronbach Alpha if an item is deleted	Cronbach Alpha
Alienation	1	0.460	0.888	0.892	1	0.454	0.892	0.895
	5	0.497	0.889		5	0.492	0.893	
	8	0.404	0.889		8	0.393	0.893	
	16	0.512	0.887		16	0.511	0.891	
	17	0.519	0.891		17	0.519	0.891	
	21	0.480	0.892		21	0.480	0.892	
Stereotype	2	0.397	0.889		2	0.400	0.893	
	6	-0.036	0.895					
	10	0.396	0.889		10	0.402	0.894	
	18	0.454	0.888		18	0.460	0.892	
	19	0.373	0.890		19	0.375	0.894	
	23	0.563	0.903		23	0.609	0.889	
	29	0.498	0.887		29	0.507	0.891	
Discrimination experience	3	0.402	0.889		3	0.408	0.893	
	15	0.399	0.889		15	0.405	0.893	
	22	0.691	0.901		22	0.547	0.890	
	25	0.469	0.888		25	0.471	0.892	
	28	0.437	0.888		28	0.444	0.892	
Social with-drawal	4	0.450	0.888		4	0.438	0.892	
	9	0.618	0.884		9	0.617	0.889	
	11	0.316	0.891		11	0.323	0.895	
	12	0.641	0.884		12	0.642	0.888	
	13	0.398	0.889		13	0.389	0.893	
	20	0.638	0.884		20	0.631	0.888	
Stigma resistance	7	0.519	0.887		7	0.513	0.891	
	14	0.383	0.889		14	0.387	0.893	
	24	0.355	0.890		24	0.357	0.894	
	26	0.331	0.890		26	0.339	0.894	
	27	0.373	0.888		27	0.375	0.893	

Note:
Model 1: ISMI: Substance Abuse Version with 29 statement items
Model 2: ISMI: Substance Abuse Version with 28 statement items

The respondents took 15-20 minutes to complete the questionnaire. All respondents said that all statements in the questionnaire could be easily understood. No respondents asked for clarification on the statements of the questionnaire. Therefore, they were able to complete the questionnaire independently.

DISCUSSION

This study developed an instrument to assess internalized stigma for a specific population, namely adolescents, by adapting the ISMI: Substance Abuse Version instrument through validity and reliability tests. **R**esearchers did not modify the content of the instrument - the statements were only translated into Indonesian according to WHO procedures to create an instrument that can represent the social and cultural background of adolescents in Indonesia.

Several linguistic aspects were considered to achieve linguistic validity because there are risks with unequal meaning in each statement item displayed when developing cross-cultural instruments (Jang et al., 2020). Such issues may arise from the culture in Indonesia, which is different from other countries. For example, family members are reported to repeatedly put pressure on creating a safe environment for patients with mental health problems (Mubin et al. 2023). Consideration of cultural relevance is expected to increase adolescents' understanding and ability to answer the instrument. The respondents took approximately 15 minutes to complete the questionnaire and stated that the questions were easy to understand and could be answered by themselves.

Validity and reliability are required for research methodologies. Validity is the extent to which an instrument can be measured accurately and precisely. A valid measure can produce estimates of the construct being measured. This validity can be tested by calculating the corrected total-item correlation score, which determines the correlation between a particular item and all other items. An item is declared valid if the $r_{count} \geq$ is 0.256 for a confidence level of 95% (Khilmi et al., 2022) and if the Corrected item-total correlation is > 0.3 (Raharjanti et al., 2022; Suhartini et al., 2022).

The results of the validity test of the 29 statements (Model 1) showed that 1 of 7 statements is invalid (number 6). The statement assesses the stereotype subscale. Stereotypes are a form of stigma that will pose a threat to a person's self-concept, which can reduce their level of motivation, performance, and self-concept (Desombre, Jury, Bagès, Brasselet, & Desombre, 2019; Voisin, Brick, Vallée, & Pascual, 2019). A study found that age and gender can influence the stereotypical qualities of self-concept

(Klaczynski, Felmban, & Kole, 2020). However, the level of heterogeneity will influence the research results. Factors related to adolescence, such as age and thought or the unequal distribution of demographic characteristics gender, can lead to invalid statements on the stereotype subscale.

The researchers did not make any modifications and retested the invalid statement. The invalid item can be removed if it does not fulfill the correlation value (Boateng, Neilands, & Frongillo, 2018). Therefore, the researchers deleted the 1 invalid item in the stereotype subscale component. The final result of the validity test on 28 statements seen in Model 2 of Table 3 shows that all statements have a value of r ≥ 0.2564. Thus, the instrument with 28 statements (Model 2) is valid for measuring internalized stigma in adolescent drug abusers.

Aside from validity, a good instrument should also be reliable. Reliability measures the consistency of the result with statements or questions. A test is reliable if measurements conducted under the same conditions can give the same results. This reliability test refers to the internal consistency across all parts of the instrument. This consistency analysis is measured through Cronbach's Alpha, as it describes the correlation or degree of covariance in the questionnaire. For example, to what extent the items of a statement are related. The instrument is classified as reliable if it has a value of Cronbach Alpha ≥ 0.700 (Taherdoost, 2018; Tsang et al., 2017).

The Cronbach Alpha value of Model 1 was 0.892 (r ≥ 0.700), and Model 2 was 0.895 (r ≥ 0.700), indicating reliable results. It is consistent with the results of tests on previous instruments with high Cronbach Alpha values, even though they were conducted on different populations and cultural characteristics. Based on the Cronbach Alpha results, the ISMI instrument: Substance Abuse Version is reliable in measuring the level of internalized stigma in adolescent drug abusers in Indonesia.

This valid and reliable instrument can be used for initial screening and periodic evaluation of the level of internalized stigma of drug abusers in adolescents so that caregivers can provide interventions appropriate for the problems experienced. The limitation of this study is the low number and uneven distribution of the demographic characteristics of the respondents. Although the respondents in this study came from various regions, most were male and unmarried. These characteristics can affect the results of the instrument validity test.

CONCLUSION AND RECOMMENDATION

The Internalized Stigma Mental Illness: Substance Abuse instrument can validate and reliably measure internalized stigma in adolescent drug abusers. This instrument can be used to assess and evaluate adolescents who use drugs in clinical, rehabilitation, research, and community settings. Further studies can be conducted on the development of instruments to measure internalized stigma specifically for adolescent drug abusers can be conducted by considering a greater number and wider distribution of demographic characteristics of respondents.

ACKNOWLEDGMENTS

The authors thank Jennifer E. Boyd for giving permission and supplemental content to adapt the Internalized Stigma Mental Illness: Substance Abuse questionnaire. We also thank the Director of Research and Development, who has granted funding to the 2020 International Indexed Publication (Publikasi Terindeks International), Universitas Indonesia.

CONFLICT OF INTEREST

The authors have declared that there is no conflict of interest.

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Jurnal Keperawatan Soedirman – Vol 19, No 2 page 72-77
http://jos.unsoed.ac.id/index.php/jks/index

JURNAL KEPERAWATAN SOEDIRMAN

ORIGINAL ARTICLE

THE HAPPY SPIRITUAL INTERVENTION FOR OVERCOMING INTOLERANCE OF UNCERTAINTY AMONG FAMILIES OF PATIENTS WITH MENTAL DISORDERS

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Article Information
Received: 28 December 2023
Revised: 5 March 2024
Accepted: 31 May 2024

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DOI
10.20884/1.jks.2024.19.2.11032

ABSTRACT

Families of patients with mental disorders frequently experience intolerance of uncertainty due to prolonged treatment, high caregiving burdens, and unpredictable patient behaviors. This study was conducted to investigate the effects of Happy Spiritual Intervention on the intolerance to uncertainty among families of patients with mental disorders. A pre-post quasi-experimental study with a control group was carried out among families of patients undergoing treatment at Dr. Amino Gondohutomo Psychiatric Hospital in Semarang. Simple random sampling was applied to recruit a total of 50 respondents who were aged 18 years or older and had been cohabiting with the patients for more than five months. The intervention group received six 45-minute therapy sessions, while the control group received standard care. This study utilized the Intolerance of Uncertainty Scale as research instrument. Data were collected using Google Forms, and subsequent analysis using a t-test was performed. The results revealed a significant difference in intolerance of uncertainty among families of patients with mental disorders after the intervention in both the intervention and control groups, with an effect size of 3.026 and a p-value of 0.000. This suggests that Happy Spiritual intervention effectively reduces the intolerance of uncertainty among families of patients with mental disorders.

Keywords: *Happy Spiritual intervention; intolerance of uncertainty; family; mental health patients*

ISSN : 1907-6637 **e-ISSN : 2579-9320**

INTRODUCTION

The World Health Organization (WHO) has highlighted a significant increase in mental health issues worldwide since the onset of the COVID-19 pandemic (WHO, 2020). The Director of Mental Health and Substance Abuse Prevention and Control explained that the prevalence of mental health disorders in Indonesia is relatively high, with approximately 1 in 5 individuals; this means that about 20% of the Indonesian population is potentially affected by mental health disorders (Widyawati, 2021). A preliminary study conducted from January to October 2021 at Dr. Amino Gondohutomo Psychiatric Hospital in Semarang, Indonesia, recorded 2,921 patients with mental health disorders, among whom 169 experienced relapses. These relapses were attributed to several factors, including non-compliance with medication and the inability of families to provide adequate care.

Patients with mental health disorders require emotional, social, and financial support for their care, which significantly impacts their families (Mubin *et al.*, 2023). Taking care of a family member with mental disorders entails substantial responsibility and exposes families to various societal issues, such as labelling, stereotyping, isolation, and discrimination (Utama et al., 2020). Moreover, families experience caregiving burdens, emotional strain, financial challenges, and social stigma, contributing to uncertainties within the family unit (Rosyanti & Hadi, 2021).

Uncertainty is a common experience individuals encounter when facing challenges. In his theory on illness-related uncertainty, Mishel defines uncertainty as an individual's response to the inability to determine the meaning of events tied to ambiguity within their situation (Bailey Jr. Donald E., 2021). Accepting uncertainty can lead to a comfortable life response and a happier life overall, fostering a positive outlook toward life's problems, known as the tolerance of certainty. On the other hand, viewing uncertainty may trigger stress and discomfort, resulting in a negative belief towards the illness or intolerance of uncertainty (Rettie & Daniels, 2021).

Intolerance of uncertainty can cause anxiety and depression (Rettie & Daniels, 2021), triggering negative emotions, cognition, and behaviors (Birrell et al., 2011). This reaction implies that individuals with intolerance of uncertainty tend to experience more difficulties when confronting issues as they tend to interpret them negatively and excessively (Rettie & Daniels, 2021).

Several factors contribute to the emergence of intolerance of uncertainty among families caring for patients with mental health disorders. These include confusion about the illness , along with emotional, physical, financial, temporal, and social burdens. Other factors include the complexity and accumulation of medication needs and other resources, as well as inadequate protection against potential physical harm from family members with mental health disorders (Hardiyanto et al., 2020). Families frequently experience emotional uncertainty, leading to anger, fear, anxiety, worry, and other negative emotions; they also face behavioral uncertainties stemming from contradictory situations and cognitive turmoil, which may involve suspicion and stress (Akbari et al., 2018).

Mindfulness interventions have been carried out in previous research to increase positive coping mechanisms to overcome intolerance to uncertainty in the families of patients with mental health disorders (Mulyono and Chen, 2023). However, mindfulness interventions specifically targeting intolerance of uncertainty in families have yet to be developed (Epstein, 2021). The Happy Spiritual intervention, a spiritually-based therapy aimed at helping families cope positively with intolerance of uncertainty, encourages acceptance as a positive coping strategy that enabling families to find happiness in their circumstances (Dwidiyanti & Munif, 2022).

Previous research has explored the impact of Happy Spiritual intervention on emotional regulation. A study involving 46 nursing students using a one-group pretest-posttest without control design revealed a significant difference in emotional control before and after the intervention with a p-value of 0.000 ($p<0.05$) (Dwidiyanti et al., 2022).

The Happy Spiritual intervention focuses on clearing unresolved negative emotions from past events by fostering contentment in believing of divine assistance. It is expected that through Happy Spiritual Therapy, individuals or families caring for violent patients can manage their emotions, experience happiness, and accept whatever happens in their lives (Dwidiyanti & Munif, 2022). This practice is not limited to Muslim individuals but applies to individuals of various religious or spiritual backgrounds. Once individuals engage in Happy Spiritual exercises, they aim to regulate emotions and find happiness regardless of life's circumstances (Dwidiyanti et al., 2019).

The families of patients with mental health disorders experiencing intolerance of uncertainty require nursing interventions that offer crucial steps in managing uncertainty to alleviate negative thoughts during the caregiving process (Haji Assa & Umberger, 2022). Therefore, research is needed to validate whether the Happy Spiritual intervention effectively addresses intolerance of uncertainty in families of patients with mental health disorders.

METHOD

Study Design

This quantitative study utilized a pre-post quasi-experimental design with a control group. Simple random sampling was employed to recruit the respondents, dividing them into the intervention group (subjected to the therapy) and the control group (standard care).

Samples/Participants

The population consisted of families caring for schizophrenic patients undergoing treatment at Dr. Amino Gondohutomo Psychiatric Hospital in Semarang, Indonesia. Simple random sampling was employed to recruit the respondents that met the inclusion criteria, namely Muslim families of schizophrenic patients, males or females aged between 18-45 years old, cooperative, had resided with the patient for at least five months, have followed the patient before and during hospitalization. Where two or more family members qualified, we chose the one spending more time caring for the hospitalized patient (indicated by the family members themselves). The sample size in this study was calculated based on the hypothesis test formula for mean differences used in previous research, resulting in 50 samples. All respondents were recruited and then randomly divided using simple randomization into two groups: the intervention group (n=25) and the control group (n=25).

Instrument

This study utilized the Intolerance of Uncertainty Scale (IUS-12), a standardized and revised version of the prior 27-item IUS scale, as the research instrument (Kretzmann and Gauer, 2020). The standardized IUS aims to measure an individual's negative response to uncertainty, ambiguous situations, and events from the future. It consists of 27 statements rated on a Likert scale of 1-5 and demonstrates excellent validity (α = 0.94) and good reliability (r = 0.74). Validation and reliability testing for this scale have been conducted in Indonesia, with validity scores ranging from 0.304 to 0.789 and a Cronbach's alpha reliability coefficient of 0.921 (Nur Istiqomah et al., 2022).

The IUS-12 is a Likert scale measurement tool with 12 statement items categorized into two formative factors: prospective and inhibitory anxiety. Responses are scored on a scale of 1 to 5, from "not appropriate at all" (1) to "extremely appropriate" (5). Cronbach's alpha reliability testing displayed good scores of 0.764 for prospective anxiety and 0.844 for inhibitory anxiety, resulting in an overall alpha score of 0.867. Furthermore, the scale exhibits item-total correlation through Pearson product-moment correlations ranging between 0.421 and 0.786 (Nur Istiqomah et al., 2022).

Intervention

The Happy Spiritual intervention was administered to the intervention group over six sessions, each lasting 30-45 minutes. This intervention consisted of nine steps: Intention, Self-reflection, Repentance, Acceptance, Prayer, Body Scan, Detoxification, Relaxation, and Surrendering. The intervention was conducted every three days over two weeks. The complete concept of the Happy Spiritual intervention is

described in Figure 1, while the detailed procedure is outlined in Figure 2. In this study, both groups completed a pre-test questionnaire before the Happy Spiritual intervention. The intervention group received the Happy Spiritual intervention, while the control group received standard hospital patient care therapy. The researchers monitored the respondents during the Happy Spiritual therapy via WhatsApp chat and compiled independent intervention monitoring summaries via Google form. Subsequently, the post-test was administered through Google form after the respondents completed the six intervention sessions.

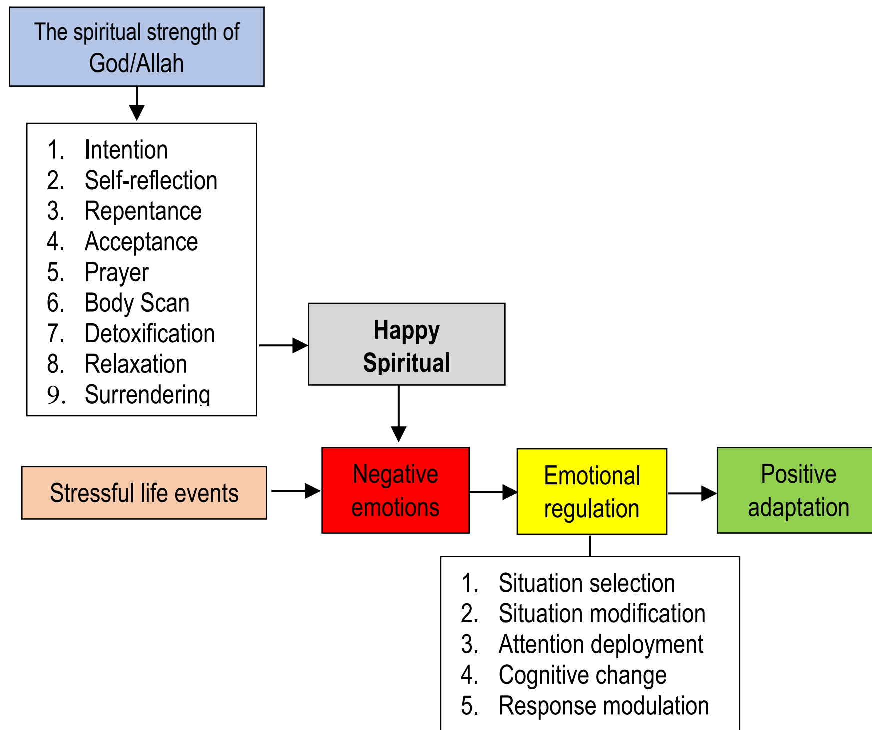

Figure 1. The Concept of Happy Spiritual Intervention (Dwidiyanti & Munif, 2022).

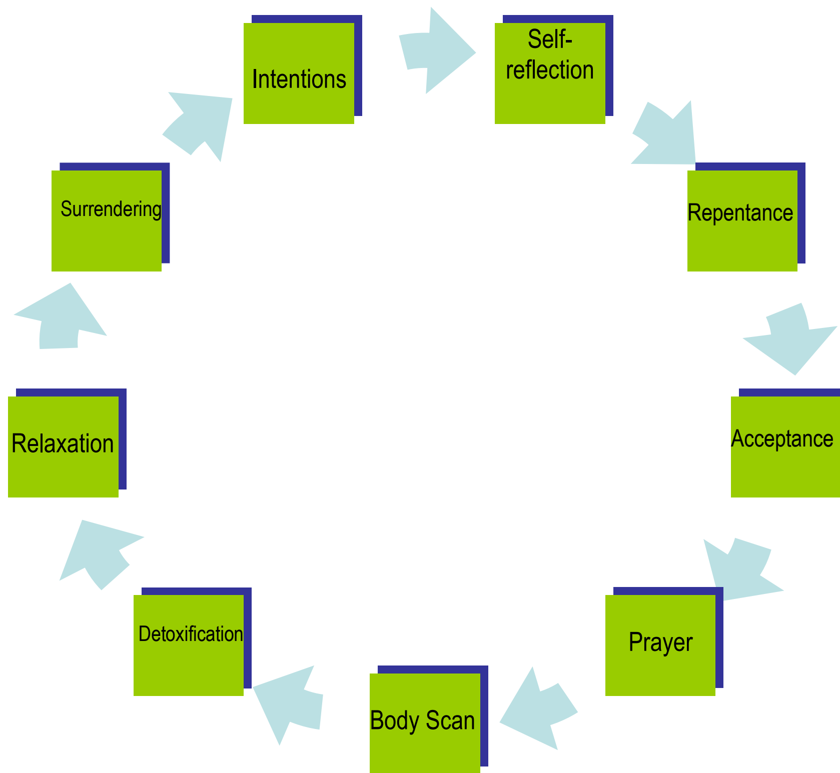

Figure 2. The Stages of Happy Spiritual Intervention (Dwidiyanti & Munif, 2022).

Data Collection
This study was conducted at a psychiatric hospital in Semarang, Indonesia. The intervention group underwent six sessions of Happy Spiritual therapy, each session comprising nine stages, while the control group received standard care. The post-test took place after the completion of the six intervention sessions.

Data Analysis
This study employed univariate and bivariate analyses. Univariate analysis was utilized to assess intolerance of uncertainty among families with the risk of violent behaviors, examining mean, mode, median, and percentage. Data normality was tested using a normality plot with the Shapiro-Wilk test since the sample size was less than or equal to 50; both datasets showed p-value ≤ 0.05 means the data is not normally distributed. The Wilcoxon test was employed to analyze intolerance of uncertainty in the intervention and control group. Meanwhile, the Mann-Whitney test was used to test the effects of the Happy Spiritual intervention on intolerance of uncertainty.

Ethical Consideration
This study obtained ethical approval from the Health Research Ethics Committee of Dr. Amino Gondohutomo Psychiatric Hospital, Central Java Province, with reference number 420/09624 dated June 15, 2022, and funding number 185-68/UN7.D2/PP/V/2023.

RESULTS
The general characteristics of the respondents in both study groups, such as age, gender, employment status, and relationship with the patient, exhibited p-values > 0.05, indicating no significant differences or demonstrating homogeneity. Details of respondent characteristics are outlined in Table 1.

Table 1. Frequency distribution and percentage of respondents' characteristics in the intervention and control groups

Characteristics	Intervention		Control		p-value
	f	%	f	%	
Age	Mean=47.8	SD=9.40	Mean=49.3	SD=9.37	0.930
Gender					
Male	11	44	9	36	0.564
Female	14	56	16	64	
Employment					
Employed	14	56	13	52	0.777
Unemployed	11	44	12	48	
Relation with patient					
Younger brother/sister	1	4	2	8	0.797
Son/daughter	4	16	1	4	
Father	6	24	5	20	
Mother	7	28	10	40	
Wife	4	16	3	12	
Brother/sister	1	4	1	4	
Husband	2	8	3	12	

Notes: SD=Standard Deviation

The difference in intolerance of uncertainty among families of individuals with mental health disorders pre-and post-intervention, in both the intervention and control groups, is evident in Table 2. In the intervention group, a p-value of 0.000. Conversely, within the control group, a p-value of 0.002. These findings highlight a significant variance in intolerance of uncertainty before and after the psychoeducational intervention in both groups.

Table 2. Differences in intolerance of uncertainty among families of patients with mental health disorders before and after the intervention in the intervention and control groups

Group	Pre-test Median (Min±Max)	Post-test Median (Min±Max)	*p*-value
Intervention	71,00 (56±94)	67,00 (54±87)	0.000*
Control	80,00 (63±97)	79,00 (63±98)	0.002*

**Wilcoxon test*

Table 3 shows the difference in intolerance of uncertainty among families of patients with mental health disorders after the intervention between the intervention and control groups. The results indicated a mean difference of 4.44, an effect size of 3.026, and a p-value of 0.000. This finding signifies a significant difference between the intervention and control groups regarding intolerance of uncertainty.

Table 3. Differences in intolerance of uncertainty among families of patients with mental health disorders after the intervention in the intervention and control groups

Notes	Group		Mean Difference	Size Effect	p-value
	Intervention	Control			
	Mean Difference	Mean Difference			
Difference in intolerance of uncertainty among patient families between the intervention and control groups after the intervention	5.48	-1.04	4.44	3.026	0.000

DISCUSSION

These findings align with prior research, illustrating that families with members experiencing mental health issues frequently experience intolerance of uncertainty. Various societal challenges, arise from labelling, stereotypes, isolation, and discrimination (Utama et al., 2020). Additionally, families encounter caregiving burdens, emotional strains, financial stress, and societal stigma, all contributing to this intolerance (Rosyanti & Hadi, 2021).

High levels of intolerance of uncertainty can result in consequences such as anxiety, depression, and emotional responses that trigger negative behaviors (Dai *et al.*, 2021). Moreover, this intolerance often leads families to interpret challenging situations negatively and excessively, making coping more challenging (Rettie & Daniels, 2021). Additionally, the profound impact of intolerance of uncertainty can significantly affect mental health, potentially leading to mental disorders (Massazza et al., 2023). Establishing positive coping mechanisms to address intolerance of uncertainty is crucial, and interventions like Happy Spiritual interventions aim to serve this purpose.

This result suggests that the Happy Spiritual intervention is more effective in reducing intolerance of uncertainty. This finding aligns with prior research where the Happy Spiritual intervention, delivered through the Family Heart Connection (FAMCY) application, proved effective in mitigating intolerance of uncertainty among families dealing with patients exhibiting violent behaviors (Dwidiyanti et al., 2023). The decrease in intolerance of uncertainty can be influenced by several factors, including antecedent uncertainty, which is the stimulus determining and influencing an individual's assessment of uncertainty. These stimuli come from a series of stimuli such as symptom patterns (perceived symptoms of disease), unfamiliar events in healthcare (delivery of healthcare services which are not yet known by the individuals that discomfort to the sick persons), and congruence events (health condition instability). Apart from these stimuli, uncertainty is also influenced by cognitive capacity (an individual's ability to interpret an event) and the structure of the providers, which include education (health education affecting uncertainty level assessment), social support (social groups having similar symptoms or illnesses), and credibility (trust in the quality of healthcare providers) (Smith & Liehr, 2018).

Happy Spiritual intervention guides individuals to achieve moments of awareness, initiating the intention to cleanse negative emotions. By practicing this therapy, individuals are expected to manage their emotions, enhancing cognitive capacity and enabling acceptance and happiness despite life events (Dwidiyanti & Munif, 2022). Families of patients with mental disorders experiencing intolerance of uncertainty require nursing interventions to navigate and reduce the negative impacts resulting from this intolerance (Haji Assa & Umberger, 2022). Managing intolerance of uncertainty through coping strategies, such as risk mitigation, seeking opportunities, positive coping, and adaptation, aims to reduce uncertainty and manage emotions, fostering positive opportunities through adaptive behaviors (Smith & Liehr, 2018).

Previous research indicates significant changes in the health belief model among families of patients with mental disorders after receiving spiritual intervention approaches. These changes occurred in perceptions, benefits, barriers, and self-efficacy perceptions. Families of patients with mental disorders were able to interpret events, believing that everything happening to the patient and the family is a divine destiny; this belief suggests that patients should become more independent than before and trust in the potential for the mental disorder to undergo a healing process, leading to improvement (Effendy, Amin and Mardhiyah, 2023). This study corresponds with the theory that Happy Spiritual intervention focuses on managing emotions arising from challenging or uncomfortable individual experiences. As a spiritual-based therapy, this intervention aims to enable families to address intolerance of uncertainty by fostering acceptance as a positive coping strategy, allowing family caregivers to discover happiness amidst their circumstances (Dwidiyanti & Munif, 2022).

This study has limitations. The researchers provided the interventions to the participants during patient visit hours, leading to time constraints. Due to the limited available time, the researchers, assisted by the facilitators, renegotiated time contracts with the participants.

CONCLUSION AND RECOMMENDATION

The Happy Spiritual intervention has proven effective in addressing intolerance of uncertainty among families of patients with mental disorders. This study suggests that Happy Spiritual therapy could serve as an alternative intervention for families of mental health patients in dealing with the intolerance of uncertainty. Implementing this approach might help families feel more prepared and accepting while caring for family members with mental illness. Future research is recommended to explore the psychological impacts of Happy Spiritual interventions on families of patients with mental disorders. Additionally, future studies should involve a larger sample size for more comprehensive results.

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Wanda, D. et al. (2024)
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http://jos.unsoed.ac.id/index.php/jks/index

ORIGINAL ARTICLE

MOTHERS' EXPERIENCES IN CARING FOR CHILDREN DIAGNOSED WITH COVID-19: A PHENOMENOLOGICAL STUDY

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Article Information
Received: 21 November 2023
Revised: 12 February 2024
Accepted: 14 May 2024

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DOI
10.20884/1.jks.2024.19.2.9891

ABSTRACT

Mothers, as the primary caregivers are most likely affected when children are exposed to the COVID-19 pandemic. A few studies in Eastern countries, particularly in Indonesia, explored how mothers were affected by their children's hospitalization due to COVID-19. Indonesia and most eastern countries applied collectivism, which is essential for togetherness. This study aimed to identify mothers' experiences caring for children diagnosed with COVID-19. A phenomenological approach was used, and the data were collected through in-depth interviews with 15 mothers recruited using a purposive sampling technique. Thematic analysis was performed to analyze the data by compiling mothers' experiences caring for children diagnosed with COVID-19 at home and in hospitals. Five themes were revealed: (1) feeling guilty when the child was confirmed positive for COVID-19, (2) feeling worried about the health of the child but thinking positively and becoming stronger, (3) feeling grateful to be able to do the isolation together with the child, (4) making an effort to help the child become cured of COVID-19 and (5) feeling relieved when their children had relatively mild symptoms during isolation. Mothers faced psychological problems including feeling guilty about their child's condition, but then happy when they were hospitalized and recovering together.

Keywords: *Children; COVID-19; isolation; mother*

ISSN : 1907-6637 **e-ISSN : 2579-9320**

INTRODUCTION

The COVID-19 outbreak has quickly spread to all countries worldwide, causing a rapid increase in confirmed COVID-19-positive cases. Indonesia had the most COVID-19 confirmed cases in Southeast Asia, followed by the Philippines and Myanmar (John Hopskins University & Medicine, 2020; World Health Organization (WHO), 2020). Children diagnosed with COVID-19 might require self-isolation and even intensive care. Of the 171 children treated in Wuhan, China, 1.8% admitted to intensive care (Ludvigsson, 2020). Meanwhile, 20% of children diagnosed with COVID-19 in the United States were hospitalized (Bialek et al., 2020). From March to December 21, 2020, Indonesia has 37,706 confirmed COVID-19 positive cases in children, including 175 deaths. The highest death rate occurred in children aged 10–18 years, i.e. 42 of 159 cases (26%), followed by 36 cases in children aged 29 days–12 months (23%), 36 cases in children aged 1–5 years (23%), 24 cases in children aged 0–28 days (15%) and 21 cases in children aged 6–9 years (13%) (Pudjiadi et al., 2021).

The most likely life aspect affected by the COVID-19 pandemic in a family is the mother's psychological condition. The prevalence of anxiety in mothers who have children aged 0–8 years increased during the COVID-19 pandemic due to the severity of COVID-19 illness if compared to other illnesses (Cameron et al., 2020). The high number of cases and deaths caused by COVID-19 lead fears of the disease, and women were 1.44 times more likely to develop psychological problems than men (Zhu et al., 2020). A study found that the stress response and anxiety included the worry of being infected, encountering contaminated surfaces, and strangers carrying the infection. (Taylor et al., 2020b, 2020a). Emotional stress and social disorders might be worsened by such conditions, leading to maladaptive coping mechanisms during self-isolation (Taylor et al., 2020a). Parents whose

children were sick experienced additional stress because other family members could not visit them (Meesters et al., 2021). Furthermore, if children were sick, they are still highly dependent on their mothers, therefore, this condition impact on the family in general.

Studies related to the experience of mothers caring for their children diagnosed with COVID-19 have been increasing since the pandemic and post-pandemic era (Jones, et al., 2022; Kracht, et al., 2021; Tamo, 2020). These studies could add new insights to determine the appropriate intervention in nursing care to overcome the difficulties experienced by mothers and children during infection and isolation. However, studies focused on the characteristics of Eastern countries, including Indonesia, were limited. Indonesia has a strong principle of togetherness, where being in the isolation room due to COVID-19 was indeed a challenge. Based on this description, this study aimed to explore meanings from the lived experiences of mothers caring for children diagnosed with COVID-19.

METHOD

Study design

The design used in this study was qualitative, using a phenomenological approach. The phenomenological approach focuses on common meanings of lived experiences from several individuals (Creswell & Poth, 2018). We used this method because it was considered the most appropriate for the research questions, which explored the lived experience of mothers who cared for their children who were diagnosed with COVID-19. This study was conducted in Jakarta, Indonesia, a COVID-19 red zone with the highest percentage of infection cases from all over Indonesia. The characteristics of the families in Jakarta varied in terms of religion, culture, and social life. Therefore, the mothers and families evaluated in this study could have several characteristics of mothers who experienced caring for their children diagnosed with COVID-19 throughout the country.

Informants

The participants were selected purposively from mothers who had completed the form to participate in this study. The inclusion criteria were mothers who had children aged 12–59 months with confirmed COVID-19 infection and who were isolated in the hospital, self-isolated at home, or both. The maximum time interval between data collection and recovery was six months. Mothers were physically and mentally healthy, communicating, reading, and writing well in Indonesian. The exclusion criteria were mothers who felt or were inconvenienced with the procedures, those who could not continue the study, and those whose data could not be analyzed.

In total, 18 mothers were interviewed. However, only 15 interviews were transcribed. The recording of three interviews could have been better, so, the transcription could not be completed. The data saturation was reached when the researcher interviewed the 12th mothers. Three more interviews were conducted to ensure there were no added data.

Data collection

This study was conducted when the pandemic situation in 2021 still occurring. The data might be important as a lesson learned from a similar situation that might happen in the future. The data were collected through online semi-structured, in-depth interviews using Zoom Meeting. After reviewing the literature on mothers' experiences caring for sick children, the interview guide was arranged after reviewing. The questions were open-ended to help the authors investigate more profoundly the experiences of each participant. The research team conducted the trial and evaluation of the interviews before the data collection. This process was conducted to test the research instrument and questions in the interview guide.

The second author conducted the interviews. The researchers and participants had yet to learn from each other previously. Twenty-two participants were personally approached through messages and phone calls to introduce themselves as researchers and build trust. The researcher explained the objectives and details of the study and the rights of each participant in the study. The data collection began after 18 participants consented to participate. During the interviews, the researcher and participants were in private places, either at home or work, with no one else accompanying them.

The interviews were conducted online once with each participant using Zoom Meeting for 35–60 min, using the interview guide provided in Table 1. The interviews were recorded in the form of audio-visual media. However, three interviews were not appropriately recorded, resulting in low-quality results and, therefore, could not be used in the analysis process. The researcher made field notes related to the interview process, the expressions of the participants, and non-verbal communication during the interviews. The participants were allowed to answer openly and freely without coercion or time constraints. Furthermore, the researcher conducted three additional interviews to ensure that no new information or data was found.

Table 1. Interview Guide

Questions
1. When was your child first confirmed to be positive for COVID-19?
2. How was your reaction when knowing your child confirmed positive for COVID-19?
3. How was your experience during the treatment of your child?
4. Who did help you while caring for your child?
5. How did you care for your sick child?
6. When was your child declared negative?
7. How was your experience with the health workers who helped during the treatment?

Data analysis

The thematic analysis was used in this study. The researchers followed the seven iterative phases of Colaizzi's method described in Polit and Beck (2022). First, the interview recordings were listened to, and transcription was made word by word. Then, the text was read repeatedly to grasp the overall message's meaning. Second, all significant statements from mothers in the transcripts were compiled and interpreted in the third phase. Fourth, all meanings derived from the transcripts were arranged into categories, sub-themes, and themes. In the fifth and sixth phase, a comprehensive picture of mothers' experiences in caring for their children who confirmed COVID-19 positive was integrated from the themes considering the context of the study. The final phase of Colaizzi's method consisted of participants' confirmation related to the final analysis. No new data was found in this member-checking activity.

Trustworthiness

The strategy used to achieve data validity was to follow the standards of credibility. Credibility was achieved by conducting member checking to verify that all participants

had checked the findings and provided feedback. Data validation was carried out by obtaining consent from the participants for the compiled coding. Furthermore, data collection triangulation was also used through interviews and field notes, which complement each other to form the themes for the findings. Dependability in this study was fulfilled by presenting all the processes transparently. Confirmability was fulfilled systematically by compiling all data and documentation, namely, interview recordings and field notes. Transferability was determined by reaching the maximum variation of participants' characteristics. The maximum variation included involving families with a wide-range of children's aged (between 12–59 months), religion, age of the mother, education level of the mother, occupation of the mother, COVID-19 status of the mother, number of children, age of the child the COVID-19 case was confirmed positive and isolation place.

Ethical consideration

This study was approved by the Ethical Committee Faculty of Nursing Universitas Indonesia (SK-36/UN2.F12D1.2.1/ETIK 2021). The participants signed an electronic form sent via message, which contained the objectives, benefits, and risks of the study.

RESULT

This study was conducted during the pandemic period, which was from October 2020 to November 2021. During that time, the number of paediatric cases of COVID-19 increased and was considered high in Indonesia.

Characteristics of the participants

The total of participants in this study was 15 people. All of them used pseudonyms. The ages of the mothers ranged from 28–44 years. Most of them were Moeslim. The occupations consisted of a dentist (one person), nurses (eight people), housewives (four people), and civil servants (two people). There were senior high school graduates (three people), university graduates (six people), bachelor's degree (three people), and nurses (three people) regarding with the education background. The number of children in one family ranged from 1–4 children. The age of the children who tested positive for COVID-19 ranged from 13–57 months. The confirmed period was from December 2020 to July 2021. The number of participants treated in the hospital and self-isolated at home was ten and five, respectively. Fourteen mothers were confirmed positive during the isolation, and one was confirmed negative for COVID-19.

Five themes to describe the experience of mothers while caring for confirmed positive COVID-19 children were revealed in this study. The themes were: (1) feeling guilty when the child was confirmed positive for COVID-19, (2) feeling worried about the health of the child but thinking positively and becoming stronger, (3) feeling grateful to be able to do the isolation together with the child, (4) making an effort to help the child become cured of COVID-19 and (5) feeling relieved when their children had relatively mild symptoms during the isolation. Table 1 provides examples of coding trees for two themes.

Table 2. Example of Coding Tree

Significant Statement	Coding	Categories	Sub-theme	Theme
"... while taking care of my child, I think the feeling of guilt dominates. I mean it's like because of the parents' negligence the child also becomes positive..." (P01)	Feeling guilty due to parents' negligence	-	Feeling guilty due to parents' negligence	Theme 1. Feeling guilty when the child confirmed positive for COVID-19
"I was like, 'Oh, I feel so guilty, I was the first to get the virus'. I was the one who gave it to my child." (P07)	Feeling guilty due to virus transmission	-	Feeling guilty due to virus transmission	
"Oh my God, the child is still small. Will he be healthy or not. I can't stop thinking. Oh my child is hot like this. The nurse said, 'Ma'am, calm down'. 'Sister, look at my child. What's going on?' I was getting worried." (P06)	Worried because the child had fever and parents did not know what happened	Worried the child's condition became worst	Worried about the child's condition	Theme 2. Feeling worried about the health of the child but think positively and become stronger
"Thinking about it [news that many children died due to COVID]. At that time that was what I was afraid of. The fear of dying is really exist." (P02)	Afraid the child would die as many children died due to COVID	Worried the child would die		
"I try to generate positive thoughts, I was told to take a break not to work, so I took advantage of this condition to have some rest. I try to build positive thoughts." (P05)	Think positive in the condition of having COVID	-	Positive thinking	
"So we as adults must be stronger than him [the child]. I have a feeling that I have to be strong for my child, like that." (P15)	Feel that mothers should be stronger than the child	-	Trying to be a strong mother	

Theme 1. Feeling guilty when the child confirmed positive for COVID-19

Mothers felt guilty (n = 5) when their children were confirmed to be positive for COVID-19. They felt guilty because they were neglected in caring for their children. Mothers who worked in health facilities felt guilty because they carried the disease to their children. This theme was described in Scheme 4.2.

… while caring for my child… I dominantly felt guilty… and when caring for them, I felt guilty… I mean, I felt like it was because of my neglect, my child became positive too. (Jane)

… when I knew it was positive, I felt guilty, like, since the beginning, I felt guilty… I only could cry and blame myself

because I did not obey the government to not go travelling, I still went to visit my parents. (Margareth)

The mothers said that they predominantly felt guilty during their experience of caring for their children. They thought they failed to take care of their children and exposed them to the disease. They regretted and blamed themselves because they did not obey the health protocols made by the government related to the travel ban.

Theme 2. Feeling worried about the children's health but thinking positively and becoming stronger

All participants (n = 15) were worried that children exposed to COVID-19 would have more severe symptoms. The mothers were also concerned about the possibility that their children would die.

First time knowing my child was positive… I was sad, confused, and confused what to do. I was Afraid, afraid it'll get worse… Oh, Allah, this COVID was like a burden, like ashamed to have COVID disease, at that time, I was kind of confused what to do, like that basically mental. (Hana)

… my feeling at that time, I was worried because my child was still a baby, still little, I was afraid especially when knowing there was a new variant with a high rate of mortality, and the death rate in my neighborhood was also high. (Valerie).

Mothers felt sad and confused when knowing their children were exposed to and confirmed positive for COVID-19. They were afraid the disease would get worse and even cause death, as mentioned by participants who were a housewife. They said that being exposed to COVID-19 was a heavy burden on their minds. They mentioned that being exposed to COVID-19 made them ashamed and confused about dealing with it. COVID-19, in their opinion, not only affected them physically but mentally.

During the isolation, all participants (n = 15) mentioned that being exposed to COVID-19 made them feel depressed and stressed. All participants realized that they had to put more effort into fighting stress by building coping skills. They have made several efforts to develop coping skills include praying, dhikr (continuously mentioning God's name), thinking positively, being strong, and avoiding stress.

We will recover as long as we always think positively. (Michelle)

Because we're older, we have to be stronger than him (child)… I had a feeling that, yes I had to be stronger than my child. (Madeleine)

The mothers tried to look strong in front of their children, although they felt sad and worried. Being confirmed as positive for COVID-19 made them stressed. However, as mentioned by the oldest participants in this study, they always managed to remain calm and control their stress.

Theme 3. Feeling grateful for being able to do the isolation together with the child

Mothers confirmed positive (n = 14) Mothers confirmed positive (n = 14) expressed gratitude when their children were also confirmed positive for COVID-19, as the mothers and their children could be hospitalized together in the isolation room. They felt more relieved to do the isolation together because they could monitor and care for their children. Previously, when some mothers confirmed positive, they thought about their children at home.

Yes, I was confused because there was nobody to take care of, I actually also upset, as a parent, how it was our own child, if separated for too long, it will also be sad… so, I, indeed, when knowing my child was positive, I felt happy, I meant happy, so I could take care of my own child, compared to when we're separated, that's it… So, indeed, the hardest blow was when I got separated from my child. (Charlotte)

Mothers expressed that they felt more confused and sadder if their children were negative and separated from them.

"Alhamdulillah [praise to Allah]*, we were (hospitalized) together. My child was the last person in the family who was hospitalized. I felt more relieved when we were together. (Jennifer)*

"…but, Alhamdulillah [praise to Allah]. *I felt happy but sad when my children were diagnosed with COVID-19 positive, because they could be with me. (Sophie)*

The mothers felt grateful that their children were confirmed as positive because they could stay with them and did not have to think about who would care for their children if their results were negative.

Generally, the mothers said that being separated from their children was a heavy burden. Therefore, when their child was confirmed to be positive, they felt happy.

Theme 4. Making an effort to help children become cured of COVID-19

All participants hoped for the most to have their children cured of COVID-19. Many efforts have been made to help the child recover soon and become cured. In addition to giving them medicine regularly, mothers tried to control their nutrient intake to maintain the immunity of their children. Another effort made by the mothers was to maintain the immunity of their children by giving them toys to keep them happy. Mothers did everything to make their children eat more, including cooking their favorite food and keeping them entertained while eating. others order their children's favorite food via online delivery applications. The mothers invited them to play and let them play as they were pleased to keep their children happy. Some participants (n = 5) gave their children headphones to watch videos on YouTube and play games, although they rarely did so previously.

We gave him vitamin-rich foods, tried everything to help him recover, so returned negative soon … We tried to give healthy four perfect five, whatever it takes, there should be carbo, protein, vegetables, fruits; all should be included, and vitamin to meet his needs, all multivitamin provided… Fortunately, he wanted it, banana, avocado he wanted, all he wanted, so I gave him chicken, eggs, sometimes rice because he didn't really want rice, so I tried porridge, he wanted it, it was softer… (Barbara)

… She/he declined to take medicine, if it was me, I made a strategy, so if it was only once a day if had been taken this morning, the medicine, for example, curcuma to be consumed in the morning, it should be once a day for example… I made it not always morning… I invited them to play, anything… a messy house, that's fine, let him play accompanied by me… sometimes, he also watched YouTube. (Madeleine)

Mothers tried to give vitamin-rich foods to help their children recover and become cured soon. They ensured that the nutrition requirements were met. They tried to maintain the immunity of their children by giving them vitamins and additional supplements, such as honey. They also made an effort to prevent their children from boredom during isolation. They coaxed them into taking medicine, such as dividing medicine time into several different times. For example, when the child had two medications, they were given at two different times, one in the morning and the other in the afternoon. They said that providing supplements, maintaining the mood of the children to stay happy and giving medicine on a daily basis could retain children's immunity and cure them of COVID-19 sooner.

Theme 5. Feeling relieved when children had relatively mild symptoms

Some participants (n = 5) stated that their children had no COVID-19 symptoms. Some others (n = 7) reported that their children had fevers and mild coughs. The other children (n = 2) had fevers and rashes on their skin. Another child (n = 1) had a fever and sore eyes. These symptoms healed after 1–3 days.

> *On Monday (July 12, 2021), my child had a fever, and I was suspicious because it was a high fever and a little cold, and, if I'm not mistaken, also cough, but not really, not a cough with phlegm… fever and flu… that time also cold, that's it, fever with cold, the temperature was up to 39.8… the fever, alhamdulillah only two days, Monday and Tuesday, and then Wednesday onwards no more fever alhamdulillah. (Valerie)*

> *My child had no symptoms. He (child) had no symptoms at all… because seeing my child acted normal, so I was just happy… I mean, not happy because he was sick, but thank God, he had no symptoms like that. So, I was not too worried, just normal, I meant sad, sad but happy, the point was happy, I was grateful because indeed there's no complaint. (Lauren)*

Based on their stories, children infected by COVID-19 had relatively mild symptoms in this study. Their mothers said that these symptoms mainly disappeared in 1–3 days. Five children did not show any symptoms since they first confirmed positive for COVID-19 until the isolation was over and returned negative. It relieved the mothers because their children looked healthy and active, despite being infected by COVID-19.

DISCUSSION

Mothers expressed guilt when the children were diagnosed with COVID-19. They felt guilty because they did not obey the health protocol related to the travel ban during the pandemic. All mothers had increased guilt if they prioritised their own needs (Reid, 2020)**.** The negative emotions were feeling ashamed and guilty by criticising themselves upon their actions and their effects on others (Cavalera, 2020).

In this study, mothers were shown to feel worried when their children were exposed to COVID-19. The feeling of worry arose when knowing the child was confirmed to be positive for COVID-19, and the child showed symptoms of illness, such as fever (Shteinbuk et al., 2021). They worried that the fever would not decrease and the disease would worsen, causing death. The information about 'the new variant' of COVID-19 and the high mortality rate due to COVID-19 were several factors that increased the concerns of the mothers about the health condition of their children. During the pandemic, anxiety increased after obtaining information about death cases, increased reports in the media, and an increased number of new cases (Lima et al., 2020). Much false information about the pandemic on social media has contributed to fear (Ren et al., 2020). A study confirmed that mothers experienced psychological stress when their children were exposed to COVID-19, making them experience emotional changes, such as worry, sleeping difficulty, and irritability (Aamer et al., 2020). People infected with COVID-19 and in quarantine felt disturbed by thoughts related to health and death (Horesh & Brown, 2020).

Mothers in this study described that when they were first exposed to COVID-19, they felt confused, sad, afraid, ashamed, worried, panicked, and had various thoughts and feelings that made them stressed and mentally attacked. Although many people worldwide will demonstrate resilience to the loss, stress, and profound fear associated with COVID-19, the virus is likely to exacerbate the existing mental health disorders, contributing to the emergence of new stress-related disorders in many people (Horesh & Brown, 2020). Mothers realized that COVID-19 had made them stressed and tried to build coping mechanisms by praying, dhikr, thinking positively, trying to be strong, and avoiding stress. For religious people, praying is part of the recovery process (Kaakinen et al., 2015). Prayer can comfort in sad situations (Abela et al., 2020). Positive thinking allows a person to better cope with stressful situations, thereby reducing harmful health problems caused by stress (Hassan & Alazzeh, 2020). It was shown in a study that the more people engaged in positive thinking, the lower their stress levels and vice versa (Basith et al., 2020).

Interestingly, mothers felt grateful when they knew their children were diagnosed with COVID-19 so that they could stay together during isolation. Most of the participants in this study were first confirmed to be positive for COVID-19, and tracing was conducted on the whole family, including their children. They were worried that the child was negative because they felt sad about being separated from their children. It was shown in a study that parents were likely to be stressed when they had to separate from their children, being unable to care for them (Dahav & Sjöström-Strand, 2018). One of Indonesian society's philosophy, particularly for Javanese people, it is stated that '*mangan ora mangan, sing penting kumpul*', which means togetherness is important, even though they do not have something to eat (Tandywijaya, 2020). This philosophy relates to the theme that mothers are expected to stay together with their children in any condition. Another similar finding was that separation significantly contributed to stress in the family (Hagstrom, 2017). Working mothers stated that undergoing isolation with their children allowed quality time because they had more time to spend with their children. Mothers with mild symptoms said that experiencing isolation from their children and other family members in the hospital felt like a vacation. It was explained in a study that mothers had more quality time with their children during the pandemic and were able to do more activities together (Sari et al., 2020).

In this study, the efforts made by the mothers to help their children diagnosed with COVID-19 to become cured were described. Building the immune system can be achieved by providing children with a balanced diet, enough sleep, and regular exercise. With these activities, children will tend to develop a more robust immune system to fight disease (National Association of School Psychologists, 2020). During isolation, the mothers tried to medicate their children regularly,

maintaining their nutritional intake in various ways to make the child eat. Mothers also tried to make their children happy during isolation, preventing boredom. Playing is for fun or pleasure (Lai et al., 2018). Young children need to play to release energy and feelings to avoid boredom. Therefore, they do not become fussy (Sari et al., 2020). All of these strategies became possible to happening since most children had relatively mild symptoms of COVID-19.

The findings were related to the experiences of mothers caring for their children diagnosed with COVID-19 during the pandemic. It will be necessary for paediatric nurses to provide infected children with holistic care by giving relevant information and showing empathy concerning the psychological condition of their mothers. If the psychological state of the mothers remained positive, they could provide better care for their children. It was mentioned in some studies that the psychological condition of mothers was critical to the psychological state of children during hospitalization (UNICEF, 2020). The occurrence of COVID-19 in children can increase feelings of affection for family and those closest to them. Finally, information regarding the feelings and expectations of the mothers during COVID-19 treatment was also provided in this study.

The main limitation of this study was that the data were obtained only from mothers whose children had relatively mild symptoms. Therefore, data from mothers whose children had severe COVID-19 symptoms were not gathered. The online data collection might hinder the mothers' expression during the interviews.

CONCLUSION

The psychological conditions of mothers while caring for their children diagnosed with COVID-19 are described here. Specifically, the mothers felt guilty because they neglected and transmitted the disease to their children, and they worried that their children would have severe symptoms and die. When experiencing this feeling, the mothers still tried to build coping skills to prevent them from being stressed. Although they felt sad that their child was exposed to the disease, the mothers felt grateful for undergoing isolation to monitor and care for their child independently. The support the children received from their mothers made them calmer and more spirited to recover. The mothers made many efforts to cure their children of COVID-19. Finally, the mothers were relieved that their children had relatively mild symptoms or even no symptoms at all.

ACKNOWLEDGMENTS

We would like to thank KEMENRISTEK/ BRIN for their funding support under Hibah PDUPT Tahun Anggaran 2021 (Contract No: NKB-072/UN2.RST/HKP.05.00/2021).

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Retnaningsih, D. (2024)
Jurnal Keperawatan Soedirman – Vol 19, No 2 page 85-93
http://jos.unsoed.ac.id/index.php/jks/index

ORIGINAL ARTICLE

PERSPECTIVES OF CLINICAL INSTRUCTORS OF NURSING STUDENT COMPETENCES IN ACUTE AND CRITICAL CARE

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Article Information
Received: 30 October 2022
Revised: 11 February 2023
Accepted: 3 June 2024

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DOI
10.20884/1.jks.2024.19.2.7027

ABSTRACT

Nursing students must be competent in providing acute and critical care. This study investigated the perspectives of clinical instructors on these competencies in challenging nursing environments. Ten clinical instructors from the Regional Hospital of Semarang City, Central Java, Indonesia, participated in this study to observe students during their clinical practice in acute and critical care. Qualitative data was collected between May and December 2020. Face-to-face and virtual in-depth interviews lasted 30 to 40 minutes per informant. Data validity was ensured by member verification, which involved participants reviewing the recorded interviews. The nursing competency perspectives were divided into nine themes: (1) addressing biological, psychological, social, and spiritual needs; (2) involving families in patient care; (3) integrating attitudes, morals, and ethics; (4) developing communication skills; (5) working in multidisciplinary teams and complementary therapies; (6) effectively managing emergencies effectively; (7) recognizing and addressing spiritual aspects; (8) developing critical thinking and technology mastery; and (9) improving quality. This study's findings serve as a valuable reference and guide for refining nursing student competencies in acute and critical care and creating assessment instruments.

Keywords: *Acute and critical care; clinical instructor; nursing competencies; nursing students; perspective*

ISSN : 1907-6637 **e-ISSN : 2579-9320**

INTRODUCTION

Quality health care and health equality can be achieved through competent registered nurses. This competence is built through nursing education (Aldrich & Grajo, 2017; Garneau et al., 2017). Since college, nursing students must meet established competency standards. Such competency standards require registered nurses to integrate and apply their knowledge, skills, assessments, and personal attributes for safe and ethical practice (Pennbrant, 2016). This competence encompasses and integrates biological, psychological, social, cultural, and spiritual modalities into the nurses' daily lives and when caring for patients with their illnesses (Salminen et al., 2021).

Moreover, nurses must apply the concept of holistic nursing care, which includes knowledge, skills, performance, attitudes, and values. The holistic nursing approach is a comprehensive model that involves all aspects of caring, including attending to the patient's mental, spiritual, and social needs. Studies show that most nurses are unfamiliar with the holistic nursing concept but only fulfill the important aspects of the patient's biological needs. Therefore, the holistic nursing concept must be developed and integrated into more appropriate competency standards and assessment instruments (Kang et al., 2021).

As nursing care continues to develop, the main keys to quality and affordable services are health science technological advances and nurses' proficiencies. Moreover, competency measurement as an indicator of student proficiency assessment is a pivotal practice that should be conducted. This systematic evaluation can determine students' characteristics based on their cognitive and psychomotor abilities.

Critical care nursing is a specialized skill developed for nurses serving patients with acute and life-threatening health conditions that require intensive care. The competencies of nursing students for acute and critical care are very significant, but until recently, there have been no instruments

available to measure these competencies (Aldrich & Grajo, 2017; Bernhard et al., 2015; Ebenezer Akore Yeboah et al., 2024). Thus, it has become one of the duties of clinical nursing instructors and college educators to develop competency measurement instruments for nursing students (DeGrande et al., 2018).

The first stage in developing a competency instrument is a literature review and theme setting based on research results (Robert F. Devellis, 2017). This study explores the perspective of clinical instructors on nursing student competencies in acute and critical care nursing. It is important to note that competence in critical care nursing is a multifaceted term with technical and non-technical components. Therefore, in addition to mastering general nursing characteristics, critical nursing students must have a solid grasp of practical abilities (Øvrebø et al., 2022).

METHOD

Study Design

This is a phenomenology qualitative study (Giorgi, 2015) that was conducted from May to December 2020.

Participants

Purposive sampling was used to recruit the informants. The inclusion criteria for the informants were that they were clinical instructors who have worked for three years to guide students in acute and critical care nursing at the Regional Hospital of Semarang City, Central Java, Indonesia, were willing to participate in the research and undergo a tape-recorded interview on their perspectives on the competencies of nursing students in the acute and critical care clinical stage. Ten informants agreed to participate in the study.

Data Collection

This qualitative study employed in-depth interviews for data collection, including face-to-face interviews using live virtual discussions. Data collection was performed through approximately 30- to 40-minute in-depth interviews. The observer compiled field notes during the interview. The sample size was calculated using the data saturation principle, meaning that more participants were recruited until additional information was no longer needed (Nursalam, 2020).

The core interview began with the question, 'What are the nursing competencies that nursing students should possess?' followed by 'Is it acquired in the acute and critical care stages?', 'What forms of support can be provided to fulfill nursing competencies in these phases?', 'Are there obstacles, and how are solutions provided?'

Data Analysis

Each interview was recorded, and all statements related to perspectives were extracted. The thematic analysis method was used to analyze each interview and field records (Castleberry & Nolen, 2018).

Rigor

Transferability

The statements reflected the expectations and criteria of nursing students in the acute and critical care learning stages.

Dependability

The reports were comprehensively, clearly, systematically, and reliably recorded to be easily understood by the readers.

Confirmability

Data validity was conducted by checking and confirming the results by asking the informants to re-read the recorded interview results.

Credibility

Continuous analysis and synthesis produced subthemes. The researchers grouped them into nine themes covering a variety of expectations and competency criteria based on the experiences expressed by the participants.

Ethical Consideration

This study was approved by the Ethics Committee No.118/EC/KEPK/D.Kep. Informed consent was obtained from each participant prior to data collection. The researchers explained the study's objectives and procedures and ensured that participation in this study was voluntary.

RESULT

Ten informants met the criteria for in-depth interviews. Table 1 shows the informants' characteristics. The informants' perspectives of nursing student competencies in the acute and critical care learning stages were categorized into nine themes: (1) competencies related to biological, psychological, social, and spiritual needs; (2) competencies related to patient care with family participation; (3) competencies related to the attitudes, morals, and ethics of nurses; (4) competencies related to communication; (5) competence related to multidisciplinary collaboration in patient care and complementary therapies; (6) competency in assessing and managing emergencies; (7) competence in spiritual aspects and spiritual service; (8) critical thinking skills and mastering technology and information; and (9) quality development.

Table 1. Informants' Characteristics (n = 10)

Description	Number	Percentage
Gender		
Female	3	30
Male	7	70
Age		
< 34	3	30
35-40	4	40
>40 years old	3	30
Length of work as a CI		
<5 years	-	-
≥5 years	10	100
Education		
Bachelor's degree (S1)	3	30
Master's degree (S2)	7	70

1. Competencies Related to Biological, Psychological, Social, and Spiritual Needs

All participants stated that holistic care was integrated into nursing care that addressed the patients' biological, psychological, social, and spiritual needs.

> *"Holistic nursing competency is the nurses' ability or skills in providing care to patients, which include biological, psychological, social, cultural, and spiritual aspects" (P1).*
> *"Holistic nursing competence is the ability to provide complete nursing care, which includes a connection between body, mind, emotions, social/ cultural, and spiritual aspects" (P3).*
> *"All forms of nursing practice aim to help the patient achieve complete recovery in various aspects of their life, including their families and communities" (P4).*
> *"Complete nursing care covers all patient life span stages" (P5).*

"Nursing services comprehensively refer to patient-centered care, so they must cover all aspects." (P6).
"Holistic care covers the patient's whole treatment program. Or when they're in the ICU, they cannot be left alone, including their family, because the family also needs support" (P7).
"Holistic care is providing the best possible biological, psychological, social, and environment for the family when needed" (P10).

2. Competence Related to Patient Care with Family Involvement

The participants communicated that holistic nursing competence includes involving patient's families in patient care.

'[We need to] bring the patient's family to support them and meet their psychosocial needs because the average ICU patient feels isolated' (P2).
"When a family is educated [on the patient's condition], the family becomes cooperative" (P3).
"For unconscious patients, we explain what we plan to do with the family for them to understand the truth" (P4).
"Care that encompasses a kind service to the patient" (P6).
"Give family support in the patient's healing process. We also tell them to be active and not to forget to listen to the patient's wishes." (P7).
"The ability to educate the patient and his family well according to the patient's needs" (P8).
"We bring families into the patient's end-of-life phase" (P9).

3. Competencies Related to The Nurses' Attitudes, Morals, And Ethics

Almost all participants commented that nurses need to acquire a higher level of competency regarding their attitude, morals, and ethics.

Attitude

"The students' attitude towards their patients was more essential in the critical care stage than in other stages" (P1).
"Holistic nursing competence includes qualities such as patience, diligence, politeness, friendliness, calmness, conscientiousness, trustworthiness, responsibility, willingness, enterprising nature, persistence, and high interest [in the patient]" (P2).
"The students with these competencies were more caring and empathic". (P3).
"In the nursing service, nurses always involve the patient's, their families' and their communities' biological, social, cultural, and spiritual aspects in every nursing intervention." (P4)
"The students were confident in their practice and did not hurry every action performed." (P5)

Morals and ethics

Almost all informants stated that ethics is a crucial competency for nursing students.

"Competence is mentioned in nursing theory, research, and ethics." (P1)
"The problem with today's children is their lack of respect for older adults. The solution to this problem is character development." (P2)
"Legal ethics." (P3)
"Talk about legal ethics." (P4)
"Something that is related to competencies is legal ethics." (P5)

4. Competencies Related to Communication

Almost all informants commented that good relationships between patients, nurses, and teams is a crucial nursing competency.

"Competencies in nursing theory, research, caring for patients, and good therapeutic communication is essential." (P1)
"The ability to understand the patient's desires and inabilities in acute and critical care units." (P2)
"Holistic nursing competencies that should be owned by nursing students are effective communication and an understanding of local culture." (P3)
"A good nursing student should be competent in nursing theory, practice, and communication." (P4)
"Good communication." (P5)
"Highlights communication." (P6) "Communicates well." (P7)
"Technical communication skills are the ability to communicate with both the patient and the patient's family." (P8) "Communicating means that the patient has trusted us." (P9)
"To communicate well with the patient and their family." (P10)

5. Competence Related to Multidisciplinary Collaboration in Patient Care and Complementary Therapies

Patient care requires multidisciplinary collaboration

Almost all informants reported that the care team needs to involve individuals from various professions, such as acupuncturists, physiotherapists, and murotal therapists. Interprofessional collaborations such as acupuncture, physical therapies, aromatherapies, and murotal reflect a holistic approach to patient care.

"We helped patients who have been using a ventilator for a long time to consult with an acupuncturist." (P1)
"Every effort has been made, and the last effort we made was working with the acupuncture department."(P3)
"The patient's treatment involved other professions; such as physiotherapists, acupuncturists, and murotal therapists. There are also more therapies in the hospital." (P5)
"He received more than one treatment, such as acupuncture and physiotherapy." (P6)
"We cooperate with other professionals, such as an acupuncturist and physiotherapist." (P10)

Complementary therapy

Almost all participants said that complementary therapy is important. Most participants also highlighted the importance of analytical skills and the application of complementary therapies in the treatment or research context.

"We provide aromatherapy." (P1)
"We provide aromatherapy treatment because our friend has done research on the subject in the ICU. (P2)
"We teach relaxation techniques, or maybe massage techniques." (P3)
"We teach them to eat. If the patient is in pain, we would teach them a relaxation technique or maybe a massage technique." (P4)
"We also have a central mural." (P5)
"Every effort has been made, and the last effort we made was working with the acupuncture department." (P6) "We

advise conscious patients to always seek God every day for their mental well-being; If their mental condition is good, then they can accept their current condition." (P8)
"Analyzing journals can help us apply appropriate complementary therapies." (P8)

6. Competence in Assessing and Managing Emergencies

Almost all informants conveyed the importance of understanding critical patients.

"The first thing he did would be to take care of critical patients." (P1).
"We are being criticized more than we are primarily criticized; the pattern of airway breathing circulation we still put in should be a benchmark." (P2)
"If what we were doing in the ICU was what we had received, the main concern was his first concern." (P3).
"After we have covered lifesaving procedures, we would start attending to other needs." (P4).
"[We need to] focus on lifesaving without excluding other needs too. Patients in the critical acute phase are attended to first, when they're stable, we'll attend to others." (P8).

7. Competence in Spiritual Aspects and Spiritual Services

Almost all informants communicated that competent nurses would acknowledge the spiritual dimension in the care of the patient, and their competence involves an active response to the spiritual needs and beliefs of each patient.

"Normally, spiritual needs are related to what happens with murotal therapy." (P1)
We still have a central mural in the room." (P2)
"We advise conscious patients to always seek God every day for their mental well-being; If their mental condition is good, then they can accept their current condition." (P3)
"If there is no spiritual officer, one of us guides the patient to pray. We pray for the patient to be healed." (P4).
"The spiritual officer comes every day to pray." (P5)
"We would bring a priest for non-muslims."(P6)
"We approach the patient to remind them to pray." (P9)
"When the patient is in a critical and acute state, how are the spiritual needs of the patient and his family fulfilled?" (P10)

8. Competence in Critical Thinking Skills and Mastering Technology and Information

Critical Thinking

All participants agreed that nurses must have knowledge of ideas, concepts, and critical understanding.

"*Mastering theories and practicing their knowledge according to their competencies" (P1).*
"Acute and critical care evaluation is performed quickly to discover life-threatening conditions; after reaching a stable state, a complete review is conducted. Different holistic assessments are performed, since the patient's condition should be explored, not only physically. Furthermore, holistic nursing implementation requires the participation of patients and families to choose what they need. Meanwhile, the acute or crisis stage prioritizes life safety. Thus, nurses play more than one role for patients and their families" (P2).
"Analytical, conceptual, emotional, and spiritual abilities" (P3).
"Critical thinking". (P4)
"Develop critical thinking". (P5)
"I can think critically." (P6)
"We should be able to study in a timely and accurate manner and also evaluate it." (P7)
"Have the ability to analyze cases, make diagnoses, and take actions that can be applied to the patient." (P8)
"He should be able to think quickly." (P9)
"Can make accurate clinical decisions, study situations and take appropriate action." (P10)

Mastering Technology and Information

Almost all informants stated that technology and information knowledge and skills are essential for nursing students.

"Technology and information skills are necessary, since the treatment of patients in critical condition (different from those in ordinary room) require more complex equipment" (P1).
"Holistic nursing student competencies in the acute and critical care stages include sensitivity to the patients' and their families' emotional states." (P2)

9. Quality Development

Almost all informants stated that professional development was also necessary to support the nursing students' competencies.

"Students should be exposed to more learning platforms, in classes, seminars, or training workshops to improve their skills" (P1).
"Competence in theory, research, and ethics of nursing, involve caring for patients and good therapeutic communication" (P2).
"Motivating students and providing more opportunities for learning in class, seminars, and lab practices" (P3).

DISCUSSION

This research discusses the expectations for nursing student competencies. Although only ten participants were eligible to be interviewed, they provided adequate information.

The human body comprises integrated body organs that each perform a specific role in a system and are interdependent on one another. They undergo growing and evolving processes, and must meet basic needs to maintain human life (Kimmel et al., 2024). Research conducted by Rajabpour, Rayyani, and Shahrbabaki (2019) revealed that overall patient satisfaction with nursing care depends on holistic nursing care. Therefore, nurses should pay attention to the patient's physical, mental, and emotional aspects and improve the quality of care given (Rajabpour, Rayyani, and Shahrbabaki 2019).

A human is a living creature with a soul. According to Sigmund Freud, humans' personalities consist of three aspects: the id, the most fundamental personality, followed by the principle of pleasure, which comprises a fundamental desire that requires immediate recharge and without a delay in pleasure. The ego is the evolution of the id. The ego is more organized, and its task is to avoid discontent by regulating instinctual impulses to fit the outer world (Cataldas et al., 2024). The ego works according to the principles of reality and defense mechanisms, while the id is selfish and only aims to satisfy pleasure. The third is the superego, which is the development of the id at a higher level than the ego. The superego is based on ethical and non-ethical aspects, whether things are inappropriate, wrong, or right. The superego principle is used to meet needs and is aligned with values, rules, or norms that apply in society. In humans, the id, ego, and superego are intrinsic (Boyle, 2019).

The human being as a social entity grows and develops in need of others. The nature of a human as a social being allows it to learn from its surrounding environment (Dong & Huang, 2023). A person's interactions with others and their responses can affect how they behave based on the support and attention given to them.

As spiritual beings, humans have a relationship with a power beyond themselves based on their beliefs, a relationship with God, and a belief in life (Eise & Rawat, 2023). Research by Page et al. (2018) indicates that religious engagement supports health and longevity (Robin L. Page et al., 2018). Spirituality is related to the awakening or enlightenment an individual feels in achieving the meaning of life and reaching the purpose of life towards well-being. Spirituality is personal and provides emotional power that drives, directs, and chooses various behaviors (Libster, 2017). These competencies teach students to respect and value each other's integrity. The definition of holistic nursing is respecting the dignity and diversity of students and responding to the patient's social, mental, and spiritual needs. The focus is to provide patient-centered care that embodies Nightingale's life legacy.

In addition to topics related to biological, psychological, social, and spiritual competencies, the other aspects nursing students cover include information on illness, aseptic techniques, respecting individual cultural practices (Safipour et al., 2016), religious beliefs, and spiritual needs (Duff, 2019). Holistic care is a comprehensive model that includes the patient's mental, spiritual, and social needs (Fallis, 2019). According to a study by Benjamin (2020), holistic nursing is a non-invasive intervention that allows patients to relax, improving compliance with the therapeutic regimen. Additionally, a holistic mind-body spiritual nursing care (MBS) model has a robust relationship with spirituality (Kurniawati et al., 2019).

The competence theme relates to patient care with family involvement. A family-based care team's competence also includes allowing families to participate in decision-making related to patient care (Makkonen et al., 2023). This collaboration creates an atmosphere of mutual understanding between the care team and the family, providing the best decisions for the patient. By emphasizing family involvement, the care team demonstrated awareness of the family's important role in supporting the patient. This step not only enriches aspects of medical care but also creates an environment where family information and views are regarded as valuable and important in care planning (van Oort et al., 2024).

Next, for the attitude theme, the areas of study were the nurses' abilities to identify causes, find solutions to obstacles, detect problems by conveying the truth, observe things objectively, reflect, evaluate their thinking processes, realize their strengths, promote others' welfare, and motivate and encourage other nurses in a difficult situation (Ebenezer Akore Yeboah et al., 2024).

Self-efficacy partially mediates the relationship between the clinical learning environment and the nursing students' clinical abilities, confirming the importance of close academic and clinical cooperation. Such close collaboration does more than improve the clinical learning environment. Self-efficacy, clinical ability, and all influential factors must be considered when developing an undergraduate nursing curriculum to optimize nursing students' learning and improve patient care quality (Yu et al., 2021).

Nurses integrate art and science and translate the philosophy, theory, and ethics of humans into valuable tools. It is general knowledge that individuals' activities affect their health and those in the community (Rosa et al., 2019). Therefore, nurses need to provide patient-centered nursing care and adhere to fundamental ethical standards while providing nursing care, anticipating risk factors, preventing medical errors, and ensuring task completion before delegating responsibility to other nurses. Nurses must also uphold good morals and ethics by responsibly submitting and reporting medical errors that may endanger patients without hiding any information (Arab et al., 2022).

Holistic nurses also ensure open communication between nurses, patients, and families. They recognize that a healthy environment comprises living systems that participate and interact, including the physical body, its habitat, and psychological, social, and cultural needs. Transpersonal knowledge helps to respect individuals' culture, values, customs, and decisions related to health (Ho et al., 2022; Rosa et al., 2019). The nurses' abilities were examined in the following areas: developing therapeutic relationships with patients, providing the necessary sensitization for patients and families, communicating with clients according to their age, cultural background, and value system, sharing patients' needs with other healthcare professionals, providing nursing care such as primary tasks and functions, adapting plans and prioritizing their services based on clients' needs, and gathering information (Brooks et al., 2023). Moreover, caregivers must have the proper knowledge, skills, and attitudes and be supported in using these tools to work well in a team (Barton et al., 2018).

Regarding the topic of competency in evaluating and handling emergencies, the holistic approach implies that patient care involves collaboration between several professions rather than the involvement of a single profession or one area of care (Habre et al., 2023; Shimizu & Shimizu, 2023) Opportunities for advancement in patient care or health research can arise from the value of complementary therapy and analytical abilities (Gunnarsdottir et al., 2022). The concept of a holistic approach to health recognizes the correlation between the individual's physical, mental, and spiritual aspects. It reflects the view that health is not just about the absence of disease but also includes balance and well-being in the overall dimension of life. Complementary therapy contributes as a supporter of a holistic approach (Simsek & Alpar, 2022). Therapies such as acupuncture, aromatherapy, or relaxation techniques are often designed to affect physical aspects and mental and spiritual well-being (Chu et al., 2022).

To provide high-quality and timely medical care, it is crucial to have a thorough awareness of urgent patient conditions and the ability to identify and manage emergencies. Thus, health professionals should undergo continuous training and focus on understanding patient problems (Saleh, 2023).

On the theme of spiritual aspects, the nursing team's positive impact from being involved in the patient's spiritual growth includes stress reduction, increased body endurance, improved patient motivation, and others. Thus, involving the spiritual dimension in care is a holistic and profound step to support the patient's overall well-being (Rieger et al., 2023).
Florence Nightingale's philosophy and teaching emphasize that nurses must think critically and use their minds, hearts,

and abilities to create a healing environment while caring for the patient's body, mind, and soul. Since then, nursing has built a holistic paradigm in all fields of thought with a humanistic approach and an inseparable relationship with the environment. Florence's contribution to holistic critical thinking in nursing has been proven to make a difference for nurses in implementing clinical practice (Riegel et al., 2021). Competencies related to knowledge of technology and information included the need for learning objectives, understanding nursing care, technology skills and their implications, the ability to identify obstacles and find solutions to them, detecting problems around them by conveying the truth, the need for learning more, making independent study plans for professional improvement, and seeking answers to questions that arise from nursing practice (Gardulf et al., 2019). Educators emphasized learning and self-leadership skills, but according to them, not all students have the same learning abilities. Learning skills can also strengthen academic performance, impacting and increasing motivation. This competency guides nurses in learning and researching, as well as in how to gain a deeper understanding of social and environmental determinants of health (Almarwani & Alzahrani, 2023). They also challenge students to collect stories on how individuals and communities achieved their health standards and conduct research that was considered to provide qualitative and quantitative evidence. Therefore, this research explored findings on a broader level related to achieving healthy conditions. On the theme of quality development, the areas of study were the nurses' abilities to retain knowledge and skills, identify the need for more knowledge, make self-learning plans for professional improvement, and seek answers to questions that arise from nursing practice (Oguro et al., 2023).

According to the evaluation of nursing students, the nursing educators' abilities are excellent. Educator's abilities were found to be related to student academic performance and satisfaction with a nursing degree (Labrague et al., 2023). It is crucial to note that although nursing educators have good technical skills and appropriate academic training, further research should focus on the possible relationships between instructor and student abilities (Liu et al., 2023). Further international cooperation is also required to align the competency requirements of nursing educators (Salminen et al., 2021)

The professional development of undergraduate nursing students demonstrates the commitment to ongoing self-improvement in nursing. Academic and clinical workers must support professional development. Undergraduate nursing students can develop professionally by reflecting on past nursing practices, responding favorably to criticism, and implementing evidence-based practices (Nilsson et al., 2020; Wu et al., 2016).

Due to the restrictive informant criteria and the willingness of the clinical instructors to participate, the study's main limitation is the small number of participants included. However, bias is expected to be less likely because the chosen participants come from various hospitals.

Nurses can improve their skills by creating a self-learning plan for professional improvement and seeking answers to questions arising from nursing practice. Nkoane (2022) provides information on the learning needs of new nurses. Moreover, understanding specific learning needs, supported by empirical evidence, can enhance insight into how nursing students transition to professional nurses. This understanding, combined with the development of practical skills, psychological adaptation, and social support, can help new nurses provide adequate patient care and achieve succeed in their roles.

CONCLUSION AND RECOMMENDATION

This study emphasizes the importance of the proficiency of nursing students in acute and critical care. The study investigated nine themes: (1) competencies related to biological, psychological, social, and spiritual needs; (2) competencies related to patient care with family involvement; (3) competencies related to attitudes, morals, and ethics of nurses; (4) competencies related to communication; (5) competencies related to collaboration with multidisciplinary in patient care and complementary therapies; (6) competence in assessing and managing emergencies; (7) competence in spiritual aspects and spiritual service; (8) critical thinking skills and mastering technology and information; and (9) quality development. These results suggest creating important evaluation tools and student competencies at the acute care stage.

The study's findings provided suggestions for improvements to the current nursing curriculum to include topics from research, particularly those related to competency in acute and critical care. Clinical educators may also undergo more training workshops to better understand student competency and effectively mentor them throughout the crucial care phases. Moreover, appropriate evaluation tools may also be developed to gauge student proficiency in acute and critical care.

The research emphasizes the importance of mastering nursing students in acute and critical care by identifying nine themes of competence required. In order to enhance the nursing curriculum, it is recommended that these themes be integrated, as well as developing continuing education programs and workshops for clinical educators. In addition, effective evaluation tools need to be developed to measure the progressive development of student competence. Additional training and workshops are also important to ensure clinical instructors have the latest skills. Advanced research in the form of longitudinal studies is required to evaluate the effectiveness of curriculum changes and training. Multidisciplinary collaboration and collaboration with health institutions are also recommended to provide a hands-on learning experience for students. Implementation of these changes involves stages of preparation, development, testing, and evaluation to ensure improved quality of nursing education and health services.

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Sangsuk, N. et al. (2024)
Jurnal Keperawatan Soedirman – Vol 19, No 2 page 94-101
http://jos.unsoed.ac.id/index.php/jks/index

ORIGINAL ARTICLE

STRENGTHENING RESILIENCE: PARENT EXPERIENCES IN DEVELOPING THEIR CHILDREN EXECUTIVE FUNCTION SKILLS

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Article Information
Received: 4 January 2024
Revised: 10 February 2024
Accepted: 1 June 2024

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DOI
10.20884/1.jks.2024.19.2.11094

ABSTRACT

Executive functions (EF) play a key role in child development. However, Thai parents' knowledge and practice skills for their children's EF are still limited. This study aimed to explore the lived experiences of Thai parents in developing their children's EF skills in a semi-rural sociocultural context. The theme pattern was interpreted using the Heideggerian hermeneutic phenomenological approach, and the themes were reflected in Van Manen's fundamental existential themes of the life world. As many as 16 parents were selected using the purposive sampling method. Semi-structured interviews were conducted. The results of this study revealed seven themes: 1) strong resilience, self-confidence, and responsibilities; 2) challenges in handling misbehaving family members and children with poor self-control; 3) living in a natural and peaceful environment; 4) staying away from terrible things; 5) practicing time management; 6) trying to use the mobile phone safely; and 7) organizing belongings and toys. In conclusion, nurses can help parents to increase their children's EF skills by strengthening parents' resilience, self-confidence, and responsibilities; supporting parents and co-parents to deal with terrible situations; time management; and preparing a safe, green, and natural environment for children to develop their EF skills.

Keywords: *Executive function; parents' experience; self-confidence; strengthening resilience*

ISSN : 1907-6637 **e-ISSN : 2579-9320**

INTRODUCTION

Executive functions (EF) play a key role in child development. It is associated with prefrontal cortex functions and goal-directed behaviors (Friedman & Robbins, 2022). The higher the children's executive function, the better their complex skills performance, including working memory, inhibitory control, cognitive flexibility, and planning skills (Laureys et al., 2022). These skills support the children's academic outcomes (Spiegel et al., 2021). Executive functions were also related to health-protective behaviors (Gray-Burrows et al., 2019). On the contrary, executive dysfunction (ED) has been observed in children with behavioral and psychological problems, including attention-deficit hyperactive disorder (ADHD) (Kaga et al., 2020), learning disabilities (Ji et al., 2021), and substance use disorder (Inozemtseva & Mejía Núñez, 2019). Research has also shown that the lower the child's ED, the higher their happiness level (Sung & Choi, 2021).

To date, the prevalence of behavioral and psychological problems among Thai preschool children is high (23.6%). Data revealed that Thai preschool children had lacked inhibition, emotional control, planning and organization, and working memory impairment (Wannapaschaiyong et al., 2023). Suspected delayed development in early childhood was reported at 40.9% (Rithipukdee & Kusol, 2022). The risk of dyslexia was also 15.81% in a study with first-grade students (Lerthattasilp et al., 2022). Furthermore, in northeastern Thailand, 60.7% of students are adolescent drinkers, and 20.7% are smokers (Yangyuen et al., 2021).

Maltreatment, such as abuse, neglect, and violence, has a strong relationship with ED among children (Lund et al., 2020). Parental divorce, severe family conflicts, parent and child health problems, and chronic illness of family members were common risk factors for behavioral and emotional problems among Thai preschool children (Teekavanich et al., 2017).

EF skills could be cultivated through scaffold training (Zelazo, 2020) and cognitive training for psychological development

among preschoolers (Scionti et al., 2020). Although early childhood teachers in child care centers in Thailand are trained to develop their abilities using EF guidelines (Poowanna et al., 2022), parents' EF knowledge and practices of parents about EF are still limited. Only 38.73% of parents in northeastern Thailand have promoted EF skills in early childhood children (Arsarthong & Palapol, 2022). This research aimed to explore the experiences of Thai parents in developing their children's executive function skills in a semi-rural sociocultural context and to explore the lived experiences of parents to understand their unique knowledge of EF.

METHOD

Study design

This qualitative research employed a hermeneutic phenomenological approach (Polit & Beck, 2021) to gain a deeper understanding of the lived experiences of Thai parents in developing their children's EF. A Heideggerian interpretive phenomenological approach (Suddick et al., 2020) was used to uncover and interpret how individuals understand the common meanings of their experiences in their situational contexts. The phenomena experienced by individual parents were identified through their descriptions of their inner world. Next, the researchers reflected the lived experiences of parents through Van Manen's fundamental lifeworld existential themes (van Manen & van Manen, 2021) comprising lived body (corporeality), lived time (temporality), lived space (spatiality), and lived relation (relationality), as well as lived things (Pool, 2018).

Informants

At the beginning of the study, potential informants received information about the study's processes. The inclusion criteria included the primary caregivers of the children willing to participate and share their experiences. The exclusion criterion was individuals unwilling to participate in the research. After obtaining the agreement to participate, ensuring confidentiality, and obtaining permission to audiotape the interviews and publish the results, we began the data collection process.

Sixteen parents who are the primary caregivers of the children studying at the community childcare center (8 mothers and 8 grandmothers) participated through criteria-based purposive sampling. They resided in a semi-rural sociocultural location in Mahasarakham province, Thailand, and had adequate experience in child care. Heterogeneity was reflected in the background, age, number of children, occupation, and educational level of the participants. The number of participants was decided by the main researcher who determined the level of data saturation during data collection. Saturation was reached when no new themes emerged from the participants and data were repeated (Moser & Korstjens, 2018).

Instrument

A semi-structured interview guide was used to allow participants to freely express their experiences (Cheron et al., 2022).

Data collection

Face-to-face interviews were conducted in a comfortable and trusting room at a community childcare center in the village. The interviews were semi-structured to ensure the interviews were focused (Turner III & Hagstrom-Schmidt, 2022). Individual interviews were conducted between May and August 2023 by the first author. The parents decided on the date, place, and duration of the interviews. The interviews were recorded digitally and lasted between 39 and 68 minutes (mean 48.2 minutes). An interview schedule was developed in the Issan and Thai dialects. The following open-ended questions were asked: "What does the word 'executive functions' make you think?" "Tell me about your experiences in developing your child's executive functions" "What problems have you encountered in your lived experiences that made you feel defeated in the development of your child's executive functions? And how did you and your child manage to overcome these situations?" Additional questions were asked in response to the participants' responses and reactions during the interview, such as, "Tell me more about that, how did you feel?" "What is your perception of that?" "What was it like? And please describe some examples of the events that happened" (Creswell & Creswell, 2018).

Data analysis

In this research, the Heideggerian existential phenomenology as a philosophical framework was employed because it has contributed to nursing research. It allowed the researcher to clarify the meaning of the parents' experiences. The first and second authors were involved in the interview process. The third and fourth authors transcribed the in-depth interviews verbatim from a digital recording. Nonverbal expressions of emotion, such as silence and laughter, were included in the transcription to understand the lived experiences of the parents. All transcriptions were confirmed to be accurate in Thai. The first author read and reread all transcriptions line by line several times to gain an understanding of the overall picture. The meaning units were marked and reviewed to extract codes. Similar codes were grouped into categories. All categories were refined and discussed to reduce bias. Significant themes were interpreted to understand the lived experiences of parents of the studied phenomena. In the last phase, English translations were conducted after all quotes explaining the themes were discovered.

Trustworthiness

The trustworthiness of the data was established using Lincoln and Guba's criteria (Stahl & King, 2020). Credibility was established by checking preliminary findings and interpretations against raw data through member check. The interview transcripts accurately reflect the meaning of the participants. Before the interview started, the participants were informed about the study objectives, and the researchers obtained their informed consent. The dependability of the data was confirmed through a systematic research process that included the context, participants, data collection, and analysis stages. Confirmability was established throughout the study by keeping digital recordings of interviews and interview transcripts as audit trails. The purpose of this study was not to generalize its findings to other populations and only explore the truth in the study area. Transferability was applied in a similar setting and context by a clear method of participant recruitment in the setting and context, explaining the emergent themes with direct verbatim excerpts.

Ethical consideration

Ethical approval for the study was obtained from the research and ethics committee of Mahasarakham University with reference number 139-130/2023.

RESULT

The highest level of education of the eight grandparents who participated was grade 6 of primary school and were housewives and farmers. Meanwhile, the highest level of education for most of the mothers participating was grades 9

and 12 of secondary school. Only a mother graduated with a bachelor's degree. They were housewives, vendors, nurse aids, and babysitters. They had experience raising children in their home. They all had children in the early childhood stage. Some of the participants had children with special needs, such as Down syndrome, substance use, obesity, poor memory, and speech delay.

Table 1. Characteristics of the participants

Child's relationship	Age (years)	Highest level of education	Occupation	Children in responsibility	*Notes*
Mother	30	Grade 9	Housewife	3 years 6 months 14 years	- -
Mother	41	Grade 9	Fried banana vender	4 years 15 years	- Down syndrome
Mother	27	Grade 9	Meat ball vender	4 years	-
Grandmother	51	Grade 6	Farmer	4 years 9 months	-
Grandmother	55	Grade 6	Farmer	3 years 4 months 9 years 1 month	- - -
Grandmother	52	Grade 6	Farmer	2 years 8 months 7 years	- -
Grandmother	52	Grade 6	Farmer	2 years 6 month	-
Mother	28	Grade 9	Nurse aid	3 years 9 month	*Obesity*
Mother	26	Grade 12	Vender	3 years 5 month	-
Grandmother	49	Grade 6	Farmer	5 years 4 years	*Speech delay* *Speech delay*
Grandmother	55	Grade 6	Housewife	2 years 4 month	-
Grandmother	53	Grade 6	Farmer	4 years	-
Mother	24	Grade 9	Online vender	2 years (daughter) 6 years (niece) 11 years 13 years	*Daughter* *Niece* *Nephew* *Nephew (substance use)*
Mother	34	Grade 12	Housewife	6 years 12 years	- -
Grandmother	58	Grade 6	Housewife	2 years 6 month 16 years 11 years	- - -
Mother	40	Bachelor's degree	Babysitter	4 years 7 years 15 years	- - *Poor memory*

This study found seven themes: 1) the parents' strong resilience, self-confidence, and responsibilities; 2) challenges in handling misbehaving family members and children with poor self-control; 3) living in a natural and peaceful environment; 4) staying away from bad things; 5) practicing time management; 6) trying to use the mobile phone safely; and 7) organizing belongings and toys. The data is shown in Table 2.

Table 2. Themes of parents' lived experiences in developing executive function skills for children in the early childhood stage

Lived existential themes	Theme
Lived body	1. The parents' strong resilience, self-confidence, and responsibilities
Lived relation	2. Challenges in handling misbehaving family members and children with poor self-control
Lived space	3. Living in a natural and peaceful environment 4. Staying away from terrible things
Lived time	5. Practice time management
Lived things	6. Trying to use mobile phone safely 7. Organizing belongings and toys

Lived body

Theme 1: The parents' strong resilience, self-confidence, and responsibilities.

The participants addressed their feelings about how they take care of their bodies in the context of developing EF skills for their children. They spoke of their resilience to avoid smoking and drug use, even though some parents were tempted to use substances when they were young due to the problems of their families. They had previous experience in fostering resilience in their children. One of the parents reported:

"Both of my sisters used illegal substances, but I did not. My goal was to be a good daughter only. I felt so sorry for my parents. They were stressed and lost money to save my sisters. The addictive substances were inexpensive and easy to obtain. I will teach my daughter not to do that. I believe that they will not use any addictive substances because they have seen the results already." (P13)

Some parents also had self-confidence in the way they cared for their family and were proud of themselves, as shown in the following statement:

> "*…I feel so proud of myself. I am a single mom who could take care of two boys while my first child has Down syndrome. People in the community said that I am a talented mother.*" *(P2)*

Parents also realized that they were responsible for helping their children develop EF skills. They needed to ensure their children's future success. They taught them to be kind, polite, and diligent in learning. The statements of the participants are as follows:

> *"It's my responsibility to raise them. I love them and will try my best to support them. I will let them try new things to learn and gradually teach them how to be a good and polite person with a nice personality and diligent in learning." (P14)*

Lived relation

Theme 2: Challenges when handling misbehaving family members and children with poor self-control.

The participants expressed their feelings toward misbehaving family members in the context of developing their children's EF skills. They stated that some of their family members were not role models for children due to substance abuse and the use of mobile phones as babysitters. Participants found it challenging to deal with such family members. These experiences were reflected in the following statements:

> *"The father and mother are untrustworthy for child care. They smoke, drink, and do not have enough money to support their children. It is not good. They are not good role models for their children. If the children's grandparents did not support them, how would the children's well-being be?" (P15)*

> "*…Her father left home when she was only two years old. He was jailed for drug abuse and alcohol addiction. Now, her grandparents support her and are her father and mother figures." (P4)*

> *"Their mother (my daughter-in-law) has used a mobile phone as a babysitter since her child was two years old. My nephews had phone addiction, no set mealtimes, stayed up late, and fell asleep while on the phone. That is why they had delayed their speech. I try to practice talking to them and motivating them to practice everyday skills. Their skills are now quite better, but they are still delayed compared to their friends in the childcare center. (P10)*

The participants also shared their experiences with children who are inattentive and lack self-control. They addressed their feelings toward these children about the development of EF skills in the following statements:

> *"She wanted to go to the candy store outside. I did not let her go. She screamed, cried, and threw a tantrum. She insisted that she must go (to the candy store)." (P 5)*

> *"It is hard to control their behavior, especially when we have to get ready for school in the morning. He reluctantly took a bath, dressed up, and had breakfast. In the evening, they were unable to focus on their homework. They could not sit still. They play and jump. I told him to stop jumping and sit for 5 minutes to do his homework." (P6)*

Lived space

Theme 3: Living in a natural and peaceful environment

The participants shared their feelings about the environmental context and how living in a natural and peaceful environment can help children develop their EF skills. These feelings were reflected in the following statements:

> *"I happily practiced (different skills) with my children in the rice fields surrounding my home. They can learn to be a farmer by helping their mom and dad. They can play football, ride bicycles, climb trees, and dig the ground. They play safely in my sight. There is no internet, Wi-Fi, or mobile phone for the children to play with." (P16)*

> *"I teach my child the way of life in the countryside. She learns how to feed the cows and herd them into the pen. She knows that her mom will get money from cattle sales." (P13)*

> *"I play with my girl in my back garden. We pick red sandalwood seeds in the garden for her grandma. She sells these sandalwood seeds. We would walk happily together to look at the cattle, chickens, and crows in the rice field." (P8)*

Theme 4: Stay away from horrible things

The participants expressed their feelings about developing their children's EF skills and how they set boundaries to protect their children from people who smoke, drink, or use drugs. These feelings are described in the following statements:

> *"My neighbor's child smokes electric cigarettes. He is only a grade 5 student. The teacher called his parents to school because a video of him smoking was uploaded to social media. I told my child not to follow him or try to do bad things." (P5)*

> *"Their uncle may use substances. I am not sure. I saw his friends smoking at his house. I told my children to stay away from their uncle. I don't want them to see bad things." (P6)*

> *"Drugs or illegal substances in the community are very scary. I will protect my children (from them). I don't get close to people who like to party with smoking, drinking, and substance use. We just stay at home." (P 14)*

Lived time

Theme 5: Practicing time management

The participants reflected on their lived experience in developing their children's EF skills, specifically time management. Children should learn to manage their time in everyday life. These experiences were explained in the following statements:

> *"I teach her about time. This is the time for dinner, drink milk, bathe, and brush your teeth. I teach her about time management. She can remember when it is time to go to bed; she turns off the light and sleeps on her bed." (P11)*

> *"I teach her to be responsible and how to manage her time. When it is time to wake up, listen to the alarm clock, then wake up and go to the bathroom without crying. I teach her when it's time to have breakfast, to eat by herself, and when it's time to go to school so that she won't be late." (P8)*

"He knows when to stop watching videos on his mobile phone. At 8 o'clock, he returns his mobile phone to his father and goes to bed." (P1)

Lived things

Theme 6: Trying to use mobile phones safely

The participants reflected on their feelings about their lived experiences in developing children's EF skills, specifically with respect to mobile phones. Mobile phones are things that children should try to use safely. The following statements are some of the participant's responses:

"She follows the dance moves of dancers who uploaded their clips to an application on a mobile phone. There is a channel that teaches children how to help parents. I told her that it is good for children to help their parents. I try to teach her what is good or bad when we watch videos on the mobile phone together." (P9)

"She learned how to make ice cream from watching a video on a mobile phone. She put her milk in an ice cream container and then left it to freeze in the refrigerator. She did it herself without help." (P5)

"Her parents would video phone call her every day. Her mother sings children's songs and she dances along with her mother's singing. (P11)

Theme 7: Organizing belongings and toys

The participants reflected on their feelings about developing their children's EF skills in terms of belongings and toys. These feelings are described in the following statements:

"I play with toys with her. After playing, she always followed me to put her toys in a basket. (P7)

"I told her to put her bag back on the shelf, put her clothes in a basket, and put her pencils in a box after using it. So, things would not disappear because she would know where it is." (P8)

"I told her to collect the clothes used to wash, then she would help me put the clothes on the hanger to dry." (P12)

DISCUSSION

Van Manen's fundamental existential themes from the life world: lived body, lived relation, lived time, lived space, and lived things were used to discuss the lived experiences of parents about developing their children's EF skills.

Lived body

The interviews revealed that with respect to their lived body experience, the participants were proud of themselves. They stated that although they come from broken families, have low levels of education, and are poor, they could adapt to any situation while developing their children's EF skills. Individually, they faced many problems in their families. Some single parents stated that they struggled emotionally as they would feel isolated and guilty if they could not face the stigma directly (Chung & Son, 2022). In contrast, self-confident parents could tackle situations effectively. Self-confidence was associated with self-acceptance, where the higher the level of self-acceptance, the higher the level of self-confidence (Pastimo & Muslikah, 2022).

Additionally, participants said that they felt responsible for raising their children. They teach their children with love and support because they want their children to be nice, polite, and not aggressive. Parents and child interactions play a significant role in EF development (Koşkulu-Sancar et al., 2023). Supportive parents result in fewer child behavioral problems (Choi & Becher, 2019). The response of the mother was also negatively associated with behavioral problems in the child. Therefore, strengthening responsiveness and reducing stress among mothers and fathers will improve the well-being of their children (Ward & Lee, 2020).

Lived relation

The participants also shared how it was challenging to handle family members who misbehave, have substance use problems, are negative role models, and they use mobile phones as babysitters while developing their children's EF skills. In toddlerhood, a child's EF skills can be predicted by their parents' EF skills (Ribner et al., 2022). Positive parenting predicted high EF skills in low- and high-income children (Murphy et al., 2022). Children's EF difficulties are correlated with their parents' problematic smartphone use (Yang et al., 2023). In addition, parental substance use, including alcohol and illicit drugs, can influence their children's behavior, academic performance, and goal attainment (Lowthian, 2022).

In this study, the participants also mentioned children who had parents-grandparents co-parenting them. This co-parenting approach reduced conflicts. The more supportive the parents-grandparents co-parenting is, the fewer behavioral problems are seen in the children. Unsupportive co-parenting was more associated with children's problem behaviors (Xu et al., 2023). Furthermore, positive discipline strategies in parenting may help strengthen self-control and self-regulation in children who lack self-control, particularly when they exhibit tantrum behaviors (Sangsuk & Thipchart, 2023).

Lived space

The participants addressed their feelings about the environmental context and how living in a natural and peaceful environment helped children develop their EF skills. The children played and learned in rice fields, gardens, and rural areas. The participants stated that they restricted their children's play space due to safety concerns and the responsibilities that the children were expected to fulfill. Children were usually allowed to play outside within seeing and hearing distance of their parents. A Belgian study finding further supports the parents' perspective. The correlation between early life exposure to residential green space and improved cognitive function in children aged 4-6 years emphasized the importance of the environment in shaping cognitive development. Childhood green space reduces hyperactivity and improves attention and visual memory (Dockx et al., 2022). Therefore, providing opportunities for young children to connect with nature, particularly in educational settings, can benefit the children's cognitive functioning (Vella-Brodrick & Gilowska, 2022).

Additionally, the participants stated that keeping their children away from people who smoke, drink, or use drugs and dangerous situations provided a sense of security. Meanwhile, home visit programs may benefit families affected by substance use disorders. Relationship-based parenting intervention can also help parents with substance use disorders overcome emotional barriers (Lowell et al., 2023).

Lived time

Next, the participants reflected on their feelings about time when developing their children's EF skills. They stated that children should be able to manage their time in daily life.

Working parents should plan their time effectively to balance their work and caring for their young children. During the early stages of child development, timely scheduling practices are more advantageous. Good time management and self-control skills support the children's academic performance. Time management skills can be honed through practice (Trentepohl et al., 2022). It also requires people to organize and prioritize their time based on what is most important to them (De Jesus & Garcia, 2023).

Lived things

The participants stated that children should use their mobile phones safely by monitoring high-quality content when practicing EF skills. In Thailand, less positive parenting and screen use from an earlier age (particularly at 18 months) has been linked to behavioral problems in preschool and school-aged children (Srisinghasongkram et al., 2021). Screen time exceeding 2 hours a day and difficult temperament were the two factors associated with suspected delays in language development in Thai children between the ages of 24 and 60 months (Rithipukdee & Kusol, 2022). Furthermore, lower quality media are linked to global executive dysfunction, including inhibition, emotional control, planning, and organizing. Impaired working memory was also associated with extended viewing of low-quality media content (Wannapaschaiyong et al., 2023).

Therefore, screen time must not replace other activities for a child's health and development, such as peer and family interactions, outdoor physical activities, schoolwork, and sleep. Families should provide a safe, fun, caring, nurturing, and safe environment for their children. The content being watched should be monitored to be age-appropriate, constructive, and instructive (Gupta et al., 2022).

Finally, participants focused on organizing belongings and toys when developing their children's EF skills. Children's actions, such as putting toys or belongings back in their place, keeping them clean, and being tidy at home and school, are linked to a sense of responsibility and awareness of moral rules. Their moral values also result from their relationship with older people and family members (Yalçin, 2021).

The earliest expression of EF skills for children's self-regulation is through their actions and gestures with and through their belongings. At the end of the first year, the children began to conventionally use objects and instruments according to their social function. They learned about the material world when faced with challenges in using that material in everyday life. Children not only perform actions, but also understand their actions and their goals (Rodríguez, 2022). Furthermore, the self-directed interaction that young children have with objects during play plays a crucial role in early-age development (Riede et al., 2023).

The limitations of this research findings may be subject to temporal dynamics. It may not reflect the experiences of parents from urban or more remote rural areas in the country, as their views may be influenced by different socioeconomic conditions, technological advancement, or educational reforms.

CONCLUSION AND RECOMMENDATION

This research may be beneficial to nurses in nursing practice. Nurses play a vital role in strengthening the EF of parents by building their resilience, self-confidence, and sense of responsibility. Providing this support would help families achieve their goals and promote the development of children's EF skills. When providing parenting support, nurses should provide guidance on handling conflicts, properly managing time, and intervening in inappropriate use of the mobile phone. Nurses should also strengthen children's EF skills by increasing their self-control, self-regulation, self-discipline, sense of responsibility, awareness of moral rules, and time management. In addition, children's development of EF should be supported by positive environments, such as safe areas with access to greenery and nature.

ACKNOWLEDGEMENT

The authors express their appreciation to the Faculty of Nursing of Mahasarakham University, Thailand, for funding this research and wish to thank all participants who shared their experiences.

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Septanto, A. N. & Purwaningsih, P. (2024)
Jurnal Keperawatan Soedirman – Vol 19, No 2 page 102-107
http://jos.unsoed.ac.id/index.php/jks/index

ORIGINAL ARTICLE

FACTORS RELATED TO QUALITY OF LIFE AMONG PEOPLE LIVING WITH HIV IN INDONESIA: A CROSS-SECTIONAL STUDY

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Article Information
Received: 15 December 2023
Revised: 16 May 2024
Accepted: 30 June 2024

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DOI
10.20884/1.jks.2024.19.2.10622

ABSTRACT

People living with HIV (PLWH) have a complex problem with their disease including stigma and psychological problems. This research focused on measuring level of self-esteem, perceived human immunodeficiency virus (HIV) stigma, social support, and quality of live (QOL) among PLWH in Surabaya, Indonesia. Comparing part of social support which were by family and by friends would be explained. Our study used a cross-sectional correlation design. Variable self-esteem was measured using State Self-Esteem Scale by Heatherton and perceived HIV stigma by The Berger Scale, the social support was the multidimensional scale of social support by Zimet and WHOQOL-HIV instrument was by WHO. Univariate analyses and multiple regression analyses examine between predictors. The existence of moderate level of perceived HIV stigma was observed (mean: 95.67). There were significantly positive relationships between self-esteem and QOL ($p < .01$; $r = .642$); social support and QOL ($p < .01$; $r = .592$). In contrast, perceived HIV stigma showed a negative correlation with QOL ($p < .05$; $r = -.222$). In self-esteem ($p < .01$), social support by family ($p < .01$), and that by friends ($p < .01$) were shown to be significant predictors of higher QOL level. Self-esteem and support by family and friends were considered possible promoting factor of QOL of PLWH.

Keywords: *HIV; PLWH; Stigma; Indonesia*

ISSN : 1907-6637 **e-ISSN : 2579-9320**

INTRODUCTION

The World Health Organization (WHO) estimated that by the end of 2022, 39.0 million people living with HIV (PLWH) and in 2022, 630,000 people died from HIV-related causes globally around the world. In Indonesia, cumulative people living with HIV and AIDS (PLWHA) till 2022 was estimated that 540,000 people (UNAIDS, 2023), while in end of 2019, Surabaya were approximately 915 new HIV cases where was the highest HIV and AIDS cases compared with any other city in East Java, Indonesia (Khairunisa et al., 2023).

A study in India explained that most PLWHA have low self-esteem, social support, and quality of life (Wani, 2020). mentioned that factors such as insurance and employment status, monthly income, age, being male, and educational level influence the quality of life of PLWHA in Iran (Kalan et al., 2019). In Indonesia, PLWHA are often stigmatized and obtain a low level of support from their family (Sitorus et al., 2023). In Surabaya, PLWH mostly felt fear of death, feeling of guilt, and feeling no future (Citra et al., 2023).

Psychological factors could be influenced all of aspects of QOL among PLWH. The factors are needed to increase level of QOL. High level of QOL may be indicated high psychological health among PLWH. Nurses had a crucial role to identify level of QOL among PLWH at hospital or community. Knowing the factors and how the factors related to QOL among PLWH would be described in this research. On clinical field, the results of the research could be evidence based to improve the intervention increasing QOL among PLWH.

METHOD

Study design

This study employed a cross-sectional correlation design and descriptive analytics at a non-governmental organization

related to HIV and AIDS and a hospital in Surabaya in September 2018.

Setting and samples
The researcher investigated the total respondents needed using G*Power 3.1.9.2. software. The study planned to use multiple linier regression and bivariate analyses. Based on a medium effect size 0.15, α (alpha) error probability < 0.05, Power (1-β error probability) 0.80, and the number of predictors = 10, The total number of respondents needed in this study was 118 respondents with purposive sampling.

The inclusion criteria in this study were PLWH aged 18 years or older, fluent in Indonesian, and willing to give their informed consent. Exclusion criteria was participants who were on AIDS-infected.

Data collection
The demographic characteristics recorded in this study include age, gender, marital status, highest educational level, employment, length of HIV diagnosis, and severity level (stage 1 or 2). The self-esteem variable was measured using the State Self-Esteem Scale by Heatherton (Heatherton & Polivy, 1991) which consists of 20 items that measure positive and negative feelings about oneself. Higher scores indicate higher self-esteem. Next, the Berger Scale, consisting of 40 items, was used to measure the perceived HIV stigma variable (Berger et al., 2001). The scale was translated into Bahasa Indonesia (Nurdin, 2013) and a high score indicates greater stigma. Meanwhile, the Indonesian version of the multidimensional scale of social support (Zimet eet al., 1988) was used to measure the social support variable. This scale comprises 12 questions, with four items, each addressing social support from family, friends, and special persons. Higher scores indicate higher social support. The WHOQOL-HIV instrument (WHO, 2002) is specific to HIV and AIDS conditions. The instrument contains 31 items and has six domains: physical, psychological, level of independence, social relationship, environment, and spiritual/religious/personal beliefs.

Data analysis
Data analyses in this research were conducted using the Statistical Package for Social Sciences (SPSS) version 24.0.0.0 software and Excel spreadsheets. A mean or a percentage was calculated for the respondents' demographic status. Univariate analyses (descriptive analysis) were used to measure the level of each variable (self-esteem, perceived HIV stigma, social support, and QOL), and multivariate analyses (non-parametric test) were employed to examine overall perceived HIV stigma, self-esteem, social support, and QOL based on demographic characteristics. Additionally, Pearson correlation coefficients were used to predict the relationship between variables. The last analysis used multiple linear regression to find predictors influencing the level of QOL among PLWH.

Ethical considerations
The research was approved by the Epidemiologic Study and Ethics Committee of Airlangga University Hospital, Indonesia (No:123/KEH/2017). The participants provided their written, informed consent, and no identifying information (name, address, telephone number) was collected.

RESULT
The average age of the respondents was 36.03 years old and most graduated from high school (66 participants or 55.9%) (Table 1).

Table 1. Demographic data and HIV-related information (n = 118)

Variable	n (%)
Age (years)	36.03 ± 7.90
≤ 35	66 (55.9)
≥ 36	52 (44.1)
Gender	
Male	81 (68.6)
Female	37 (31.4)
Marital status	
Single	54 (45.8)
Married with stable partner	46 (39.0)
Divorced	18 (15.3)
Highest education level	
Primary school	11 (9.3)
Middle school	23 (19.5)
High school	66 (55.9)
College or University	18 (15.3)
Employment	
Unemployed	16 (13.6)
Employed	102 (86.4)
Length of living with HIV (months)	
≤ 48	76 (63.9)
≥ 49	42 (36.1)
Severity level	
Stage 1	114 (96.6)
Stage 2	4 (3.4)

The mean score for the self-esteem variable was 68.11 (the maximum possible score was 100). The perceived HIV stigma variable obtained a mean score of 95.67, with the maximum possible score being 160 (Table 2).

Table 2. Level of self-esteem, perceived HIV stigma, social support and QOL

Variable	Range	Minimum	Maximum	Mean	Std. Dev.
Self-esteem	20-100	42	96	68.11	9.89
Perceived HIV stigma	40- 160	51	148	95.67	17.20
Social Support	12 – 84	30	84	59.47	12.99
QOL	31- 155	69	154	103.05	16.47

The results revealed that age, employment status, severity level, gender, and marital status did not influence self-esteem, perceived HIV stigma, social support, and QOL among PLWH. Moreover, respondents with college degrees had significantly higher mean self-esteem (71.78; p<.05), social support (67; p<.01), and QOL (115.83; p<.01) than respondents with primary school, middle school, or high school education. The results also showed that perceived HIV stigma is not associated with last education (Table 3).

Table 3. Self-esteem, perceived HIV stigma, social support, and QOL by highest education level

Variable	Total	Primary school	Middle school	High school	College	P value
	Mean (Std. Dev)	Mean (Std. Dev)	Mean (Std. Dev)	Mean (Std. Dev)	Mean (Std. Dev)	
Self-Esteem	68.11 (9.89)	64.82 (4.89)	63.91 (9.45)	69.12 (9.87)	71.78 (11.04)	0.018*
Perceived HIV Stigma	95.67 (17.2)	95.36 (12.87)	97.74 (18.50)	95.26 (18.61)	94.72 (12.79)	0.671
Social Support	59.47 (12.99)	41.73 (4.69)	52.74 (13.12)	62.71 (11.33)	67 (8.32)	0.000**
Quality of Life	103.05 (16.47)	89.64 (7.82)	97.96 (13.22)	103.58 (16.22)	115.83 (16.5)	0.000**

p < 0.05 p < 0.01 **non-parametric test: Kruskall-Wallis*

The respondents who have lived with HIV for less than 48 months had significantly higher mean social support (62.48; p<.01) and QOL (105.09; p<.05) than those who have lived with HIV for more than 49 months (Table 4).

Table 4. Self-esteem, perceived HIV stigma, social support, and QOL by length of living with HIV (month)

Variable	Total	48 months or less	More than 49 months	P value
	Mean (Std. Dev)	Mean (Std. Dev)	Mean (Std. Dev)	
Self-Esteem	68.11 (9.89)	67.94 (10.22)	68.44 (9.34)	0.810
Perceived HIV Stigma	95.67 (17.2)	97.74 (17.68)	91.78 (15.73)	0.062
Social Support	59.47 (12.99)	62.48 (11.73)	53.80 (13.50)	0.002**
Quality of Life	103.05 (16.47)	105.09 (15.23)	99.22 (18.12)	0.023*

Additionally, there was a significantly relationship between self-esteem (r = 0.642; p < 0.0001), perceived HIV stigma (r = -0.222; p < 0.016), social support (r = 0.592; p < 0.0001), with QOL (Table 5).

Table 5. Correlation between self-esteem, perceived HIV stigma, social support and QOL

Variables	QOL	P value
Self-esteem	0.642	0.0001
Perceived HIV stigma	-0.222	0.016
Social support	0.592	0.0001

Factors related to QOL

The regression analysis started with analyzing the following socio-demographic factors: age, last education, employment status, duration of living with HIV, severity level, gender, and marital status. The results showed that only the highest education factor was found to significantly correlate with the quality of life (p < 0.000) (Table 4), with an R2 of 0.165.

The second step added the sub-domains of perceived HIV stigma, namely age, last education, employment status, duration of living with HIV, severity level, gender, marital status, personalized stigma, disclosure concern, negative self-image, and public attitude about PLWH. The positively significant correlation as a predictor of QOL in PLWH was the highest education level (p < 0.000), and the negatively significant correlation was negative self-image (p < 0.003), with an R2 of 0.228.

Next, the following three factors were investigated: demographic factors, perceived HIV stigma, and self-esteem. The R2 of these three factors was 0.703. The self-esteem factor did not have a sub-domain. The results showed that the highest education level (p < 0.001) and self-esteem (p < 0.000) were positively significant predictors of QOL in PLWH. Meanwhile, the duration of living with HIV (p < 0.049) was negatively significant as a predictor influencing QOL among PLWH. Next, negative self-image was not significant in this step.

In the fourth step, social support by family, friends, and special persons was added to the regression analysis. As predictors of quality of life, self-esteem (p < 0.000), social support from family (p < 0.000), and social support from friends (p < 0.009) were positively significant. The highest education level was not significant, and the R2 for this step was 0.744.

Table 6. Linear regression analysis for QOL

Predictors	Step 1		Step 2		Step 3		Step 4	
	B	*p*-value	B	*p*-value	B	*p*-value	B	*p*-value
Demographic factors								
Age	.033	.700	.020	.812	-.062	.402	-.080	.219
Highest education level	.406	.0001[b]	.391	.0001[b]	.232	.001[b]	.110	.133
Employment	-.027	.750	.007	.935	-.012	.853	-.032	.619
Length of living with HIV	-.089	.305	-.142	.097	-.136	.049[a]	-.074	.265
Severity level	.107	.208	.106	.197	.053	.439	.062	.340
Gender	.015	.865	.047	.568	-.028	.675	-.051	.424
Marital status	-.004	.963	.000	.997	.022	.752	-.045	.487
Perceived HIV stigma								
Personalized stigma			-.095	.521	-.008	.914	.064	.375
Disclosure			.173	.108	.018	.790	.045	.506
Negative self-image			-.251	.003[b]	-.029	.700	.021	.764
Public attitude			.170	.294	.040	.591	.093	.192
Self-esteem					.588	.0001[b]	.777	.0001[b]
Social support								
By family							.909	.0001[b]
By friends							.698	.009[b]
By special person							.070	.488
R^2	.165		.228		.703		.744	
F	22.912		16.938		37.199		47.189	

Note. a. p < .05 b. p < .01
Step 1: Sub-domains of demographic factors related to QOL
Step 2: Sub-domains Demographic factors and perceived HIV stigma (sub-domains) related to QOL
Step 3: Sub-domains Demographic factors, perceived HIV stigma, and self-esteem related to QOL
Step 4: Sub-domains Demographic factors, perceived HIV stigma, self-esteem, and social support related to QOL

DISCUSSION

The factors that might impact to the higher self-esteem was the last education. Higher education can be as high predictor to improve level of self-esteem. The result was linier with research which presented by Setyoadi (Setyoadi et al., 2018). The research explained that level self-esteem among PLWH in Malang, Indonesia had a high level.

Our study observed that the perceived HIV stigma among PLWH is at a moderate level. This finding is important because, to our knowledge, no previous studies have mentioned this in Indonesia. Previous research from Ethiopia explained that the level of perceived HIV stigma among PLWHA in Western Ethiopia was high due to poor social support (Turi et al., 2021). Ataro et al (2020) also mentioned that in Ethiopia, gender is related to perceived HIV stigma (Ataro et al., 2020). Moreover, Li & Sheng (2014) found that in Henan, China, PLWH experienced a moderate level of perceived HIV stigma, where the women had a higher level of disclosure stigma than men (Li & Sheng, 2014). The results reported that women had high-level of disclosure stigma than men. Some previous studies also explained high-level of perceived HIV stigma (Adane et al., 2020; Chekole & Tarekegn, 2021; Subedi et al., 2019).

Next, this study investigated the role of social support. The results revealed that the highest education level and duration of living with HIV were predictors of the background factors that increased the level of social support. Additionally, our study showed a strong correlation between self-esteem and social support. Previous literature has also mentioned the correlation between the highest education level and social support (Shamshad et al., 2023) (Abrefa-Gyan et al., 2016). as well as how the duration of the illness also contributed to the respondents' level of social support (Wani, 2020).

In this study, the respondents' quality of life varied. Studies have shown that the highest education level and duration of living with HIV are associated with quality of life (Karkashadzeet al., 2017). The results in this study indicate that PLWH who have higher education levels obtained a high level of quality of life. This result aligns with a previous study in Iran, which mentioned that educational level influenced the low level of quality of life among PLWHA (Maleki et al., 2020).

Self-esteem and social support have a positively significant relationship with the quality of life of PLWH (Sofro & Hidayanti, 2019). (Evi et al., 2015) also noted that social support, functional status, and general health perception are strong predictors of influence on women living with HIV in an urban area in Indonesia. Social support from family and colleagues or the community also significantly affects the quality of life of PLWH (Safitri, 2020). In India, (Chandrakanth et al, 2017) and (Manhas, 2014). mentioned a similar result where self-esteem positively affects quality of life.

Meanwhile, perceived HIV stigma has no significant relationship with the quality of life of PLWH (Van Der Kooij et al., 2021). In this study, the factors of self-esteem, social support from family, and social support from friends were used to predict the quality of life of PLWH by stepwise regression (step 4). The results show that the paradigm of thinking among PLWH in Indonesia has changed. The researcher assumes that PLWH and family members have built their trust with one another. Previous research also reported that close family and friends could have a great impact and provide fundamental support to people with HIV/AIDS (Arias-Colmenero et al., 2020). In Indonesia, wive was as a great support to husband who have HIV (Agnes et al., 2022).

IMPLICATION AND LIMITATIONS

The limitation of this study was that respondents who were invited to fill in the questionnaire could not come to the location. Therefore, the researcher actively communicated

with them to complete the questionnaire remotely. For clinical implications, this research will provide new knowledge to nurses who work at HIV and AIDS wards at hospitals or community health centers and for non-government organization staff to treat PLWH physically and psychologically to increase their quality of life. phychological intervention such as including family and friends as the best support to increase QOL among PLWH.

CONCLUSION

The moderate level of perceived HIV stigma observed in this study could not be overlooked. There were significant correlations between self-esteem, perceived HIV stigma, social support, and quality of life. Self-esteem, social support from family, and social support from friends can determine the quality of life of PLWH. Future research should focus on planning interventions and effective actions to reduce HIV stigma and increase the self-esteem of PLWH.

ACKNOWLEDGMENTS

We thank all respondents and health officers at Airlangga University Hospital who participated in this study.

AUTHOR CONTRIBUTION

ANS and PUR contributed to writing the manuscript. ANS contributed to the study's design and data analyses. The manuscript was revised by PUR. All authors have no conflict of interest and approved the manuscript.

CONFLICT OF INTEREST

The researcher describes that there is no conflict of interest in this study.

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Triyanto, E. et al. (2024)
Jurnal Keperawatan Soedirman – Vol 19, No 2 page 108-115
http://jos.unsoed.ac.id/index.php/jks/index

ORIGINAL ARTICLE

EFFECT OF VIRTUAL REALITY IN 360 DEGREES VIDEO TO IMPROVE STANDARD PRECAUTIONS COMPLIANCE AMONGST NURSING STUDENTS

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Article Information
Received: 19 December 2023
Revised: 17 April 2024
Accepted: 1 June 2024

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DOI
10.20884/1.jks.2024.19.2.9843

ABSTRACT

Nursing students need effective learning methods to improve their abilities and skills in achieving competency. Virtual care reality in 360° videos is an alternative solution to a real and concrete learning method. This study aims to determine the effect of virtual care reality in 360° (VCR 360°) videos on compliance with standard precautions in nursing professional students. The study used a randomized control trial with the sample of 32 students for each group was obtained through a random sampling technique. This research was conducted at two state universities in Indonesia in 2022 and provided an intervention in the form of a 360° VCR for 17 minutes at least three times in each video containing material on standard precautions. A standard precautions compliance questionnaire was employed to investigate the main variable with a further analysis using paired t-test and independent t-test. The results of the study showed that there was a significant effect of the VCR 360° on increasing standard precautions compliance among students ($p = 0.004$). The research results are expected to be applied in the learning process of nurses in tertiary institutions and other learning topics.

Keywords: *Compliance; virtual care reality; 360° videos; standard precautions*

ISSN : 1907-6637 **e-ISSN : 2579-9320**

INTRODUCTION

COVID-19 brought some adjustment throughout daily lives including education. With the previous measures to combat the transmission with the social distancing, we aligned to a different path of remote education (Shorey et al., 2022). Thus, continuing education after COVID-19 pandemic becomes a constant, challenging endeavor for many nursing education institutions. One of many alternatives is modifying the learning methods. In-person instruction was replaced with virtual remote learning (Agu et al., 2021), and clinical rotations were halted (Leaver et al., 2022). Reportedly, these circumstances have several negative effects, including insufficient planning, a deficiency in learning chances, and

subpar skill development (Kaveh et al., 2022). Another study also highlighted a variety of difficulties that nursing students faced during this time of transition, including difficulties with technology and the classroom (Sulastri et al., 2022).

Furthermore, during the COVID-19 pandemic, students who were pursuing higher education in nursing certainly had needs that needed to be met to gain an authentic learning experience, as well as improve skills relevant to their profession (Ilmy et al., 2020). Another study had unequivocally shown how fresh graduates evaluate their clinical shortcomings; hence, young nurses may believe their situation is more unstable than that of their forebears (Martin et al., 2023). Now that the pandemic is over, post-pandemic education can use adaptive and dynamic learning methods that focus on resilience with the use of new digital technologies that offer a more interactive experience (Ratten, 2023). Therefore, it is very important to develop authentic learning methods and media to improve students' skills in achieving competence as professional nurses. One of the skills that is very crucial for nursing students who are undergoing a nurse professional education program is action *standard precautions*.

Preventive procedures *and precautions* must be implemented strictly in all health service facilities, including emergency rooms, action rooms, triage rooms, observation rooms, and laboratories (Wu et al., 2020). There are several methods used in patient care, both involving invasive and non-invasive procedures. This can pose a risk for nurses to be exposed to various types of germs originating from patients (Hillier, 2020). Every nurse must comply with the action procedure *universal precautions* consistently and precisely every time they perform nursing actions on all patients. The implementation of standard precautions includes washing hands, using personal protective equipment, managing needles and sharps, treating equipment in a sterile manner, and managing waste and cleanliness. Implementation of standard precautions is part of the nurse's efforts to create an environment free from infection and protect themselves and patients from the spread of disease. The application of standard precautions can train and introduce practices that always prioritize safety and infection control in hospitals for all patients. Therefore, an effective learning effort is needed.

Learning methods have a significant impact on the quality of learning in higher education in nursing (Sismulyanto & Putra, 2018). Practice in the laboratory is the main way that can help in the nursing learning process covering cognitive, affective, and psychomotor aspects (Juniarti et al., 2017). The application of the perfect practicum method requires the help of learning media with a real picture and an effective instructional layout (Maduramente et al., 2019). According to Permana et al (2019) good learning media can provide authentic learning experiences that are almost the same as the real environment.

The recommended method for applying clinical nursing skills is the use of Virtual Care Reality (VCR 360°) in the form of 360°-spherical video. VCR 360° is a device that can produce images and objects that look real and can be rotated 360 degrees. This device uses stereo images to create an immersive experience, which makes us feel as if we are in a simulated environment. VCR 360° service offers opportunities for users to interact with patients and clinically virtual resources, and access practice content as needed. Overall, the use of Virtual Reality Simulation (VRS) is a practical way of learning that can visually show the practical experience of providing nursing care in situations that are almost the same as real situations (Permana et al., 2020).

Virtual Reality (VR) is becoming more affordable financially and can be used easily so that students can access it wherever and whenever they want to learn (Permana et al., 2020). VR has the potential to transform health professions education. VR with higher interactivity showed more effectiveness compared with less interactive VR for post intervention knowledge and skill outcomes (Kyaw, 2019). Even so, the use of VCR 360° in the world of nursing higher education in Indonesia is still limited and there is no VCR 360° technology specifically designed for higher education in nursing. Thus, it is important to carry out studies and innovations on the VCR 360° specifically designed for the healthcare sector in Indonesia. The hope, the use of VCR 360° can meet the deficiencies of learning methods, especially in the practice of standard precautions which are more effective, safe, and support direct learning. This study aims to analyze the effect of using virtual reality technology in video 360° on the level of standard precautions compliance (SPC) among nursing students.

METHOD

Study design

We conducted a randomized control trial. The design of this study was to measure the effect of the 360° VCR intervention on SPC in nursing students.

Sample

The population of this study were students at the State University in Purwokerto dan Depok, with as many as 164 respondents. The sampling technique used a random sampling technique through a random draws process. The number of samples in this study was 38 students in the intervention group and 32 students in the control group. The inclusion criteria were students of the Nursing Profession, the Department of Nursing, the Faculty of Health Sciences, Jenderal Soedirman University, and the University of Indonesia. Exclusion criteria were students who did not take part in nursing professional practice at the hospital.

Instrument

This study used a questionnaire for SPC that had been tested by (Valim et al., 2015) consisting of 20 statement items with the answer choices always, often, sometimes, and never. The validity test value is 0.76-0.83 and the reliability value is 0.8. An instrument also explored respondent characteristics are gender, experience as a nurse, experience studying infection control, receiving Hepatitis B vaccine, and report needlestick incidents.

Intervention

VCR 360° intervention was applied to the intervention group for 17 minutes (Permana et al., 2020) at least three times in each video. VCR 360° videos contain material about *standard precautions* consisting of proper and proper hand washing, use of Personal Protective Equipment (PPE), safe injection practices, and handling of potentially contaminated equipment or surfaces in the patient's environment.

Data Collection

The research subjects were divided into two groups, namely the intervention group and the control group. Measurements were made twice, namely before and after the intervention in

both groups. Researchers provide research explanations to prospective respondents. Prospective respondents who are willing to be respondents fill out the consent form. Measurement *post-test* was performed two weeks after the VCR 360º intervention for the internalization phase first (Kusumawardani et al., 2018). The control group was given a VCR 360º after *t*he posttest to pay attention to research ethics. This research was conducted at the Nursing Professional Study Program, Department of Nursing, Faculty of Health Sciences, Jenderal Soedirman University, and the University of Indonesia. This research was conducted for four months.

Data Analysis

Data analysis consisted of univariate and bivariate. Univariate analysis describes the characteristics of students and SPC. The age variable is interpreted in terms of median, minimum, and maximum. Variables of gender, experience as a nurse, studied infection control, received hepatitis B vaccine, and reported incidents of needle sticks were interpreted in terms of frequency and percentage. SPC was interpreted in terms of mean and SD.

Bivariate analysis was used to identify differences in the average standard precaution's compliance in each group and to analyze the effect of the intervention on SPC. Analysis of differences in the average standard precaution's compliance before and after the VCR 360º intervention in each intervention and control group using the pooled t-test. Analysis of the effect of the VCR 360º intervention on SPC using paired t-test. The normality test was carried out first using the Saphiro Wilk test with the results of p>0.05.

Ethical Consideration

This research has been declared to have passed an ethical review from the Ethics Commission of the Faculty of Health Sciences, Jenderal Soedirman University with decision letter number 788/EC/KEPK/VII/2022.

RESULT

In this study, the characteristics of students by age reveal that the median age of the students is 22 years, with an age range between 21 and 31 years. This table reflects the age variation among the sample of 70 students.

Table 1. Characteristics of students based on gender, experience as a nurse, studied infection control, hepatitis B vaccination, and reported incidents of needle sticks (n=70)

Characteristics	f	%
Gender		
1. Man	4	54,7
2. Woman	66	94,3
Experience as a nurse		
1. Once	4	54,7
2. Never	66	94,3
Experience studying infection control		
1. Once	69	98,6
2. Never	1	1,4
Receiving Hepatitis B vaccine		
1. Once	9	12,9
2. Never	61	87,1
Report needlestick incidents		
1. Once	28	40
2. Never	42	60

Table 1 shows that most students are female, namely 66 students (94.3%), 66 students (94.3%) have never been nurses, 69 students (98.6%) have studied infection control, 61 students (87.1%) never receive Hepatitis B vaccine, and 42 students (60%) had never reported needlestick incidents.

Table 2. SPC before and after intervention (n=70)

SPC	Group	Mean	SD
Before	Intervention	64,18	6,035
	Control	64,38	5,729
After	Intervention	65,92	5,440
	Control	64,84	6,284

The average of SPC among students in the intervention group was different before and after the intervention was carried out. The mean SPC before the intervention was 64,18 with a standard deviation of 6,035. [MOU1] The mean SPC after the intervention increased to 65,92 with a standard deviation of 5,440. The average SPC in the control group was not much different between before and after the intervention. The mean of SPC before the intervention was 64.38 with a standard deviation of 5.729. After the intervention, the mean of SPC was not much different, namely 64.84 with a standard deviation of 6.284.

Table 3. Respondents' SPC homogeneity test (n = 70)

Variable	Group	Mean	SD	p - *value**
SPC	Intervention	64,18	6,035	0,893
	Control	64,38	5,729	

**Homogeneous population variance (equivalent) at p value> 0.05*

Based on the results of the homogeneity test, it was found that the variance of SPC between the intervention group and the control group was homogeneous (p > 0.05). After knowing the variance of the two homogeneous groups, an analysis of the differences in respondent's SPC before and after the intervention was carried out in the intervention group and the control group.

Table 4. Analysis of changes in SPC among nursing students before and after the intervention (n = 70)

Variable	Intervention Group					
	Before		After			
	Mean	SD	Mean	SD	Mean Different	*p-value*
SPC	64,18	6,035	65,92	5,440	1,74	0,002
Variable	Control Group					
	Before		After			
	Mean	SD	Mean	SD	Mean Different	p-*value*
SPC	64,38	5,729	64,84	6,284	0,46	0,129

Table 5. Analysis of differences in SPC among students after intervention between the intervention group and the control group (n = 70)

Variable	Group	Mean	SD	p-*value**
Obedience	Intervention	65,92	5,440	0,004
	Control	64,84	6,284	

The analysis results showed a difference in the mean SPC Obedience scores between the intervention group and the control group of 1,08. The results of further statistical tests also obtained significant changes in adherence after the intervention (p-*value* <0.05). The mean of SPC also increased by 0.46 in the control group. The results of further analysis obtained insignificant changes in SPC before and after the intervention in the control group (p-*value*> 0,05).

After analyzing the differences in SPC before and after the intervention in the two groups, then analyzing the differences in SPC after the intervention between the intervention group and the control group using a statistical test *pooled t-test*. The results of the analysis showed that the mean SPC of respondents after the intervention was carried out in the intervention group was 65.92 with a standard deviation of 5.440. The mean SPC in the control group without intervention was 64.84 with a standard deviation of 6.284. The results of the further analysis showed that there were significant differences in SPC after the intervention between the intervention group and the control group (p-*value* < 0,05).

DISCUSSION

The study's findings indicate that the respondents were in their late teens, with an SD of 1.378 and an average age of 22 years. Early adolescence is a developmental stage that marks the beginning of becoming a more responsible adult (Bonnie & Backes, 2019). A person's cognitive capacities are at their peak during the late adolescence stage, making it simpler for them to learn, understand, and think creatively. There is also no deterioration in memory capacity currently (Potter et al., 2013). The level of awareness and adherence to the usage of PPE among dental students at RSGM Unsoed is influenced by adolescence (Dewi et al., 2020).

VCR 360° intervention affects student compliance in the form of student perception changes. VCR 360° intervention is useful for improving new knowledge and skills (Alammary, 2023), so that students can easily understand the basic principles and standard practices of SPC as well as it consistently applies that positive perception will be formed. Positive perception on VCR 360° intervention is shaped by their knowledge, which also serves as a foundation for decision making and impacts on changes in students' perception on standard precautions practice, it is also confirmed in a study by Angeloni et. al (2023) that an improvement in the students score on SPC shows the educational intervention is successful, the improvement may be attributable to the fact that the students are able to absorb and process new information on the intervention. These results indicate that the learning method using a VCR 360° effectively increases student knowledge about *standard precaution.*

The findings indicated that most pupils had read readings on infection prevention. Following the completion of their nursing undergraduate degree, individuals pursue nursing professional education. When they reach the Bachelor of Nursing education level, this indicates that students have been exposed to basic infection control information. The skills course in undergraduate level includes information on fundamental infection control (AIPNI, 2021). The ability of the students to apply the principles and practices of infection control and patient safety is one of the learning successes in this course.

To assist the implementation of high-quality and competent healthcare services, including infection prevention and control initiatives in healthcare facilities, the Ministry of Health of the Republic of Indonesia has established guidelines for infection prevention and control in healthcare facilities. The goal of Infection Prevention and Control (IPC) is to prevent and reduce the frequency of illnesses in patients, employees, visitors, and the neighborhood surrounding healthcare facilities. Standard cautious principles based on transmission, prudent antibiotic use, and safeguards are used to execute IPC. Through advocacy, outreach, technical counseling, training and capacity building of human resources, monitoring, and evaluation, the process of nurturing and supervising IPC is carried out based on Health Minister Regulation No. 27 Concerning Guidelines for Infection Prevention and Control in Health Facilities (Health Minister Regulation, 2017)

Students, who make up one of the resources in question, must get instruction and technical advice about IPC to reduce the incidence of infections linked to healthcare. The work of hospital healthcare professionals and healthcare professionals involved in the delivery of healthcare services in healthcare facilities is to blame for this infection. Every hospital has a policy requiring the implementation of fundamental IPC training for all healthcare professionals, including students working as practitioners there. There was 1 (one) student who had not received basic IPC training when the pretest measurement was carried out, because the student was sick at the beginning of practical implementation. Pretest data was taken before the student was scheduled to take part in the follow-up activities for basic IPC training organized by the Hospital Training Agency.

The hepatitis B vaccine has not been administered to nearly all kids. It is important to make efforts to prevent, control, and treat viral hepatitis since it is an infectious disease and a public health concern. By doing so, the impact on morbidity, mortality, and socioeconomic concerns will be reduced. Through vaccination campaigns, viral hepatitis can be managed. Newborns must receive an active hepatitis B vaccination as soon as possible after birth. Newborns of hepatitis B-positive mothers receive passive hepatitis B vaccine shortly after birth based on Health Minister Regulation No. 53 Concerning Viral Hepatitis Management (Health Minister Regulation, 2015).

Based on the results of basic health research in 2018, the number of hepatitis cases in Indonesia is quite high, both in the adult to adolescent age range (Ministry of Health, 2019). However, currently there are no regulations that require health workers in Indonesia to undergo hepatitis B vaccination before starting work in health care settings.

Many health workers have received complete hepatitis vaccination, although there are still a small number who have an incomplete vaccination history and have never been vaccinated (basic health research, 2018). According to Bastiangga & Hapsari (2019) there are still few health professionals who have protective anti-HB titers against hepatitis B.

Most pupils haven't ever reported experiencing a needle stick. According to Mallapiang et al (2019) a needle stick injury is an accident brought on by being pricked by a needle when receiving an injection, closing the needle, drawing blood, inserting the infusion, or disposing of it and there is a chance that the wound will get contaminated with blood or bodily fluids. The likelihood of infection may be impacted by this. Training in the proper use of needles and established work standards are factors that affect the frequency of needle sticks (Herlinawati et al., 2021).

According to earlier studies, nurses frequently get needle sticks in their fingers while recapping and pay little attention to properly disposing of sharp materials. The ability to increase one's self-awareness in terms of adhering to specified work standards, using PPE, and reporting any work-related incidents is expected of nurses (Sari et al., 2021). According to research findings, the lack of complaints of needle stick events during practice may be attributable to students' improved ability to implement basic IPC when taking the prior level of education and training offered by the hospital.

Students are encouraged to examine an undesired incident when teachers are well informed about them. The work standards established by healthcare institutions act as a manual for attaining practical and time-saving objectives so that they can consistently and safely achieve the required criteria. When performing invasive operations on patients, training can help reduce the likelihood of needle sticking (Herlinawati et al., 2021).

The results showed that the mean compliance of respondents in the intervention group was different before and after the intervention was carried out. The mean compliance score in the intervention group after the intervention also increased by 1.74 compared to before the intervention. The results of further statistical tests also obtained significant changes in respondents' compliance after the intervention (p-*value* <0.05). The mean compliance of respondents in the control group was not much different before and after the intervention. The mean compliance before the intervention was 64.38 with a standard deviation of 5.729. After the intervention, the mean knowledge was not much different, namely 64.84 with a standard deviation of 6.284.

In this study, VR applications are called *Virtual Care Reality* in 360º video (VCR 360º). VCR 360º are real-looking images and objects projecting a three-dimensional (3-D) view that can be rotated 360 degrees and uses a stereo image to give it a real feel. This is what causes the VCR 360º to become a practical learning method capable of providing learning experiences in increasing knowledge (Permana et al., 2019). Notoatmodjo (2018) explains that a person's knowledge occurs after sensing certain objects. Sensing can be through the senses such as the senses of sight, hearing, smell, taste, and touch.

Kang et al (2020) showed the highest scores for the level of knowledge, confidence, and performance after using VR applications with conventional learning procedures compared to the control group (Kang et al., 2020). Another study by Padilha et al., (2019) stated that clinical virtual simulations increase knowledge retention and clinical reasoning and increase student satisfaction in learning. This is due to the VCR 360º technology functions to reconstruct information into a digital visualization combined with the real world so that it becomes easy for students to imagine the information conveyed. In addition, the learning method uses a VCR 360º which makes it easy for anyone to use (Indrawan et al., 2021).

Ashari et al (2021) in his research uses *virtual fieldwork* to show that result *virtual fieldwork* is a form of innovation that can be an alternative in providing learning experiences based on field studies and practicum. In this system, online learning does not limit opportunities to hone skills and experience learning physical geography contextually. This is what can increase student knowledge, even though they experience limitations in the learning process during the pandemic. Other research conducted by Nurdiana, (2020) shows the effectiveness of the development *of reality* as an educational medium can increase public knowledge about the natural disaster of Mount Merapi. This is because this media presents an image that when highlighted using a cellphone camera will produce an effect that combines the real world with the virtual world, so that it can be a choice in increasing public knowledge of natural disasters.

Rambing et al (2017) in their research related to application *Virtual Reality* (VR) based on 360º video on the traditional dances of the Minahasa tribe show the results that VR media can help preserve cultural values and provide information so that it can increase one's knowledge in studying culture in North Sulawesi. This is caused by *the virtual Reality* 360º video based on the Maengket Dance in the form of an interactive application featuring the Maengket Dance with a total of 3 rounds where in each round scene there is an information button about the meaning of the dance movements displayed.

A meta-analysis study reveals the role of VR in student academic achievement, the results of which are known to have a positive impact on improving cognitive abilities, affective and psychomotor skills, satisfaction, self-confidence, and performance time in addition to creating a perception of a real atmosphere and a feeling of being present immediately (*presence*) (Akgün & Atici, 2022; Wu et al., 2020). In nursing studies, the results of this study validate the positive impact on student knowledge as is the case in Jung & Park (2022) who designed a similar study in a group of 30 nursing students on surgical nursing (p=0.001). Compared to the use of traditional methods in nursing learning, the use of VR in practical learning has been extensively researched and has had positive results in increasing student knowledge and skills (Wu et al., 2020). Although several other studies have results that tend to show the same or contradictory results in two different treatment groups (Ezenwa et al., 2022; William et al., 2016) a literature study shows that the use of VR is one of the most effective learning methods in increasing student knowledge (compared to affective and psychomotor abilities) (Shorey et al., 2021). This can be explained by a study that shows that the interest of nursing students in the VR method and the success of their studies is based on the motivation and perceived benefits of using VR (Uymaz & Uymaz, 2022). However, some research also indicates the need for an

assessment of the suitability of the VR method with the skills being taught.

The various studies above show the effectiveness of *Virtual Reality (VR)* as a technology that places images or videos situationally and broadens the viewing power, captures, and analyzes virtual data significantly to increase knowledge. Besides that, *Virtual Reality* can increase compliance because it allows users to interact in cyberspace with an environment that is simulated by a technology from the actual environment and that exists in the imagination. The strength of this study focuses on the effect of virtual care reality in 360º videos (VCR 360º) on compliance with standard precautions in nursing students and the limitation relates to the sample of study which is clearly still insufficient to describe the actual situation.

CONCLUSION AND RECOMMENDATION

The research results show that virtual reality in 360º video can increase nursing students' compliance in implementing universal precautions. The research results are expected to be applied in the learning process of nurses in tertiary institutions. This method integrates the latest information technology in the clinical learning process so that one of the learning competency outcomes for nurse graduates can be achieved. The learning outcomes and competencies referred to are being able to utilize information technology in the process of providing nursing care. Universal precautions are a very crucial basic competency for nurses because if they are ignored, nurses will violate the principles of patient safety in healthcare facilities. Patient safety is one of the nine life-saving patient safety solutions that all health and support workers in health service facilities need to pay attention to. In addition, the VCR 360º method is expected to be applied to other Nurse learning themes.

ACKNOWLEDGMENT

This research was funded by the Association of Indonesian Nurse Education Institutions (AINEC) through the AINEC Research Award 2022 grant scheme. The researchers thanked Jenderal Soedirman University and the University of Indonesia for participating as research respondents.

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Wungu, C. D. K. et al. (2024)
Jurnal Keperawatan Soedirman – Vol 19, No 2 page 116-127
http://jos.unsoed.ac.id/index.php/jks/index

ORIGINAL ARTICLE

RISK FACTOR PROFILE AND ROLE OF CARDIOVASCULAR DISEASE OUTREACH PROGRAM BY EXPERTS IN RURAL COMMUNITIES: A PILOT STUDY IN MAGETAN REGENCY, INDONESIA

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Article Information
Received: 3 January 2024
Revised: 17 April 2024
Accepted: 18 June 2024

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DOI
10.20884/1.jks.2024.19.2.10947

ABSTRACT

Cardiovascular outreach programs and risk factors profiling have been regarded as key strategy in preventing and controlling cardiovascular diseases as the leading global causes of death worldwide, especially when being conducted by a professional. This pilot study aims to evaluate the effectiveness of a cardiovascular outreach program in Plaosan District, Magetan Regency, to improve knowledge and influence changes in the community's behavior related to cardiovascular risk factors. This study was conducted by providing educational interventions and profiling cardiovascular risk factors on 90 adults using consecutive sampling method. Health education was performed by experts and evaluated by pre-post tests before and after the material delivery. Statistical analysis was used to assess the relationship of risk factors that can contribute to cardiovascular disease. This study showed a significant increase in the participants' knowledge score after the intervention ($p = 0.007$). There were several risk factors for cardiovascular disease in the participants, with the highest risk prevalence being diabetes mellitus (33.33%). Six participants (6.67%) had abnormal electrocardiography results. In conclusion, our study showed a high prevalence of cardiovascular risk factors in rural communities and the importance of cardiovascular outreach programs by experts to improve the understanding of cardiovascular disease in a specific community.

Keywords: *Cardiovascular disease; risk factors; rural communities; socialization*

ISSN : 1907-6637 **e-ISSN : 2579-9320**

INTRODUCTION

Cardiovascular diseases are the global leading cause of death, taking an estimated 17.9 million lives each year, representing 32% of all global deaths. More than three-quarters of CVD deaths occur in low- and middle-income nations (World Health Organization, 2021). Among these countries, Indonesia is the world's fourth most populous country, and it has undergone a rapid epidemiological change in terms of its current and projected illness burden due to improvements in the country's economic development. While the existing burden of communicable diseases is a serious problem in Indonesia, the burden of non-communicable diseases has emerged as a major public health concern (Hussain et al., 2016). Cardiovascular diseases (CVD) accounts for almost one-third of all deaths in Indonesia, with stroke and coronary heart diseases (CHD) being the major causes of death (The Institute for Health Metrics and Evaluation, 2019). The mortality rate of cardiovascular diseases in Indonesia is even the third highest in ASEAN, after Laos and the Philippines (Indonesian Ministry of Health, 2021). Heart diseases also absorb the most budget for this country's health insurance, with 11.5 million cases and a budget of more than Rp. 8.2 trillion or around $488,502 USD (Indonesian Ministry of Health, 2022). Moreover, cardiovascular diseases can also reduce the quality of life due to depression, physical limitations, and poorer physical functioning and general health (Bahall et al., 2020). Therefore, Indonesia became the country with the globe's second-largest decrease in quality of life due to cardiovascular diseases in 2018 (Uli et al., 2020).

Primary care plays an important role in preventing and treating cardiovascular diseases. The Indonesian Ministry of Health calls for strengthening primary care to address the problem of cardiovascular diseases in Indonesia through population education, primary prevention, secondary prevention, and the capacity and capability improvemnet of primary care (Indonesian Ministry of Health, 2022). Primary care may mitigate the negative health effects of economic disparity on health and mortality, particularly in areas with the largest income inequality. However, there are significant inequalities between rural and urban communities regarding health access and utilization (Basu, 2022). These can cause a higher risk and mortality of cardiovascular diseases in rural areas compared to urban areas. In other countries, such as the United States, the prevalence of cardiovascular disease is also 40% higher in rural compared to urban areas, a gap that has grown over the past decade (Harrington et al., 2020).

Magetan Regency is a rural district in Indonesia, located on the slopes of Mount Lawu and near the border between East Java and Central Java. Data from the Magetan Regency Health Office in 2022 found that in just four months, the number of people with hypertension in Magetan reached 211,762. According to the 2020 data, the achievement of health services in Magetan Regency for people with hypertension was just 56%, which was much lower than the target attainment. The low public awareness and the high incidence of cardiovascular diseases in the partner area can reduce the community's productivity (Health Department of Magetan Regency, 2021b, 2021a).

Various lifestyle-related factors trigger the emergence of cardiovascular diseases, including smoking, diabetes mellitus, obesity, and hypertension (Messner & Bernhard, 2014; Wahyuni et al., 2022). When compared to urban areas, rural areas have a much higher prevalence of uncontrolled traditional cardiovascular risk factors. Rural populations are much older than urban and suburban populations. They also have a higher prevalence of diabetes, obesity, and hypertension (Harrington et al., 2020). However, the burden of these risk factors in rural areas in Indonesia remains unknown. Furthermore, health promotion to improve community understanding and socialization programs related to the risk of acquiring cardiovascular disease in rural communities must be promoted and evaluated. A previous study has found that comprehensive programs of cardiovascular disease risk reduction delivered by nurse practitioner/community health worker (NP/CHW) teams were more effective in improving lipids, blood pressure, glycated hemoglobin (HbA1c), and patients' perceptions of the quality of their chronic illness care in urban community health centers compared to enhanced usual care (EUC) (Allen et al., 2011). Several clinics in several countries have also adopted the cardiovascular outreach program principle by enabling cardiologist to counsel to the communities (Columbia University, 2024; Mayo Foundation for Medical Education and Research (MFMER), 2024). A cardiovascular outreach program by a cardiologist could provide earlier diagnosis and treatment as an important determinant of outcomes in various cardiovascular diseases (van Deventer et al., 2017).

Therefore, this pilot study aimed to analyze cardiovascular disease risk and conduct an educational intervention for rural communities in Plaosan District, Magetan Regency, Indonesia through a cardiovascular outreach program performed by a cardiologist and several clinicians. This way, researchers could lower the burden of cardiovascular disease in Indonesia, particularly in high-risk areas.

METHOD

Study design

The study was an analytic observational pilot study assessing the profile of risk factors and the role of cardiovascular outreach programs by experts in rural communities in Plaosan District, Magetan Regency, Indonesia. This study used a combination of cross-sectional and intervention study design. This study was conducted in July 2023. In total, ninety participants of villagers from Plaosan District, Magetan Regency, East Java, Indonesia, were included in this study.

Sample criteria

This study applied consecutive sampling with sample size calculation following the Lemeshow formula (Lwanga & Lemeshow, 1991): $n = \frac{Z^2_{1-\alpha/2} x\, P(1-P)}{d^2}$ with Z for 0.05 significance, d = 0.1, and P = 0.29 based on previous research regarding the proportion of high CVD risk in Indonesian population (Maharani et al., 2019). From the equation, researchers obtained 79 as the minimum sample size. Researchers added the sample until 90 to prevent missing data and to add the publication's power.

The inclusion criteria of the samples were villagers in Plaosan District, Magetan Regency, Indonesia, who were: (1) adults (more than 20 years old); (2) reachable by primary health care center; (3) willing to fully participate in the socialization program and attentively listen to the experts' explanations. The exclusion criteria were: (1) Immobile or disabled individuals; (2) Hospitalized or having severe diseases; and (3) having difficulties in writing the answers for knowledge scores.

Intervention program

Two experts in cardiology and metabolic disorders delivered the intervention outreach program. The materials were modified for civilians and adapted to the conditions of the community in the region. Training and counseling were

carried out by clinicians who also acted as the faculty staff of Universitas Airlangga, collaborating with the Head of Plaosan Community Health Center. The materials were given in the local language (Javanese). Each speaker brought a different material. The first speaker brought material on cardiovascular diseases for common people, including an overview of cardiovascular disease, risk factors, early detection, danger signs, and treatment. The second speaker delivered material on metabolic syndrome and how to maintain a healthy lifestyle and diet. This material was disseminated at the same place (Plaosan Health Center) and at a similar time. The duration of the presentation delivered by each speaker was one hour. There were no intersections of the material presented by the two experts. After submitting the entire material, there was a ten-minute discussion and question-and-answer session. The media used by the speaker were lectures, videos, Power Point presentations, and educational books. Before submission of the material, a pre-test was conducted and after submission, a post-test was carried out to measure the participant's knowledge.

Data Collection

The clinicians of Universitas Airlangga collected data involving physicians, nurses, and staff of Plaosan Health Center. Physical examinations were performed on participants to get the following information: weight, height, abdominal circumference, and blood pressure. The blood pressure was measured using a digital sphygmomanometer (Omron, Japan). Body mass index (BMI) was calculated from weight (kg)/height (m)^2. Researchers used the World Health Organization (WHO) classification for obesity, which categorized the participant as Obese if the BMI ≧30 kg/m^2, overweight if the BMI ≧ 25 kg/m^2 but < 30 kg/m2, and normal if the BMI is between 18.5-24.9 kg/m^2 (World Health Organization, 2024). Abdominal obesity was defined as abdominal circumference > 80 cm for women and > 90 cm for men (Dhawan & Sharma, 2020). A baseline laboratory examination was performed on a blood sample to measure fasting blood glucose, low-density lipoprotein (LDL), and triacylglycerol (TG). A serum creatinine test was used to measure kidney function. Laboratory measurement was measured in a private laboratory. An electrocardiogram (BTL 08 12 channel) was used to record the electrical activity of the heart, which is useful in detecting arrhythmia, conduction disorders, and ischemia (lack of blood flow to the heart). All the tools to obtain data had been calibrated so that health devices could work accurately and precisely.

Each respondent was provided a questionnaire before and after the intervention to measure their knowledge regarding cardiovascular disease as what had been delivered in the program. The questionnaire consisted of ten questions with a total score of 100. The questionnaire was developed by two experts in cardiology and metabolic disorders. The questions were developed based on the educational source of the Indonesian Ministry of Health regarding cardiovascular diseases (Indonesian Ministry of Health, 2023) and guidelines from the American Heart Association (Virani et al., 2023). The questionnaire had ten questions: (1) Which disease is the most common cause of death worldwide? (2) Which one is the risk factor of coronary heart disease? (3) What is the target of blood pressure control in hypertension? (4) What are the symptoms of coronary heart disease? (5) How can we diagnose coronary heart disease? (6) What should we do first when we face a patient with coronary heart disease? (7) What is the recommended frequency of physical activity daily? (8) Which is the recommended food for preventing cardiovascular disease? (9) Which one is the complication of coronary heart disease? and (10) In which body part is obesity primarily associated with metabolic disease? Researchers also gathered information from the patients, including gender, age, ethnicity, history of diseases (hypertension, diabetes mellitus, and coronary heart disease), family history of diseases, frequency of physical activity, smoking habits, and food consumption. Quality assurance was accomplished by supervising the data collection process, data extraction, data entry to the software, and data analysis.

Data Analysis

Data were analyzed using the SPSS statistics software, version 26 (IBM Corp, Armonk, NY, USA), and GraphPad Prism version 9.1.1 (GraphPad Software, Inc, California, USA). Cardiovascular disease risk factors were analyzed using frequencies and percentages for categorical data, and mean ± standard deviation for numerical data. Correlations between the risk factors were analyzed using the Pearson correlation coefficient test. A Chi-Square test was applied to find significant differences among the risk factors between males and females. Mann-Whitney test determined a significant difference in LDL levels between diabetes mellitus and non-diabetic participants. The knowledge scores (before/pre-test and after/post-test socialization) were analyzed using the Wilcoxon sign-ranked test to evaluate the effectiveness of the socialization program. A p-value of less than 0.05 was considered significant.

Ethical consideration

The ethics committee of Faculty of Medicine, Universitas Airlangga, Indonesia has ethically approved this study, with ethical clearance number 196/EC/KEPK/FKUA/2023. All individuals who agreed to participate in this study were provided a comprehensive explanation of the study before it commenced, and written informed consent was obtained from all subjects who agreed to participate.

RESULT

This study involved 90 participants from the Plaosan District, Magetan Regency, Indonesia. The basic characteristics of the participants are displayed in Table 1. Most of the participants were female (78.9%) and elderly (52.22%). The participants ranged from 29 – 85 years, with a mean age of 60.43±10.35 years. Most participants were at a higher risk of cardiovascular disease, with risk factors including obese/overweight (61.1%), abdominal obesity (80%), hypertension (65.56%), previous history of hypertension (57.8%), family history of hypertension (56.7%), physical activity less than two times in a week (64.5%), fried food consumption (81.1%), and hypertriglyceridemia (55.56%).

Table 1. Categorical data for characteristics of the participants

Characteristics	f (%)
Gender	
Male	19 (21.1)
Female	71 (78.9)
Age (years)	
<60	43 (47.79)
≧60	47 (52.22)
Obesity	
No	35 (38.9)
Overweight	33 (36.7)
Obese	22 (24.4)
Abdominal obesity	
Yes	72 (80)
No	18 (20)

Characteristics	f (%)
Diabetes mellitus	
Yes	30 (33.3)
No	60 (66.7)
Previous history of diabetes mellitus	
Yes	17 (18.9)
No	73 (81.1)
Family history of diabetes mellitus	
Yes	22 (24.4)
No	68 (75.6)
Hypertension	
Yes	59 (65.56)
No	31 (34.44)
Previous history of hypertension	
Yes	52 (57.8)
No	38 (42.2)
Family history of hypertension	
Yes	51 (56.7)
No	39 (43.3)
History of coronary heart disease	
Yes	4 (4.4)
No	86 (95.6)
Family history of coronary heart disease	
Yes	3 (3.3)
No	87 (96.7)
Physical activity more than 30 minutes/day	
Never/Rarely	8 (8.9)
1x/week	50 (55.6)
2 – 3x/week	24 (26.7)
>3x/week	8 (8.9)
Smoking	
Never	81 (90)
2-3 pieces/day	2 (2.22)
>3 pieces/day	7 (7.78)
Fried foods consumption	
Yes	73 (81.1)
No	17 (18.9)
Fruit and vegetable consumption	
Yes	88 (97.8)
No	2 (2.2)
High LDL levels	
Yes	23 (25.56)
No	67 (74.44)
Hypertriglyceridemia	
Yes	50 (55.56)
No	40 (44.44)
High serum creatinine	
Yes	8 (8.89)
No	82 (91.11)
Abnormal ECG	
Yes	6 (6.67)
No	84 (93.33)

There were also several risk factors found in the participants that must be taken into precautions which provided in Table 2, including diabetes mellitus (33.33%), previous history of diabetes mellitus (18.9%), family history of diabetes mellitus (24.4%), history of coronary heart disease (4.4%), family history of coronary heart disease (3.3%), smoking (10%), low fruit and vegetable consumption (2.2%), high LDL levels (25.56%), fried food consumption (81.1%), high serum creatinine (8.89%), and abnormal ECG (6.67%).

Table 2. Numeric data for risk factors of cardiovascular disease of the participants

Risk factors of CVD	Mean ± SD
Age (year)	60.43 (10.35)
BMI	26.64 (4.69)
Fasting blood glucose (mg/dL)	135.66 (56.27)
Systolic BP (mmHg)	148.74 (24.56)
Diastolic BP (mmHg)	86.21 (11.87)
LDL levels (mg/dL)	120.51 (43.26)
TG levels (mg/dL)	196.7 (94.90)
Serum creatinine levels (mg/dL)	0.81 (0.28)

This study found six participants with abnormal ECG, as shown in Table 3. Two participants had right axis deviation, two had complete left bundle branch block, and two had anteroseptal old myocardial infarction. Only one patient had a heart rhythm dysfunction, specifically atrial fibrillation.

Table 3. Abnormal ECG found in the participants

Case number	Abnormal ECG found
1	Right axis deviation, complete right bundle branch block
2	Left axis deviation, slow R wave V1 – V4, complete left bundle branch block
3	Anteroseptal old myocardial infarction, complete left bundle branch block
4	Sinus tachycardia, right axis deviation, inferior anterolateral ischemia
5	Anteroseptal old myocardial infarction
6	Atrial fibrillation

When comparing males and females, some variables with significant differences were provided in Table 4. There was a higher percentage of participants with abdominal obesity in females compared to males (85.92% and 57.90%, respectively, with p = 0.02). There was a significantly higher risk of diabetes mellitus in male compared to female participants (p = 0.045). Male participants had more history of previous diabetes mellitus (42.1% and 12.67%, respectively, with p = 0.007). Almost half of the male participants (44.44%) were smokers, while none of the female participants were smoking (p < 0.0001).

Table 4. Comparison between risk factors of CVD between males and females

Risk factors of CVD	Males, n (%)	Females, n (%)	p-value
Obese/overweight	12 (63.16)	43 (60.56)	0.469
Abdominal obesity	11 (57.90)	61 (85.92)	0.02*
Diabetes mellitus	10 (52.63)	20 (28.17)	0.045*
Previous history of diabetes mellitus	8 (42.1)	9 (12.67)	0.007*
Family history of diabetes mellitus	5 (26.32)	17 (23.94)	1.000
Hypertension	9 (50)	50 (70.42)	0.102
Previous history of hypertension	9 (47.37)	43 (60.56)	0.301
Family history of hypertension	11 (57.90)	40 (56.34)	0.903
History of coronary heart disease	2 (10.53)	2 (2.82)	0.195
Family history of coronary heart disease	0 (0)	3 (4.23)	1.000

Risk factors of CVD	Males, n (%)	Females, n (%)	p-value
Smoking	9 (47.37)	0 (0)	< 0.0001*
Fatty foods consumption	17 (89.47)	56 (78.87)	0.509
Fruit and vegetable consumption	19 (100)	69 (97.18)	1.000
High LDL levels	4 (21.05)	19 (26.76)	0.771
Hypertriglyceridemia	12 (63.16)	38 (53.52)	0.453
High serum creatinine	1 (5.26)	7 (9.86)	1.000
Abnormal ECG	1 (5.26)	4 (5.63)	1.000

**significant at p <0.05*

After analyzing the participants' risk factors for cardiovascular diseases, researchers found several significant correlations between those variables, including between LDL and TG, BMI and systolic BP, LDL levels and abdominal circumference, and diastolic BP and abdominal circumference. All of the correlations were in the positive direction and had weak power.

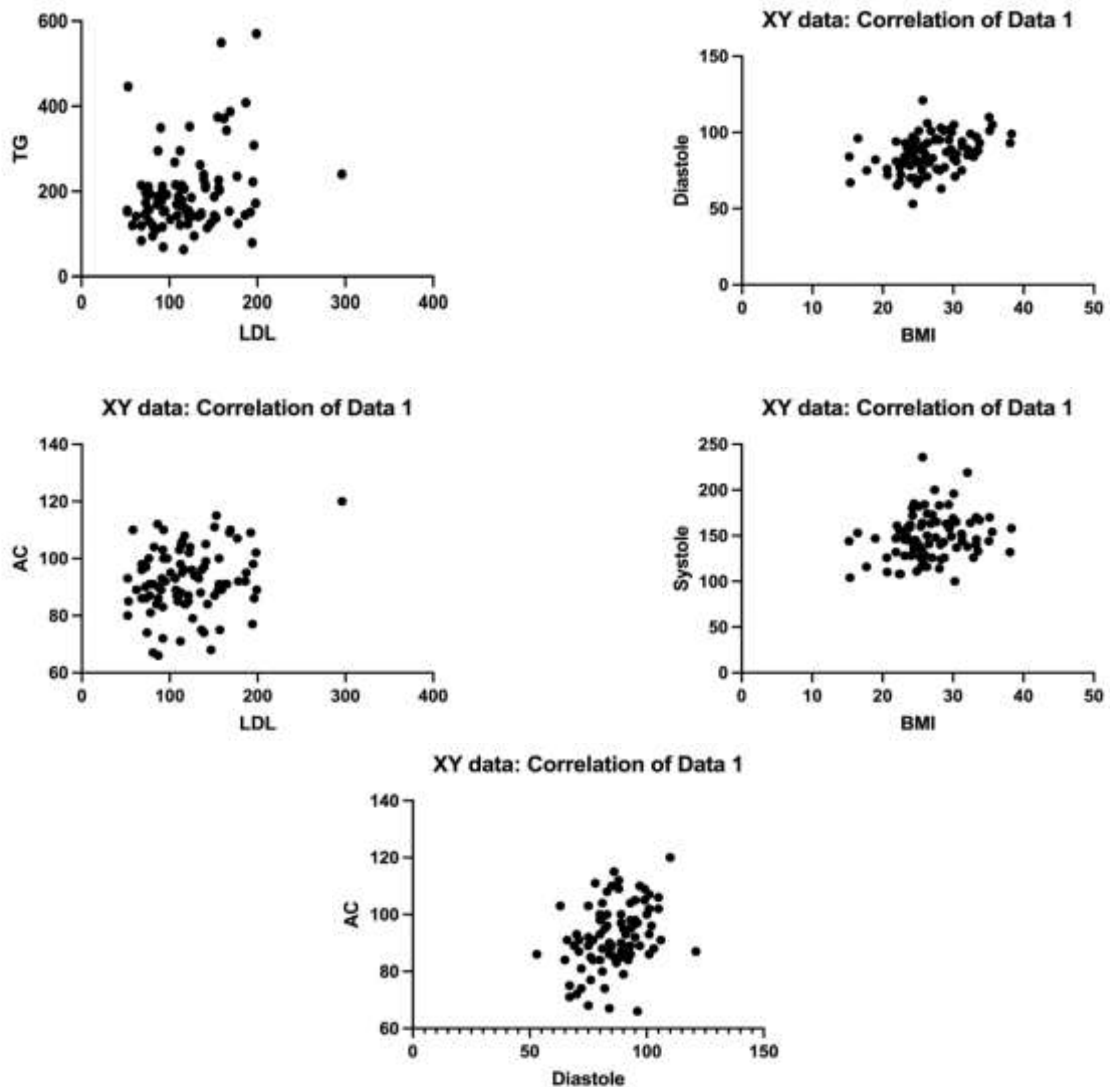

Figure 1. Correlations between risk factors of cardiovascular disease with Pearson analysis between (a) LDL and TG levels; (b) BMI and diastolic BP; (c) BMI and systolic BP; (d) LDL levels and abdominal circumference; (e) diastolic BP and abdominal circumference

Researchers also found higher TG levels in participants with diabetes mellitus (240.63 ± 125.49 mg/dL) compared to participants without diabetes mellitus (174.73 ± 66.13 mg/dL) with a p-value of 0.014.

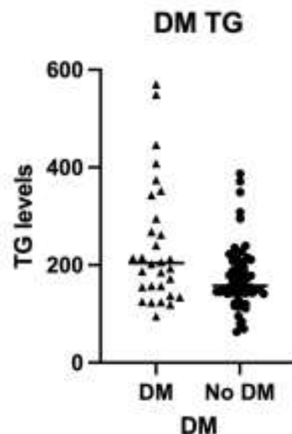

Figure 2. Comparison of TG levels between participants with and without diabetes mellitus

The average knowledge scores of the participants before and after the socialization program shown in Table 5. Overall, there was a significant increase in the post-socialization knowledge score (66.32 ± 18.75) compared to the pre-socialization knowledge score (59.61 ± 23.8), with a p-value of 0.007. The increase in the knowledge score was not different significantly between males and females.

Table 5. Pre-test score and post-test score of coronary heart disease knowledge

Knowledge	Mean ± SD	p-value
Pre-test	59.61 ± 23.8	0.007*
Post-test	66.32 ± 18.75	

significant at p <0.05

DISCUSSION

In Indonesia, CVDs account for one-third of all fatalities and are the main cause of morbidity and mortality (Hussain et al., 2016; Maharani et al., 2019). In the present study, researchers conducted research in a rural area of Plaosan District, Magetan Regency, East Java, Indonesia. Researchers discovered that most participants had a higher risk of CVD, defined as the presence of several CVD risk factors in a high percentage, both traditional and non-traditional. Among traditional CVD risk factors, abdominal obesity, hypertension, obesity/overweight, and hypertriglyceridemia were the highest percentage (80%, 65,56%, 61,1%, and 55.56%, respectively).

A prior study conducted in a Malang district, Indonesia, discovered a high incidence of CVD risk factors in rural communities. It is shown that the prevalence of the CVD risk factors is quite high in rural areas (26.2%, CI 25.2-27.2%) (Maharani et al., 2019). Other studies also stated that CVD mortality rate was higher in rural areas (Basu, 2022; Cross et al., 2020; Lindroth et al., 2014). A combination of high incidence of cardiovascular disease risk factors, limited access to healthcare, and demographic shifts are likely contributing to this condition (Cross et al., 2020; Harrington et al., 2020). In our study, abdominal obesity was found in the majority of participants. High waist circumference (WC) as a measure of abdominal obesity, is more accurately reflects visceral fat rather than BMI and is significantly related to CVDs and is predictive of mortality (Powell-Wiley et al., 2021; Sahakyan et al., 2015). Researchers also obtained a high prevalence of fried food consumption habits (81.1%). In Indonesia, fried foods are very widely consumed, such as fried snacks (“gorengan”), fried meat, or even fried rice (UNICEF, 2018). In a meta-analysis, fried foods significantly increase major cardiovascular events, cardiovascular diseases, and mortality (Qin et al., 2021).

Hypertension has a high prevalence of exposure and is associated with the strongest evidence for causation in CVDs (Fuchs & Whelton, 2020; Kjeldsen, 2018). In our study, hypertension was also found in high occurrence, followed by obesity/overweight and hypertriglyceridemia. This finding is accordance with Hussain et al. (2016) that obtained the prevalence of each risk factor specific to sex and to two age categories (<55 and ≥55 years) using summary statistics from a national survey in Indonesia and found that hypertension was the leading risk factor. It counts for one-third of all CHD and half of all strokes in both younger and older age groups and 20% to 25% of all CHD, and 36% to 42% of all strokes in both gender. A similar finding was also found in another study, where hypertension was found to be the most common cardiovascular risk factor (55.8%), followed by obesity (14.4%) (Hussain et al., 2016; Maharani et al., 2019). Intriguingly, the geographical area of this study is mountainous. Magetan district is a part of Lawu Mountain, located between East Java and Middle Java Provinces, Indonesia. The high prevalence of CVD risk factors in this study could be attributed to inconvenient transportation and low socioeconomic status in mountainous area. While the sick stayed home, many disease-free laborers relocated from mountainous to plain areas. Another reason could be that the lower medical and educational standards in mountainous regions resulted in a decreased awareness of CVD risk factors. Therefore, a lesser level of awareness, treatment, and control over CVD risk factors in mountainous areas may make the epidemic of CVD worse (He et al., 2012).

The prevalence of cardiovascular risk factors, such as high blood pressure, high cholesterol, obesity, smoking, and lack of physical activity, are frequently close related to certain lifestyle and environmental factors (Pintaningrum et al., 2020). Some reasons are unhealthy eating patterns, such as eating foods high in saturated fats, added sugar, and sodium can lead to increased blood pressure, high cholesterol, and obesity. Lack of physical activity, like a less active lifestyle, can lead to accumulated fat, decreased heart muscle strength, and increased risk of obesity. All of which are major risk factors for cardiovascular disease. According to Kim et al. (2023), the risk of developing CVD is related to the following risk factors: hypertension (aHR = 1.96 (1.86–2.07)), smoking (aHR = 1.52 (1.45–1.59)), diabetes mellitus (aHR = 1.93 (1.77–2.10)), lack of physical activity (aHR = 1.08 (1.02–1.14)), hypercholesterolemia (aHR = 1.60 (1.51–1.69)), and obesity (BMI ≥25 kg/m2) (aHR = 1.33 (1.28–1.39)) (Kim et al., 2023), all of which were present in our study. Smoking can also cause vascular damage, increased blood pressure, and increased risk of blood clotting, all of which raise the risk of heart disease and stroke. Cigarettes contain detrimental toxins due to the presence of carbon monoxide content in cigarette smoke. Carbon monoxides could enter the bloodstream, further causing blood pressure to rise. Thus, the heart must pump quickly to provide enough oxygen for the body (Marhabatsar & Sijid, 2021). In addition, the harmful substances of cigarettes can cause blood clotting, resulting in the occurrence of hypertension. Moreover, chronic stress can trigger the release of stress hormones such as cortisol and epinephrine, raising blood pressure and disrupting

cardiovascular balance. Stress can also trigger hypertension due to increased sympathetic nerve activity, which can increase blood pressure intermittently (Herawati et al., 2020). This condition requires intervention strategies to reduce cardiovascular risk. Some programs can help raise public awareness of cardiovascular risk factors and change their behavior to start leading a healthier lifestyle (Arumsari et al., 2023). Outreach programs could promote vulnerable populations' health depending on the particulars of the given health project and community through strong connections between health professionals and community residents (Shin et al., 2020).

In this study, there were significant differences in several variables when comparing men and women. In the prevalence of abdominal obesity, women was higher than men (85.92% vs. 57.90%, $p = 0.02$). In general, there is a tendency for women to have higher levels of abdominal obesity than men, which is consistent with a previous study (Meng-na et al., 2018). A higher prevalence of obesity can be found in women due to the differences in physical activity level and energy intake between men and women. Women have greater risk of central obesity due to post-pregnancy weight gain and hormonal fluctuations during menopause through body fat distribution changes from the periphery to the abdominal area (Azkia & Miko Wahyono, 2019). Men and women have different fat metabolisms, with women have a higher fat mass rate. (Khosama et al., 2016). Furthermore, the elevated risk factors of central obesity in women are linked to lifestyle factors such as the habit of eating meals high in fat and carbohydrates. This finding is supported by research by Ticoalu et al. (Ticoalu, Wongkar, & Pasiak, 2015) that consuming sweetened foods and beverages, high-fat foods, low vegetable and fruit intake can cause degenerative diseases. Sweetened and fatty foods could increase body weight and abdominal circumference. This association is thought to be due to a combination of fatty and sweet foods. Excessive consumption of sweet and fat foods can also contribute to the energy stored as fat in the body, thereby increasing the risk of central obesity (Adwinda & Srimiati, 2019). For day-to-day activities, women tend to do very minimal physical activity and burn only a few calories, which can increase the risk of central obesity. In the countryside, people tend to be more sedentary because of the lack of sports facilities. Women busy with work, household tasks, and caring for children tend to have more limited time to exercise and cook healthy food (Ticoalu, Wongkar, & Pasiak, 2015). There are notable gender disparities in the upstream factors that contribute to obesity, such as the social and biological determinants, notwithstanding the complexity of the problem. Further justifications for the observed gender differences regarding obesity can be influenced by physical activity levels, social views, biological variables, and the extent of urbanization, especially in developing countries (Prasad et al., 2020).

Besides hormonal factors, women tend to have a different response to stress than men, which can affect the tendency to eat emotionally and unhealthy diets. Chronic stress can increase cortisol hormone level, which has been associated with increased fat accumulation in the abdominal area. Stress and depression have been linked to two inclinations that result in uncontrollable eating or binge eating. (Badriyah & Sitepu, 2020; Gluck et al., 2004). In addition, social factors such as social norms, pressure from the media, and traditional gender roles can affect a woman's diet and level of physical activity. Women frequently face pressure to maintain a weight that matches an ideal body image, leading to unhealthy diet practices and a lack of physical activity (Mills et al., 2022). The high risk of central obesity that occurs in women can be overcome and prevented by designing the effective intervention strategies such as health education programs that strengthen an understanding of the importance of healthy lifestyles, including a balanced diet and regular physical activity that can help reduce the risk of central obesity.

On the other hand, men had a significantly higher risk of diabetes mellitus ($p = 0.045$), and more had a previous history of diabetes mellitus than women (42.1% vs. 12.67%, $p = 0.007$). This finding could be due to the stronger anti-inflammatory immune profile in women and the presence of Estrogen as an antioxidant and cardioprotector (Peters et al., 2019; Xiang et al., 2021). In our study, most men (44.44%) were smokers, while none of the women smoked ($p < 0.0001$). In Indonesia, associations between smoking and masculinity are deeply ingrained and can be traced back to the colonial influences of Dutch society in the seventeenth century. Numerous advertising in Indonesia that promote smoking as a socially acceptable habit and a way to build masculinity have exacerbated this issue (Kodriati et al., 2020). In contrast, smoking women in Indonesia are regarded as taboo, naughty, wild, and rogue (Pravitriani et al., 2022).

Our findings showed that there was a correlation between LDL and TG levels. LDL is more vulnerable to oxidation and has a greater endothelial cell adhesion because of its small size. It is also significantly linked to an accelerated progression of atherosclerosis. Although LDL is known to be connected with TG levels, it is not often linked to the development of atherosclerosis. Theoretically, the quantity of LDL particles may rise in tandem with TG levels, especially when LDL levels are elevated (Hori et al., 2021). Researchers also found a correlation between BMI and BP in subgroups of untreated hypertensive patient in China (Linderman et al., 2018). BP may be directly impacted by BMI, regardless of other clinical risk factors (Landi et al., 2018; Wang et al., 2020). Furthermore, researchers have also discovered that abdominal circumference and diastolic BP showed a positive correlation. Taken together, BMI and waist circumference may influence the BP. It has been demonstrated that inflammatory processes are crucial to the pathophysiology of hypertension (Caillon et al., 2019; Landi et al., 2018). Fat cells have the ability to create huge amounts of inflammatory cytokines and are sensitive to lipolysis (Landi et al., 2018).

In this study, as a part of a holistic cardiovascular outreach program, researchers also used local language to socialize with the targeted rural community. There was a significant increase in participants' knowledge scores after attending the socialization program ($p = 0.007$). Cardiovascular disease (CVD) risk factors are a significant problem in rural Indonesia. There is a demand for community-based interventions and education programs focusing on local situations, tailoring medical guidelines to existing resources, and involving government to address the burden of CVD in Indonesia, especially in resource-limited rural areas. This condition is crucial for reducing CVD risk and improving cardiovascular health in rural regions (Adisasmito et al., 2020). Aside from restricted health access and demography, another likely contributor to the high prevalence of CVD risk factors in rural areas is the level of education. Previous studies have shown that individuals who only have primary school education and live in rural and inland areas have higher CVD risk factors than those who live in urban areas and have higher education levels. Unhealthy lifestyles in rural areas may increase CVD risk factors (Lindroth et al., 2014). To corroborate these findings, lower education in rural areas may inevitably

become a factor that increases or mediates this risk. According to Rosjidi (2018), the prevalence rate of coronary heart disease is higher among people with low levels of education or who do not attend school (Rosjidi et al., 2018). Moreover, researchers depicted that the pre-test results reflecting the participants' knowledge before the socialization program were low. This is directly related to our findings that many residents of the Plaosan District have risk factors for CVD. Therefore, health promotion and prevention are crucial to prevent and reduce the burden of CVD in rural communities. Community-based approaches are important in health promotion and prevention strategies, especially in rural areas (Glenn et al., 2020). Several previous studies had shown the benefits of health education to improve participants' knowledge regarding hypertension in Indonesia (Ulya, Iskandar, and Asih, 2017; Rofacki & Aini, 2015; Yuwono, Ilham, & Hanafi, 2017; Sudiarto, Wijayanti, & Sumedi, 2007). However, in our current study, we did not only involve hypertension but also other CVD risk factors in general.

While the study provides essential insights into CVD risk factors in the rural area of Plaosan District, Magetan Regency, Indonesia, it should be emphasized that aside from the environment, different ethnicity and genetics could also affect cardiovascular disease risk in different populations (Susilo, Pikir, et al., 2022; Susilo, Thaha, et al., 2022). The effectiveness of a community outreach program can also be different according to the population (Lott, 2008). Therefore, socialization and personal approach should also be delivered according with the local language. Overall, the results of this study show the importance of profiling CVD risk factors in rural areas and the benefits of community service programs in rural areas to improve the participants' knowledge regarding CVD. Previously, a study by Arifin et al (2022) described chronic disease risk factors in rural areas in Indonesia. However, in this study researchers analyzed risk factors and performed socialization, diagnosis, and early detection of cardiovascular diseases using cardiovascular outreach program, which specialists delivered. Researchers also adapted the communication strategies using the Javanese language to the community around the Plaosan district, Magetan Regency, Indonesia. Researchers also conducted a pre-test and post-test to determine the effectiveness of the socialization of the given material, which was not performed by the previous study, since the previous was qualitative. Moreover, researchers performed a comprehensive test for early examination and detection of cardiovascular diseases, including blood pressure, weight and height tests to measure BMI, LDL and TG cholesterol, fasting blood sugar, ECG, serum creatinine, and abdominal circumference. Researchers also provided a personal counseling for participants with abnormal ECGs. A cardiologist and several professional clinicians conducted all of the program.

Nevertheless, several limitations should be considered when assessing the data's relevance. Although this current study was conducted in very homogeneous communities, researchers did not perform multivariate analysis in this study. Therefore, it could be a potential source of bias in our research results. all of which potentially increase CVD risk. Conventional risk factors including hypertension, smoking, and diabetes affect women differently than men. (Johnson et al., 2021). In addition, there are risk factors unique to women, such as hypertensive disorders during pregnancy, preeclampsia, gestational diabetes mellitus, a preterm or low-birth-weight infant delivery, and premature menopause (age < 40 years) that should also be considered to refine CVD risk assessment based on gender (Grundy et al., 2019). The prevalence of CVD risk factors and CVD-related deaths in women under the age of 65 years is known to have increased in the last two decades (Ritchey et al., 2020). There are also disparities in diagnosis, treatment, and management of CVD in women in which guideline-directed medical treatment and rehabilitation are underutilized (Johnson et al., 2021). Unrepresentativeness of women in CVD clinical trials regarding novel therapies, devices and other interventions further contribute to these disparities (Steinberg et al., 2021). Age should also be considered in assessing CVD risk factors. The incidence of CAD rises with age, with multiple-vessel CAD more common in those over 75. Race has an impact on the occurrence of CAD as well; the White population has the lowest rate (3.2%), followed by Black men (5.7%), Hispanics (5%), black women (5.2%) and black men (5.7%) (Santos et al., 2023). A 2-year follow-up research conducted by Meadows et al. (2011) shows that the CVD death rate is higher in black people (6.1%) compared with other ethnic/racial groups (3.9%; p = 0.1), including Indonesia (Meadows et al., 2011). Nonetheless, there is no data or research results comparing the influence of different ethnic or tribes in Indonesia on CVD risk factors, which could be an upcoming research opportunity. In addition, this study was conducted in only one regency with a mountainous area. Different landscapes such as coastal or lowland areas could bear different results, affected by ethnicity, food consumption habits, or physical activities. However, this study is representative of Indonesian rural areas, and supports previous findings' validity. Moreover, an effective outreach program should be specified and tailored for each community (Rozhkov et al., 2023). Researchers have adopted the delivery method using the local language and personal approach to make it more effective.

CONCLUSION

In conclusion, this study showed that rural communities in Plaosan District, Magetan Regency, Indonesia had a high prevalence of cardiovascular disease risks, including obesity, hypertension, diabetes mellitus, and dyslipidemia. Researchers also discovered that a cardiovascular outreach program by experts could effectively increase participants' knowledge of cardiovascular disease. Hopefully, the results of this pilot research would be a basis for further research to provide a deeper approach of cardiovascular outreach programs from cardiologists and professional clinicians to do case mapping, personalized counseling, and follow-up findings of cardiovascular disease in another ethnicity and population.

ACKNOWLEDGEMENTS

The authors express their gratitude to Universitas Airlangga for funding this work (Grant number: 3609/UN3.1.1/PM/2023).

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Jurnal Keperawatan Soedirman – Vol 19, No 2 page 128-134
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ORIGINAL ARTICLE

A CONTINUING CARE PROGRAM AT HOME ON CAREGIVER'S ROLE FOR CHILDREN WITH CONGENITAL HEART DISEASE: A PILOT STUDY

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Article Information
Received: 15 December 2023
Revised: 20 April 2024
Accepted: 6 June 2024

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DOI
10.20884/1.jks.2024.19.2.10903

ABSTRACT

Caregivers should have adequate caring roles knowledge of children to increase the quality of life of children with congenital heart disease (CHD). Aim: To develop and evaluate the effect of a home-based continuing care program on the role of caregivers for children with CHD. This pilot study was a quasi-experiment with one group pre-posttest without control group design and conducted between October 2018 and September 2019 in Narathiwat, Pattani, and Yala. Thirty caregivers were recruited using a multistage random sampling technique. The program covered teaching, demonstration, and feedback equipped with a manual of CHD for six weeks. The self-developed caregiver role questionnaire was provided to evaluate caregiver care roles. The paired t-test was applied to evaluate the different scores of the caring roles before and after the program with the significant p value < 0.05. The scores of the caregivers' roles for children with CHD after receiving the program were significantly higher than the scores before receiving the program ($t = 6.20$, $p < .001$). Continuing care programs enhance caring roles related knowledge of children with CHD. This program is recommended to apply continuously for caregivers of children with CHD at the outpatient or as part of discharge planning.

Keywords: *Caregivers; caring roles; children; congestive heart disease; continuing care program*

ISSN : 1907-6637 **e-ISSN : 2579-9320**

INTRODUCTION

Congenital heart disease (CHD) is an abnormal formation of the heart or major blood vessel structures, which causes birth defects associated with children's morbidity and mortality (Mahmoud et al., 2020; Poudel & Malla, 2017; Suklerttrakul et al., 2018). The incidence of CHD is 8-10 per 1,000 live births, representing nearly 25% of all congenital malformations (Mahmoud et al., 2020). CHD can be classified as non-cyanotic CHD of ventricular septal defect, atrial septal defect, patent ductus arteriosus, pulmonary stenosis and coarctation of the aorta, and cyanotic CHD of tetralogy of Fallot, transposition of the aorta, and pulmonary atresia.

Children with CHD require specific care from medical experts and their caregivers, including nutrition care, development, dental health, receiving prescribed cardiac medication, prevention of pneumonia, and monitoring of signs and symptoms of congestive heart failure (CHF) (Musiksukont, 2010; Suklerttrakul et al., 2018a). Some children with CHD did not receive adequate care, such as not getting vaccinated by appointment, eating a low-energy diet, not taking medication as prescribed, or having untreated (Suklerttrakul et al., 2018) dental problems (Wangsawat, Jaisomkom, et al., 2019; Wangsawat, Phiban, et al., 2019). Most of these children receive treatment in the outpatients and the family plays the role of the caregiver to manage the children's problems (Amakali & Small, 2014). The caregiver may experience complications of caring at home in terms of malnutrition, delayed development, congestive heart failure, hypoxic spell, respiratory infection, and pulmonary hypertension. About 20-30% of children with CHD have physical problems, delayed development, or cognitive

disorders that require specific care and treatment (Mahmoud et al., 2020). Children with CHD also have a higher risk of in-hospital mortality and morbidity when admitted to the hospital due to influenza and have lower health-related quality of life compared with healthy children (Mellion et al., 2014).

Children with CHD aged 6-30 months are at a higher risk of developmental delays due to chronic hypoxia induced by underlying CHD so early continuing screenings and interventions are recommended to solve this issue (Lata et al., 2015). Moreover, children aged 0-3 years cannot meet their needs and must depend on caregivers. The mortality rate in children with CHD remained high during the first four years of life, indicating that ongoing surveillance and early intervention may be advantageous. The age range of 0-3 years old of children with CHD is the crucial time for early identification, early diagnosis, accurate assessment, and appropriate treatment for minimizing CHD mortality and improving children's health (Mandalenakis et al., 2020).

Otherwise, congestive heart failure-related complications in children may trigger psychological distress among caregivers. Some of the caregivers reported an increased incidence of emotional distress and psychosocial issues, as well as a lack of relationships, insufficient social support, and higher expenses because they had to spend most of their time providing care for children with CHD at home (Amakali & Small, 2014; Lantin-Hermoso et al., 2017; Srichantaranit & Chontawan, 2011). Since some academic knowledge conflicted with the caregivers' beliefs and way of life, caregivers did not apply the knowledge to care for children with CHD. Furthermore, these circumstances cause complex psychological feelings and excessive stress for caregivers with a high risk of complications for children with CHD. Therefore, caregivers need to adapt to their roles through self-study to gain more knowledge regarding the care of children with CHD to increase the quality of life for children with CHD (Ni et al., 2019).

To solve this problem, encouraging caregivers to have effective knowledge and caring roles for their children with CHD is one of the recommended interventions needed. Caregivers need to adapt to their roles and apply the knowledge for caring for children with CHD. However, 94.3% of caregivers had poor knowledge and most of them had a moderate level of caring role for children with CHD (EL-Gendy et al., 2020). In southern border provinces of Thailand, malnutrition and pneumonia were found in 66.6% and 43.4% respectively among children with CHD due to caregivers' lack of knowledge and insufficient caring role at home. Therefore, it is highly recommended to create a home-based education program for caregivers in looking after children with CHD.

A previous study explored a home-based educational program to improve caregivers' knowledge and caring roles. Caregivers who received supportive and educational nursing programs had a higher mean score of knowledge when compared with the control group. However, there was no difference in the mean score of caregiver role after receiving the program observed between the experimental and control groups (Wangsawat, Phiban, et al., 2019). Wangsawat, Jaisomkom, et al. (2019) found language as the limitation of the previous program. Most caregivers used Malay as their first language, while the previous programs mostly used Thai. Therefore, this study developed a continuing care program equipped with a manual of CHD knowledge for caregivers in Thai and Malay containing illustrations that are easy to understand, allowing caregivers to review the knowledge about caring for children with CHD. This study aimed to develop and evaluate a continuing care program at home for children with CHD aged 0-3 years and compare the caregivers' role in caring for children with CHD before and after receiving the program.

METHOD

Study design

This quasi-experimental research (one group pre-post-test design) was part of the research and development project entitled The Development of Continuing Care Management System and Health Monitoring of Children with CHD Aged 0-3 Years in Primary Care Unit in Southern Border Provinces of Thailand (Wangsawat et al., 2020). This study was carried out from October 2018 to September 2019.

Sample

The minimum sample size per zone for a two-tailed paired t-test analysis was calculated using G-Power software version 3.1.9.4 where the estimated effect size of 0.9 based on the previous study (Wangsawat et al., 2018), ∝ value of 0.05 and a power of 80% was assumed. The minimum sample size calculated was 17, which was increased to 30 to accommodate incomplete or non-responses and statistical analysis of the t-test requires a sample of at least 30 people (Srisatidnarakul, 2007). The samples were selected using a multistage random sampling technique, including Takbai district in Narathiwas province, Mueang district in Yala province, and Mueang district in Pattani province. The inclusion criteria were family members as main caregivers of children aged 0-3 years old with CHD, willingness to participate in the research, ability to communicate in Thai, and willingness to be contacted by phone. The respondents who did not complete the research phases were excluded from this study.

Intervention

This program was divided into three phases using system theory (Donabedian, 1980): 1) phase I: the focus group discussion invited six caregivers to identify the problem condition and analyze caregivers' problem related to caring roles in children with CHD; 2) phase II: construction of the program that eventually consisted of teaching, demonstration, discussion and feedback, and manual of CHD knowledge for the caregivers provided the information related to cause, signs and symptoms, nutritional care, complication prevention, and drug administration for children with CHD. Also, the program was verified for content validity by three experts and was tried out in five caregivers of children with CHD; 3) program evaluation: evaluation of continuing care program at home on caring roles of caregivers of children with CHD using quasi-experimental research design.

Procedures

The continuing care program for caregivers with children with CHD was carried out at home caregivers consisting of teaching, demonstration, feedback, and providing a manual of CHD knowledge for caregivers. The manual included illustrations related to causes, signs and symptoms, nutrition care, complication prevention, and medication use in Thai and Malay. Then, the researchers carried out a follow-up by phone to assess the problems with caring among children with CHD. The program has been verified for content validity by three experts and was tried out on five caregivers of children with CHD who had similar characteristics to the study sample.

Instruments

This study applied the Thai version of a modified questionnaire of caring roles for caregivers from Keawvichit

& Thajeen, (2020). This questionnaire consisted of 40 questions using a Likert scale from 1-4 (1=never practiced, 2=rarely practicing, 3=frequently practiced, and 4=always practiced). The range score of this questionnaire is 40-160, which is categorized with a score of 40-79 = poor level, a score of 80-119 = moderate level, and a score of 20-160 = good level. This questionnaire has a CVI value for content validity which is 0.87. The Cronbach's Alpha Coefficient for the reliability test of this questionnaire is 0.80 (Wangsawat, Phiban, et al., 2019).

Data collection
The research was approved by the ethics committee of Yala Hospital (No 4/2561). The researcher obtained consent from the Respondents who were given the details of participation in the research. Privacy and confidentiality of the data collection were assured, and the Respondents were allowed to withdraw from the study at any time without any consequence (Figure 1).

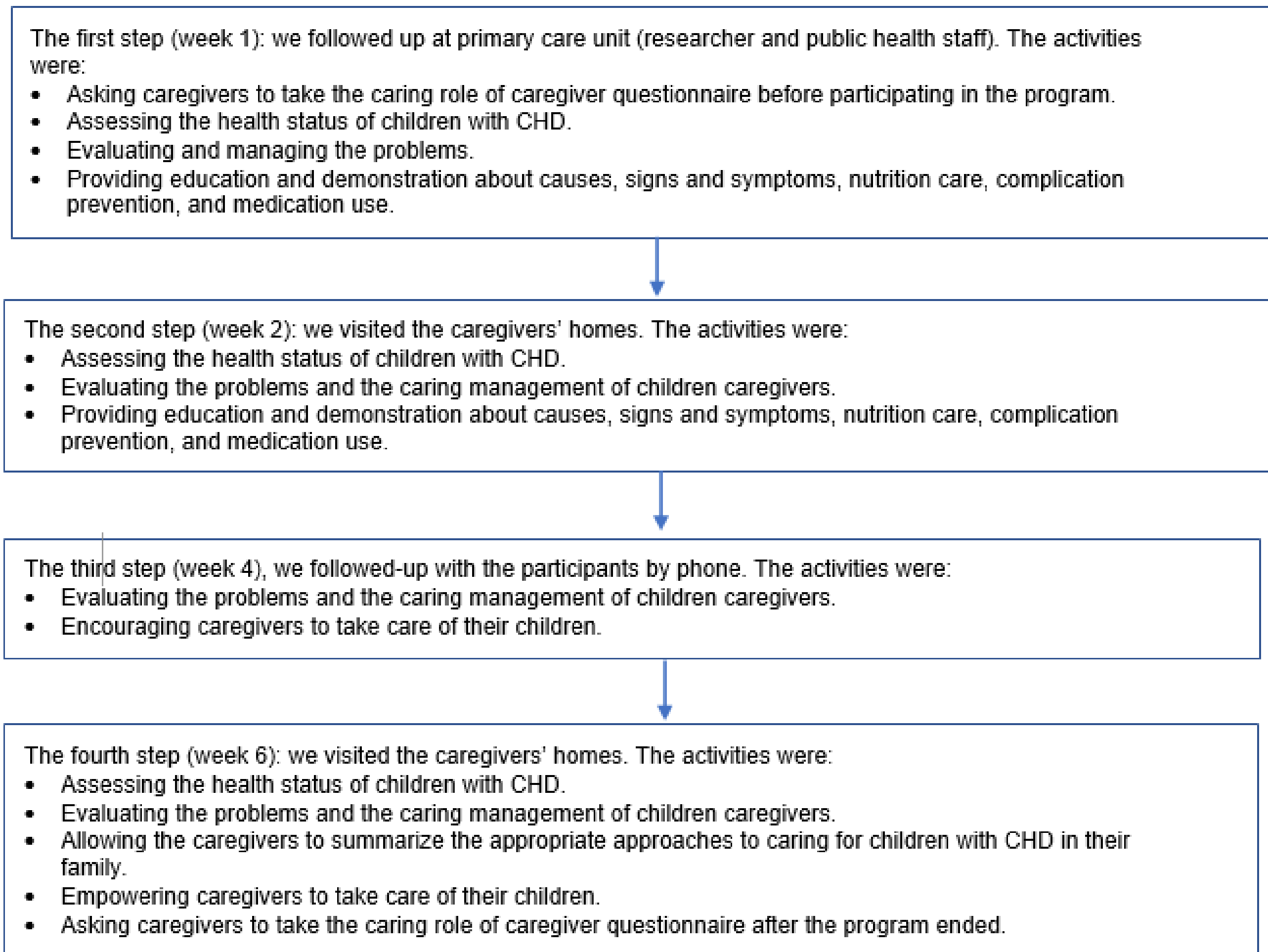

Figure 1. Program stage

Data analysis
Data were analyzed by computer-based data analysis software. The data were displayed using descriptive statistics for respondent characteristics and bivariate analysis using paired T-test to compare the mean scores of caring roles of the caregivers for children with CHD before and after receiving the program. The significance level of this study was $p < 0.05$.

RESULT

Demographic data of Respondent

Table 1. Characteristics of Respondent (n = 30)

Variables	n (%)
Age (year) Max = 52, Min = 21, m = 34.83, SD = 8.61	
Caregiver experience (month) Max = 36, Min = 1, m = 22.33, SD = 9.93	
Caregivers	
Father	7 (23.3)
Mother	23 (76.7)
Religion	
Buddhism	3 (13.3)
Islam	27 (86.7)
Education level	
Primary school	7 (23.3)
Secondary school	14 (46.7)
High vocational school	7 (23.3)
University or postgraduate	2 (6.7)
Occupation	
Employer	8 (26.6)
Farmer	1 (3.3)
Business	6 (20.0)
Housewife	11 (36.7)
Others	4 (13.4)

Variables	n (%)
Household income (Bath/month)	
< 5,000	12 (40.0)
5,001-10,000	8 (26.6)
10,001-15,000	5 (16.7)
15,001-20,000	1 (3.3)
> 20,000	4 (13.4)
Number of children	
1	9 (30.0)
2 – 3	16 (53.3)
4 - 8	5 (16.7)
Type of family	
Single family	19 (63.3)
Extended family	11 (36.7)

This part presents distributions of caregivers studied according to their sociodemographic characteristics. The mean age of caregivers was 34.83 ± 8.61 years (min = 21; max = 52). In this study, 76.7% of caregivers were mothers and 86.7% were Muslims. For education and occupation, 46.6% of the caregivers completed high school and 36.7% were housewives. Moreover, 40.0% of the caregivers had the family income of less than 5,000 baht/month. They had children between 1 to 8 per family and most respondents had children 2-3 per family. Most respondents (63.3%) live in an extended family. The average length to look after children with CHD was 22.33 ± 9.93 months (min= 1; max= 36) (Table 1).

Figure 2. Caring role level of caregivers before and after continuing care program

Before the intervention, most caregivers of children with CHD had a moderate level of caring roles (56.70%), while after the program, 76.60% of the caregivers had a good level of caring roles (Figure 2). The mean scores of caring roles in caregivers of children with CHD before and after receiving the program were 127.07 (SD = 10.89) and 135.57 (SD = 8.66) respectively. There was a significant increase in the score of caring roles of caregivers after receiving the program compared to the mean score of caring roles before the program (t = 6.20, p < .001) (Table 2).

Table 2. Comparison of the scores of caring roles in caregivers of children with CHD before and after receiving the program (n = 30)

Variable	Before		After		*t*	*p*
	m	SD	m	SD		
Caring role in caregivers of children with CHD	127.07	10.89	135.57	8.66	6.20	.001***

Note: m = mean; SD = standard deviation; *** P value is significant at p < .001

DISCUSSION

More than half of the caregivers in this study had a moderate level of caring roles before obtaining the continuing care program due to the information about children with CHD, including diagnostic, treatment guidelines, and nursing problems, was not adequately transferred by the hospital and the primary health care units. Even though the caregivers received knowledge and advice from doctors or nurses during the scheduled visits to the hospital, they received a lack of stimulation to put knowledge into practice. The caring role of children with CHD was not clear and might not be achieved as expected. It might be also supported by the educational background gained by caregivers who were senior high school. Caregivers might have limited knowledge to access information about CHD through internet sources.

However, after receiving the program, the number of caregivers with caring roles at a good level increased significantly to the higher scores. The result was consistent with the study by Songthip et al., (2015) and Wangsawat, Phiban, et al., (2019) which found that mothers of children with CHD who received the education program under the concept of a supportive-education nursing system program had higher knowledge of caring for children with CHD than mothers who received usual care. Continuing education programs including parent mentors are a promising evidence-based strategy for lowering social determinants of health and increasing outcomes for children with CHD and their families (Davey et al., 2021).

The significant increase in caring role score was due to several possible reasons. Most caregivers of this study were mothers of children with CHD and were housewives. They could manage time to take care of their child closely and continuously. In addition, the content of the program is comprehensive including the causes, signs and symptoms, nutrition care, medication use, and prevention and care of

complications. According to Khouenkoup et al. (2022), caregivers of children with CHD should understand three domains, including cardiac disease and therapies, preventing complications, and providing general care. The teaching activities in this study consisted of lectures, demonstrations, re-demonstrations, discussion, and feedback. This program also provides a handbook for caregivers. These methods could help caregivers to learn, understand, and remember more accurate knowledge and behavior so they become more confident in caring for children with CHD (Wangsawat, Jaisomkom, et al., 2020; Suklerttrakul et al., 2018).
The manual of CHD knowledge for caregivers with illustrations and narration in two languages allowed the Respondent to review when they became insecure or forgot the content. According to Gramszlo et al. (2022), parents also expressed the need for greater information about social, emotional, and financial support and direction to credible online resources during education. Therefore, broader topics related to support systems for parents should be provided in the next education project.

Home visits and health assessments of children with CHD were performed by primary healthcare personnel who had the same context as caregivers. Mentoring and educating parents of children with CHD is recommended by community health workers who have or have no child with a specific ailment (e.g., CHD) and are trained to assist other parents with similar conditions (Davey et al., 2021). Public health staff who truly understand the context and lifestyle of children with CHD and caregivers can approach problems and advise caregivers accurately and in accordance with the culture, beliefs, and lifestyles of children with CHD.

The continuing care at home program developed in this study is expected to provide nurses with skills, especially in caring for children with CHD, by integrating the knowledge with the beliefs and culture of children with CHD and caregivers. Nurses in primary health care units who have specific skills and understanding in the caregiver context teach the caregivers by demonstrating caring skills in children with CHD, such as nutrition care, oral hygiene care, assessment of hypoxia condition, stimulation of development, taking medicine, protection of respiratory infection and infective endocarditis, and the care of congestive heart failure (Wangsawat, Pongjaturawit, et al., 2020).

In this study, caregivers received appropriate practical guidelines for caring for children with CHD and could perform their role continuously. Healthcare staff monitored, evaluated, and solved the problems. As a result, caregivers were more confident in their roles. This is in line with the goals of the home service system, which focuses on families and communities to have the potential to care for and manage health to cover all dimensions holistically (Chaikongkiat et al., 2016). Moreover, education plays an important role for parents, especially the knowledge of caring for children with CHD. Therefore, parents who received the program in this study had higher levels of knowledge and practice scores in caring for children with CHD, allowing the children with CHD to have a better quality of life (EL-Gendy et al., 2020). A study reported that toddlers with CHD whose mothers received a supportive and educational nursing program had a lower cumulative incidence rate of illnesses when compared with caregivers who had not received an education program (Suklerttrakul et al., 2018a).

Moreover, the data of children with CHD were shared between the primary health care staff and physicians so caregivers of children with CHD can receive continual and consistent care and this reduces the confusion of caring for their children (Wangsawat et al., 2018). Caregivers with good knowledge, understanding, and performance in the caring role can improve children with CHD health conditions, reduce the chance of complications, and have a better quality of life. According to Jackson et al. (2016), an effective home-based support program for families with chronic diseases should focus on general skills in children's caring, support caregiver's well-being, and collaborate with trained health professional staff. This continuing care program at home provides caregivers for children with CHD with increased access to patient care advice and increases the chance for help when patients have health problems that require specialist care. This program delivers the confidence and roles for caregivers in caring for children with CHD properly. In addition, care by public health staff who understand the caregiver context will reduce burden, anxiety, and stress in caregivers. Therefore, hospitals should implement continuing care at home programs to prepare caregivers before discharging patients and home visits for children with CHD to receive continued and effective care.

As technology evolves, continuing care programs could be combined with other methods, such as telehealth education for follow-up programs. Telemedicine is commonly applied to manage chronic diseases (such as CHD) at home, improve patient outcomes, improve family care, and prevent complications (Chang et al., 2018; Mao et al., 2019). Zhang et al. (2023) reported telehealth education via WeChat significantly improved parents' awareness of the disease and home care ability following CHD surgery, as well as lessened their home care burden, hence lowering the frequency of complications and loss to follow-up after discharge.

This study faced several limitations. Most caregivers who participated in teaching activities, demonstrations, and home visits were mothers, but in the culture in this study area, the father served as the head of the family. Essential care for children with CHD, such as taking patients to visit the dentist, visiting the doctor for catheterization or surgery, and cost planning for children with CHD care is not yet fully practicable. This is because some fathers do not allow their children with CHD to be cared for by this caring. This may be due to a lack of understanding of the reasons for the treatment. In addition, primary health care units lack a pulse oximeter for infants and young children, which makes assessing the patient's health status during home visits less effective, and nursing care of patients is inefficient.

CONCLUSION AND RECOMMENDATION

The continuing care program increased the caregivers' knowledge of caring for children with CHD. The continuing care at home program consisted of teaching, demonstrations, and feedback with consistent content through the manual of CHD knowledge for caregivers, encouraging caregivers to have better knowledge and play a role in caring for children with CHD. The continuing care program could be used as a community-based intervention and a guideline to facilitate caregivers of children with CHD to lessen the home care burden and increase the QoL of children with CHD. This program is also recommended to apply continuously for caregivers of children with CHD at the outpatient or as part of discharge planning and combined with telephone and telehealth to provide broader health information thus helping caregivers gain confidence and maintain an effective caregiver role.

FUNDING

This research was funded by the National Research Council of Thailand (NRCT).

CONFLICTS OF INTEREST

The author declares that there is no conflict of interest.

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