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A scientific journal

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Editorial Policies

Focus and Scope

Jurnal Keperawatan Soedirman is a Nursing journal cover all nursing area including basic research in nursing, management nursing, emergency and critical nursing, medical surgical nursing, mental health nursing, maternity nursing, pediatric nursing, gerontological nursing, community nursing, family nursing education nursing, complementary and alternative medicine (CAM) in nursing.

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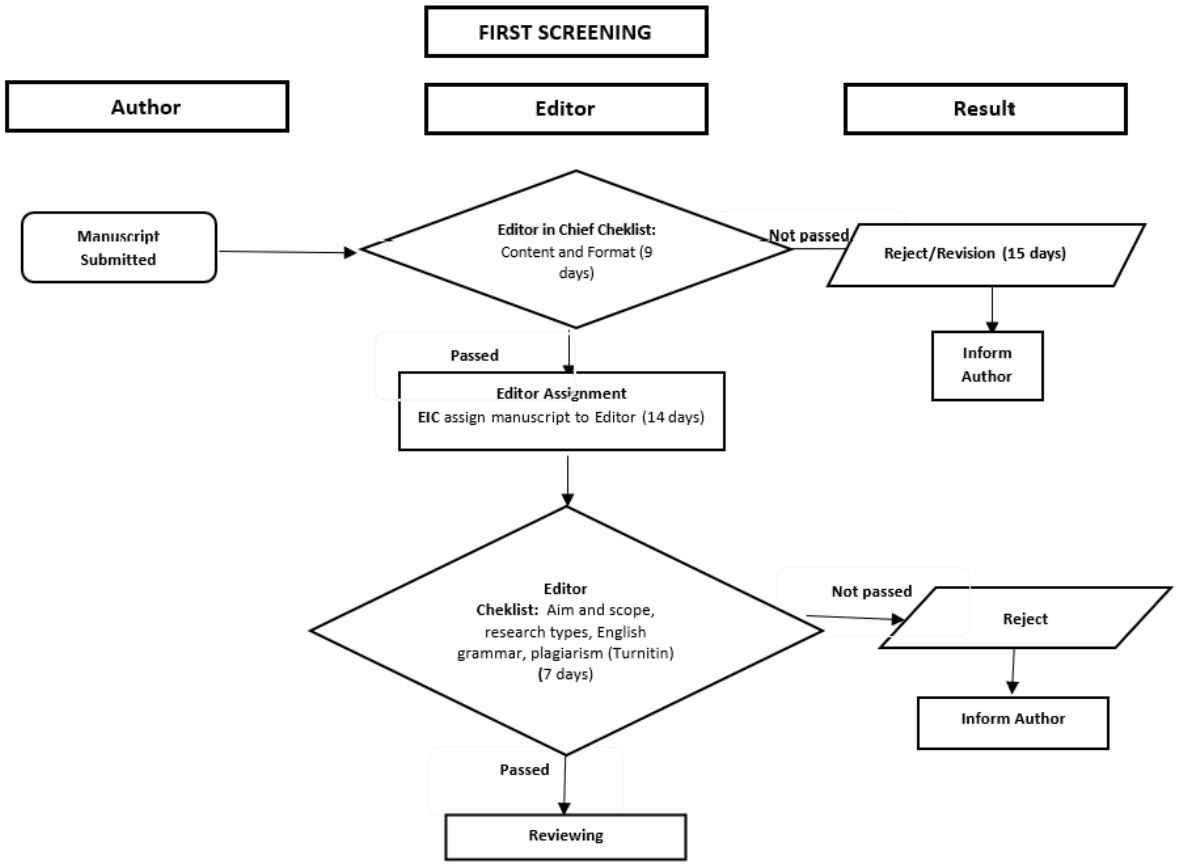
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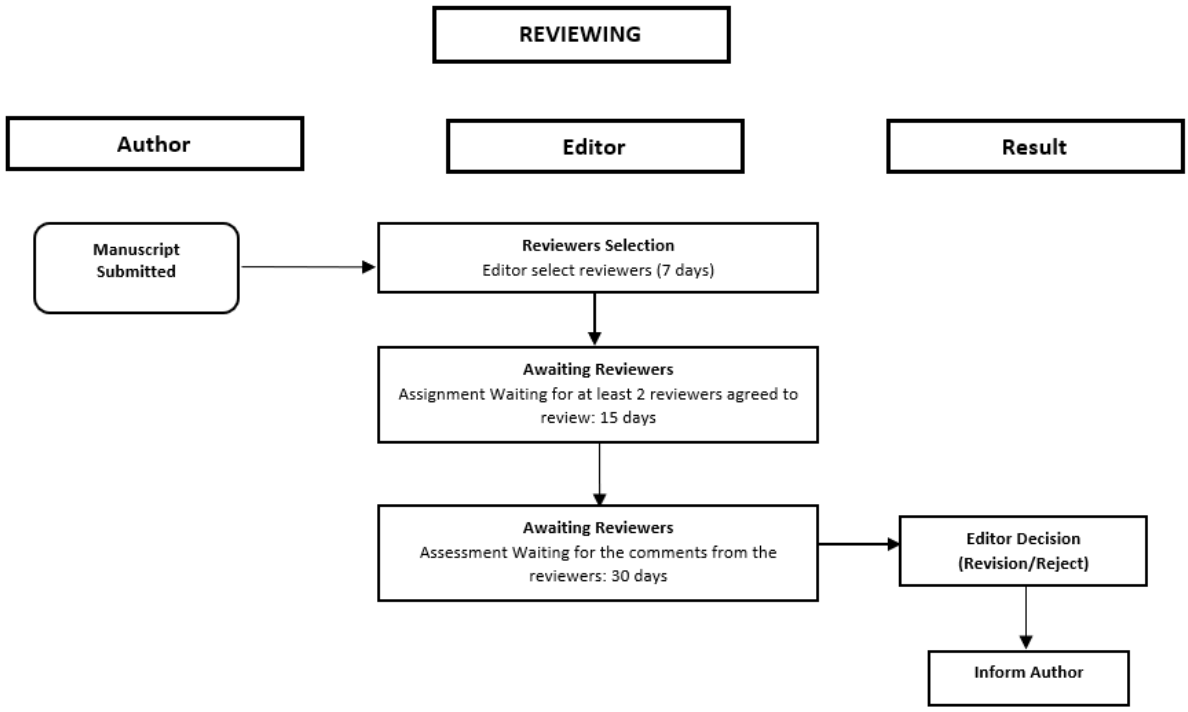
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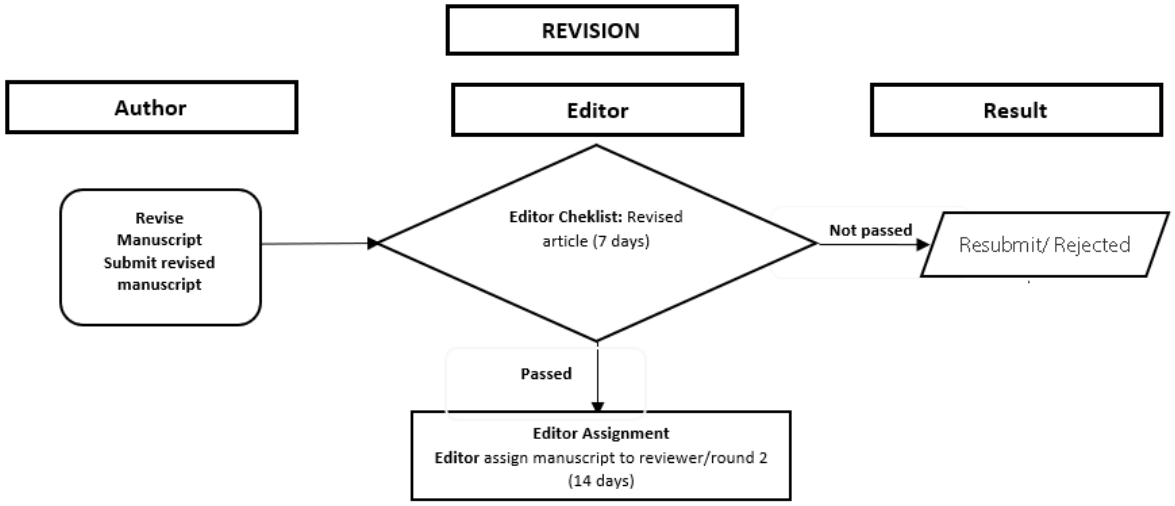

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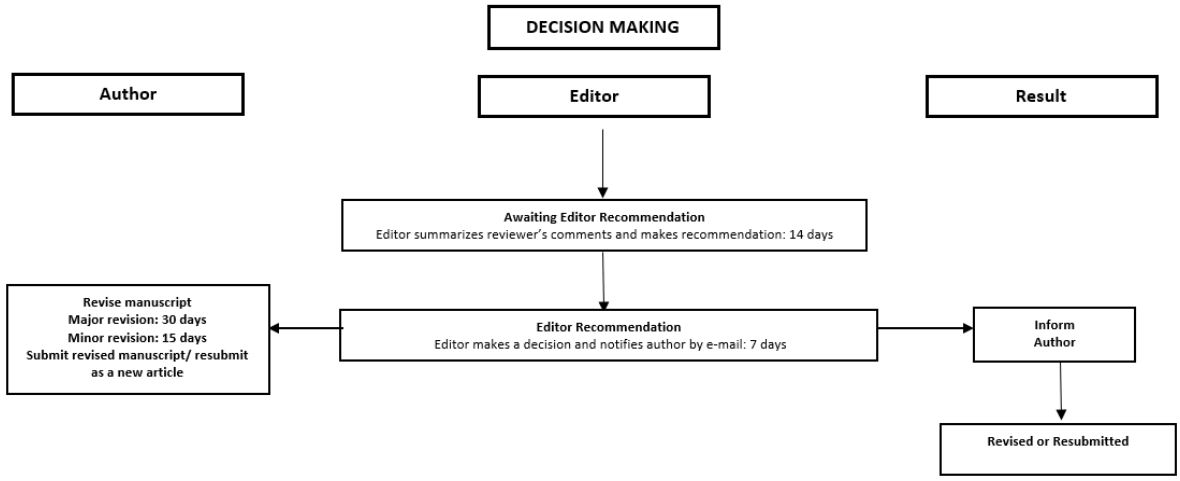

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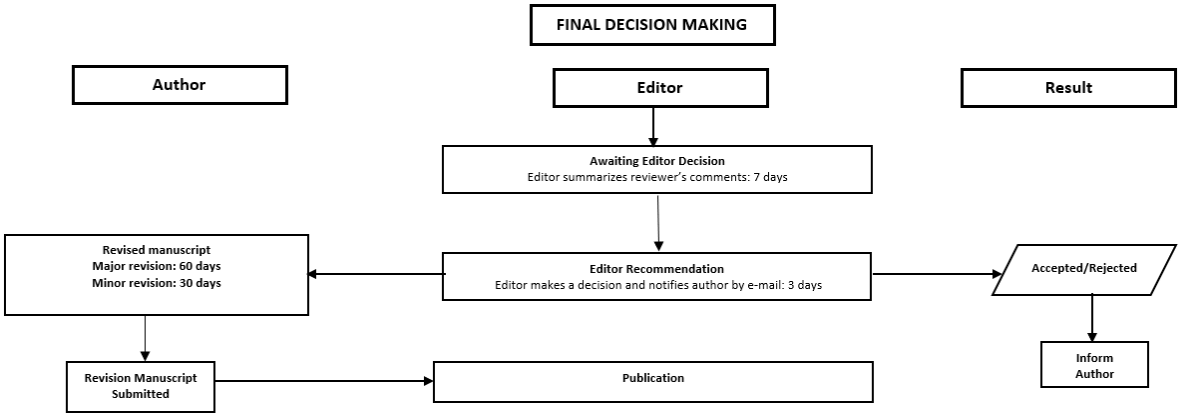

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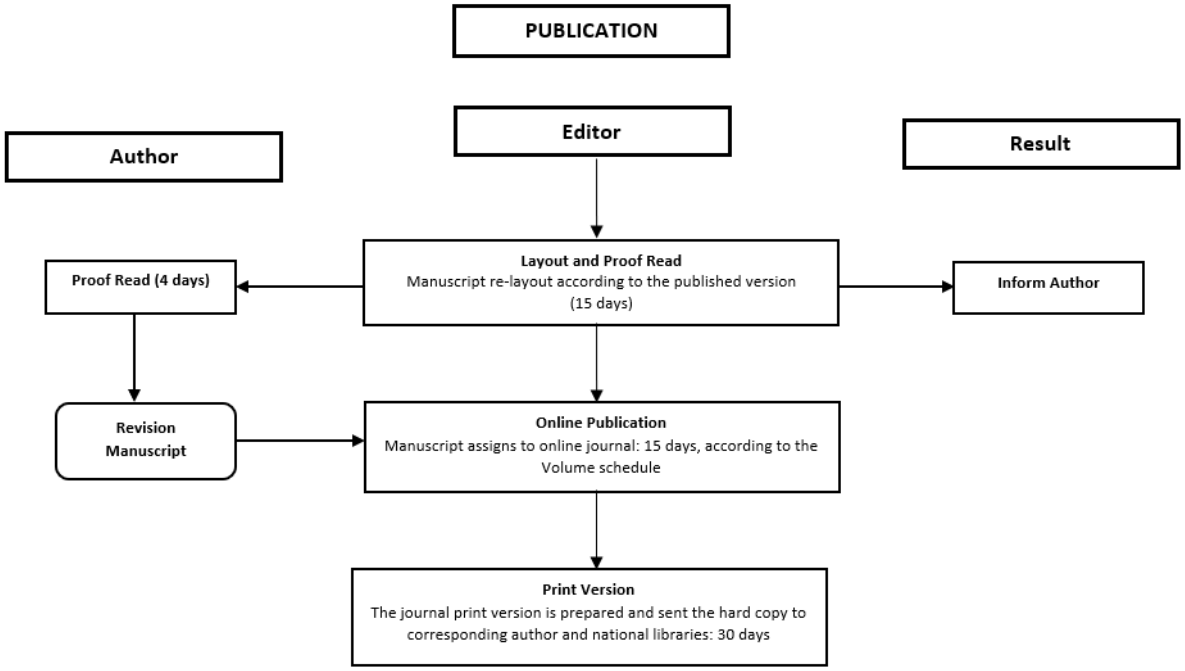

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Type

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In writing

Single author

In one developmental study (Smith, 1990), children learned ...

or

In the study by Smith (1990), primary school children ...

or

In 1990, Smith's study of primary school children ...

Plural authors

The first citation: Masserton, Slonowski, and Slowinski (1989) state that ...

Next citation: Masserton et al. (1989) state that ...

Some references in a sentence

Several studies (Jones & Powell, 1993; Peterson, 1995, 1998; Smith, 1990) suggest that ...

Writing in the References

Book:

Strunk, W., & White, E. B. (1979). *The guide to everything and then some more stuff*. New York, NY: Macmillan.

Gregory, G., & Parry, T. (2006). *Designing brain-compatible learning* (3rd ed.). Thousand Oaks, CA: Corwin.

Book chapter:

Bergquist, J. M. (1992). German Americans. In J. D. Buenker & L. A. Ratner (Eds.), *Multiculturalism in the United States: A comparative guide to acculturation and ethnicity* (pp. 53-76). New York, NY: Greenwood.

Journal with DOI:

Fatoni, A., Numnuam, A., Kanatharana, P., Limbut, W., Thammakhet, C., & Thavarungkul, P. (2013). A highly stable oxygen-independent glucose biosensor based on a chitosan-albumin cryogel incorporated with carbon nanotubes and ferrocene. *Sensors and Actuators B: Chemical, 185*(0), 725-734. DOI:10.1016/j.snb.2013.05.056

Journal without DOI (DOI not available):

Hermawan, D., Yatim, I. M., Ab Rahim, K., Sanagi, M. M., Ibrahim, W. A. W., & Aboul-Enein, H. Y. (2013). Comparison of HPLC and MEEKC for Miconazole Nitrate Determination in Pharmaceutical Formulation. *Chromatographia, 76*(21-22), 1527-1536.

Hamfi, A. G. (1981). The funny nature of dogs. *E-journal of Applied Psychology*, 2(2), 38 - 48. Retrieved from http://ojs.lib.swin.edu.au/index.php/fdo

Conference

Zusfahair, Ningsih, D. R., & Kartika, D. (2015). *The potency of Amylase Producing Bacteria in the Liquid Waste of Tapioca Factory*. Paper presented at the 1st Pharmacy International Conference, Purwokerto, Indonesia.

Online Newspaper:

Becker, E. (2001, August 27). Prairie farmers reap conservation's rewards. *The New York Times*. Retrieved from http://www.nytimes.com

Encyclopedia:

Brislin, R. W. (1984). Cross-cultural psychology. In R. J. Corsini (Ed.), *Encyclopedia of psychology* (Vol. 1, pp. 319-327). New York, NY: Wiley.

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ORIGINAL ARTICLE

EXPLORING NURSING STUDENTS' EXPERIENCES WITH FACULTY CARING BEHAVIORS IN LEARNING

Evelyn Hemme Tambunan*, Dewi Kristiana

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ABSTRACT

The caring behaviors of faculty members are one of the most important and influential factors for effective learning. If caring is only left as an assumption, this behavior will not be implemented in professional nursing practice. This study aims to explore nursing students' experiences of the nursing faculty's caring behaviors in learning. Descriptive phenomenology was used to collect data from ten senior bachelor's degree nursing students at a private university in Bandung, Indonesia. Data were collected through in-depth interviews and ethical considerations were followed. The result was transcribed and analyzed by using a qualitative content analysis approach. Trustworthiness was established by Korstjens and Moser's criteria. Nel Noddings' three great means of nurturing ethical ideals were reflected in these subjects. The interview data analysis revealed three key themes reflected by all participants: tangible virtue, challenging interaction, and modeling. The following were the six subthemes that emerged: moral attitude, moral action, supportive interaction, disruptive interaction, personal model, and professional model. The results suggested that faculty caring behavior is a useful strategy for the development of nursing students' caring behavior during the program and before they enter their real professional roles. The exact levels of faculty caring behavior need to be measured to truly depict the faculty caring behavior in nursing education.

Keywords: *Learning; nursing faculty caring behavior; nursing students' experiences*

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INTRODUCTION

Caring is the essence of nursing, which encourages individuals to focus on nurturing, loving, and caring. Caring is at the heart of nursing theory and practice, it manifests as intentions, appreciation patterns, attuning oneself to dynamic flow, and is the most central and unifying focus of nursing practice (Watson, 2018). Patients' perceptions of nurses' caring behavior are influenced not only by the technical care provided but also by the quality of care in hospital settings (Calong & Soriano, 2018; Labrague et al., 2020). Furthermore, in practice, the standard of nursing excellence is determined by the patients' experience of care performed by nurse professionals (Perangin-angin et al., 2021). Professional nursing, as the largest health system discipline, continues to have quality problems perceived by the patients, families, and nurses themselves. In acute care hospitals, the culture of missing care has grown through time and appears increasingly common (Duffy, 2018; Modic, Siedlecki, Quinn Griffin, & Fitzpatrick, 2016). Workplace pressures, coping methods, self-efficacy, and prior care experiences have all influenced nurses' caring behavior (Foster, Rochen, Giandinoto, & Furness, 2019; Oluma & Abadiga, 2020). On the other hand, caring experiences from learning programs regarding respectful behaviors among nursing faculty and students are essential; if caring is only left as an assumption, the behavior will not be implemented in nursing professional practice (Christoper, Tantillo, & Watson, 2020; Konuk & Tanyer, 2019).

Having experienced the importance of caring during their nursing education, students can then learn about the caring virtue (Monsen, Le, Handler, & Patrick J. Dean, 2017; Noddings, 2012). Being cared for early in the learning process gives students moral knowledge about what it is to care for and be cared for. Students who do not experience care in their learning often find it difficult to act in caring ways. Furthermore, students that have had caring experiences can apply this to their careers; therefore, role models are essential

to establishing effective caring habits (Wei, Henderson, Peery, & Andrews, 2021). In addition, Duffy (2018) stated that faculty role modeling and caring interactions during the educational process may be the most effective way to learn professional caring. Students learn caring through copying faculty caring behaviors and experiencing caring within their interactions with faculty and other students (Fifer, 2019; Noddings, 2010; Salehian, Heydari, Aghebati, & Karimi Moonaghi, 2017). Moreover, nursing students' knowledge of the needs and necessity of caring may improve as a result of caring education, and they may become caring ambassadors in healthcare (Li et al., 2019; Noddings, 2012).

Previous studies showed that caring behavior played an important role in the dynamism of the faculty-student relationship (Labrague, McEnroe-Petitte, Papathanasiou, Edet, & Arulappan, 2015). The existence of caring in actual interactions between faculty and students has developed the students' caring abilities. Numerous caring factors affect nursing students' perception of faculty caring, including instilling confidence, providing a supportive learning climate, allowing an appreciation of life meaning, balancing control versus flexibility, and respectful sharing (Moriña, 2019; Zamanzadeh, Shohani, & Palmeh, 2015). Based on Watson's theory of care, the caring moment is represented by an actual occasion that allows human caring to occur (Watson, 2018). Therefore, both faculty and students would determine the relationship of the moment and contribute to the acquisition of professional skills, caring attitude, self-confidence, learning competencies, and interpersonal interactions between students (Chipeta et al., 2021; Sitzman, 2016).

Furthermore, the nursing faculty must promote an environment of caring in learning to foster ethical integrity and professionalism. A review of studies has described faculty caring behavior as an encouragement, making students feel important, having respect for the diversity of learning, and understanding the students' struggles. As a results are a positive students' professional development and promote students' determination to continue their study. In addition, a learning environment that is comfortable, safe, without judgement, accepting of mistakes, and offsets institutional racism should also be maintained by faculty to facilitate caring pedagogy (Hunter & Stinson, 2018; Rojas & Liou, 2017). In contrast, the noncaring behavior of faculty fosters an unhealthy learning environment and negative feelings (Gultom & Tambunan, 2021; Situmorang, 2021). Examples of faculty noncaring behavior and its impact are ostracism, dissuasion, loss of confidence, hopelessness, emotional turmoil, and increased anxiety (Kerby, Branham, & Mallinger, 2014; Zamanzadeh et al., 2015).

Despite the caring behaviors of faculty members being one of the most important and influential supporting factors for the learning environment and the development of professional caring behavior in nursing students, this topic has received little attention. In Indonesia, there has been a lack of previous studies on this topic, such that the researchers of this study were unable to offer a clear picture of caring dimensions in learning. Therefore, this study was conducted to explore the experience of nursing students with the faculty's caring behavior in the nursing program at a private university in Bandung, Indonesia.

METHOD

Study design

The is a qualitative study with a descriptive phenomeno logical approach. Caring is a human experience and this justifies the need for a phenomenology inquiry (Elo & Kyngas, 2008). The "three great means of nurturing the ethical ideal" described by Noddings (2010), which included dialogue, practice, and confirmation, were used to structure the meaning of caring in educational experiences.

Informants

By using a purposive sampling strategy, the principle of data saturation was used to recruit 10 study informants. The sample was comprised of 5 female and 5 male senior bachelor nursing students from a total population of 96 students. Their participation was based on their willingness to take part in the study. The sample was drawn from senior year students because they were regarded to have had adequate experience with faculty members and could ably provide rich data (Pollit & Beck, 2018).

Data collection

Data was gathered through discourse by utilizing a semi structured interview guide that allowed participants to freely express their experiences. The following questions were asked: Tell me about your perception of faculty caring in a learning environment? What does faculty caring in a learning environment mean to you? What behaviors do you want to find in your faculty members? Additional questions were asked in response to the participants' expressions or reactions during the interview, in addition to the essential questions.

The participants were questioned to obtain detailed and specific information about their experiences, as well as to comprehend the meaning of their experiences in the context of the interview. An example of the key interview question is "Tell me more about it, what was that like?".

There were ten (10) face-to-face discussion sessions, each lasting about 45 minutes on average. The interviews were completed over one month in October 2019. The dialogue sessions were guided by the first author, and all data tapes were recorded and transcribed for each participant. The data collection occurred in a quiet room on the university grounds. The notions of bracketing, intuition, and reflexivity were used throughout the study to consider transcendental subjectivity.

Data analysis

Qualitative content analysis was used in this study. It involved analyzing the content of narrative data to specifically identify prominent themes.

Trustworthiness

To maintain the rigor of the study and ensure the credibility of the findings, the researchers utilized member checking. The dependability was achieved by maintaining consistency in the process of data collection by using the same main questions in the interview guide. The conformability was achieved by incorporating the participant's expressive language, which was presented as direct quotes from the transcribed data, to provide evidence of the research findings in the report. Lastly, the researcher supplied a detailed description of the research process and the research setting, and this allowed anyone interested in transferring data findings to determine whether or not such a transfer is conceivable (Korstjens & Moser, 2018).

Ethical consideration

Ethical approval to conduct the study was obtained from the Faculty of Nursing Science's Research and Ethics Committee with the reference number 031/KEPK-FIK.UNAI/EC/XI/19.

RESULTS

This study's findings depict the experiences of nursing students regarding faculty caring behavior in learning. The researchers of this explored the meaning of these experiences by transcribing the participants' direct words and slowly reading them repeatedly and independently. Next, significant statements related to the experiences of the nursing students from each transcript were deduced. The meanings of significant statements were then structured into themes. The last step was to compare the transcripts and themes multiple times to secure the justification of the results. The following themes emerged from the data collected: tangible virtue, challenging interactions, and modeling. While the six subthemes that emerged were moral attitude, moral action, supportive interaction, disruptive interaction, personal modelling, and professional modelling.

Tangible virtue

Both female and male students perceived caring behavior as a tangible virtue. The moral values of caring are "moral attitude" and "moral action," which emerged as subthemes that reflect caring behavior.

Moral attitude

The caring that was experienced by the students was a form of moral attitude. This may be described as something or someone that shows concern, love, respect, or warmheartedness to others. Examples of participants' statements regarding this subtheme are as follows:

"It's related to when someone or I have a willingness to be concerned about my friend's afflictions or hardship." (P1)

Another participant shared:

"I care about him because I know him and I want to show that I love him." (P3)

Moral action

This form of caring was experienced as a moral action and may be evidenced by empathy. Educators' empathy is defined as the extent to which faculty attempt to truly understand their students' personal and social situation and transmit their comprehension and caring to students through their action. It is not only when someone has moral values that exhibiting empathy or compassion would be manifested as caring. An example of moral action is shown in the following statement:

"...the lecturer wants to help me when I need a further explanation about the learning material...." (P5).

"...testify and saying sorry without doing anything to change, it's not a caring expression...." (P2)

While another participant described:

"I practiced caring for others by doing good deeds such as assisting, respecting, not judging, and encouraging others. It's not caring if I just talk about it and don't back it up with action…." (P3)

Challenging interactions

All ten participants described the faculty caring behavior that was experienced by nursing students during learning as a challenging interaction. Two subthemes were then derived from this theme, these are: "supportive interaction" and "disruptive interaction."

Supportive interaction

The participants stated that they experienced supportive interactions with the faculty during learning. The caring behavior performed by the faculty has enhanced the students' academic and nonacademic performance. Nevertheless, these interactions were challenging for the students. As depicted through statements:

"When I saw one faculty member consistently urge us in class, at every meeting, and when I received a low mark, I felt compelled to improve my performance." (P1)

"...they trusted us to do individual assignments or in a group." (P2)

"...sometimes when I hear a person's story or experiences that he revealed in class, it would change me." (P4)

"When I'm having financial difficulties, I talk to her to see if there's a path out...rather than taking a step back." (P6)

"He called my name frequently in class, which made me feel flattered...ehhmm...but when I first admitted to his habit of calling a student's name frequently, I felt disrespected...." (P7)

"Faculty feedback on assignments, in my opinion, offers us an opportunity to rectify our comprehension of the topic acquired and boost our self-confidence..." (P8)

"I was once mortified when a female faculty member offered me money for a haircut...hahaaa…." (P10)

Disruptive interaction

The participants were also challenged by the uncaring behavior of the faculty during learning. The forms of uncaring behavior of faculty such as disruptive interaction, have been proven to destroy the learning environment and hinder student self-development. Disrespect, less empathy, anger without reason, and other such uncaring behavior disturbed the interaction between faculty and students. One participant reported:

"…the way she was angry...I felt that she had no reason to be angry, she was not performing care... This eliminated my desire to finish the assignment." (P2).

Another stated:

"…I once felt one faculty member was generalizing her distrust of every student, I felt that I had tried to stay away from her…." (P6)

However, one participant stated a faculty member's uncaring behavior has developed his personal growth. He claimed: "I am motivated to be more independent in learning, at a time when lecturers often call the names of other students who are smarter than me." (P8)

"I felt more independent in several learning tasks when I was junior and was less sensitive about my lower performance than in the first level... However, I am aware that this is how they exercise my decision-making process." (P8)

Modeling

This theme was divided into two subthemes: "personal model" and "professional model." All ten participants discussed how the faculty's caring behavior they experienced would tend to be demonstrated in their personal and professional life. However, some participants realized that uncaring behavior should not be implemented in both their personal and professional life.

Personal model

This model refers to the individual responses to the caring and uncaring behavior performed by faculty varying among participants. Generally, when participants are nurtured by their own experiences of being cared for or uncared for, they would exhibit and grow similar behavior. Imitating, exemplifying, replicating, and patterning exist as one's learned behavior. Participants described:

"...I imitate their caring behavior automatically, because they continuously perform that, such as asking about my condition, calling my name...." (P5)

"...I care for my classmates, and they offer the same in return…." (P7)

"...I was able to put care into clinical practice, and the instructor helped me get started with new patients." (P8)

"...I didn't pay attention to my junior while in clinical practice, I did this because I was never paid attention by one faculty member…." (P9)
"...and was trying to avoid a meeting when she called me for an advisory meeting." (P10)

Professional model
The impact of being treated by different behaviors could motivate someone to be better in their future professional life. For instance,
"... because of the way I was treated, I learned to shape better behavior in the future. I believe that correct behavior should be exemplified, but wrong behaviors should not." (P1)
"…when I observed the uncaring behavior performed by faculty, I understand that there might be some reason as to why they behave like that, I know that was not professional behavior." (P4)
"...as I learned about caring through courses and also as demonstrated by faculty, I now really understand how to implement it in both my personal and professional life in the future." (P6)

DISCUSSION

Many previous studies have explored faculty caring behavior in nursing education. This study adds to this existing body of knowledge by adding Indonesian nursing students' experiences with caring behavior. From this study, three themes were obtained. The results were interpreted and discussed based on a literature review.

Tangible virtue
Moral caring is evidenced by the lecturers' caring actions in the learning environment. This finding reinforces previous research which showed that caring value as a human trait is a tangible virtue. Humans display caring behavior as an innate characteristic, and everyone has the capacity to care. Caring involves showing feelings and requires action. Furthermore, caring is an action that is learned through the experience of being cared for (Lachman, 2012; Lee, Palmieri, & Watson, 2016). While the dictionary defines caring as "a feeling and exhibiting concern and empathy to others; showing or having compassion," caring is also considered as an attentive and helpful response to the condition and circumstances of a vulnerable human being in need of assistance (The Free Dictionary, 2018; Watson, 2018).

This study also considered caring as a moral attitude. In nursing education, the caring paradigm has a main impression on the teaching and learning process. Noddings (2012) researched how schools and educators understand and practice care in education. Noddings paved the way for many educators to understand the importance of making a moral decision to enter into a relationship that has both cognitive and affective dimensions. Specifically, the caring relationship is made up of the faculty's motivation to address the students' needs and in return, the student acknowledges the faculty's response to their needs.

The moral action perceived by nursing students is referred to as the caring concept by Gay (2018) in her book which describes caring as a moral value that transforms "self-determination into social responsibility" by combining information and strategy thinking to determine how to act in the best interests of others. This is depicted by nursing students as sympathy, empathy, and compassion (Leokuna & Tambunan, 2022). These are consistent with the findings of the study that stated that being present, acting to relieve suffering, getting the basics right, and going forward are elements related to caring. Moreover, placing oneself in others' shoes, understanding others' suffering, or taking time to listen carefully to others are also forms of caring (Hofmeyer et al., 2018).

Another study revealed that the technique of bodily touch has a specific pedagogical purpose. Therefore, faculty members need to use appropriate bodily touch in such a way to concern their student's needs, interests, and purposes in particular situations (Anderson, Ohman, & Garrison, 2016).

Challenging interaction
Faculty caring behavior is essential in promoting either a supportive or disruptive learning climate. A positive interaction would build a constructive learning atmosphere for students. Previous studies have found that the quality of the learning environment is found to be the key influence on the emotional well-being of students (Bada, 2015; Tharani, Husain, & Warwick, 2017).

On the other hand, the negative interaction forms a disruptive learning atmosphere for students. Uncaring behavior by faculty members could include incivility, which in a previous study, consisted of general taunts or disrespect to nursing students. Furthermore, the academic environment, learning outcomes, and safety of students would be adversely affected (Muliira, Natarajan, & van der Colff, 2017). There was some influence of Indonesian culture where students as a younger generation must respect their elders wherever they are and are reluctant to complain directly, particularly to aged faculty. Ultimately, these two interactions have contributed to the personal and professional growth of students. A study by Haerens, Aelterman, Vansteenkiste, & Soenens, (2015), supported the hypothesis that an autonomy-supportive teaching style catalyzes and nurtures students' primary psychological needs for relatedness, competence, and autonomy.

This study's findings also reinforce the fact that nursing students want more than just support, they desire assistance with developing deeper relationships with faculty members. Students feel more successful and express greater levels of satisfaction when they are supported (Clark, 2016). Moreover, Salehian et al., (2017) stated two other principles in faculty-student caring interaction to enhance students' learning experiences, namely, human relationship and knowing. Based on humanitarian principles, respect, equality, and interaction, the processes of teaching and learning are sustained. On the other hand, determining methods to know the student better requires strategies because of the uniqueness of each student.

Modeling
In nursing education, the emotional goal of learning is to develop the principles of caring value. Educators have the role of helping students to internalize caring values. In this way, the faculty's caring behavior can promote the personal and professional growth of students. This could be achieved by imitating or patterning the caring behavior (Nadelson, Zigmond, Nadelson, Scadden, & Collins, 2016).

It is necessary to consider the ideal performance such as caring behavior as a pattern that is planted and implemented during the program. It has been found that instructors' caring actions had a favorable influence on nursing students' caring behaviors. Nursing students can be professionally trained to acquire caring competence through positive faculty modeling and role modeling (Labrague et al., 2015). In other words, the faculty's demonstration of caring behavior would be the best

method to communicate a caring concept, which is essential in nursing.

Another study on nursing students' experiences with faculty's empathy as an expression of caring resulted in a positive impact on students' professional development in nursing (Mikkonen, Kyngäs, & Kääriäinen, 2015). Furthermore, the study showed that education and achieving learning experiences influence the growth and development of professional values positively. In this case, the emphasis on paying attention to value-based integrated education will be affected by practical, conceptual, and ethical learning. Therefore, the purposeful integration of value-based education such as caring, human dignity, and altruism all have strong positive points for nurses' work in the future (Parandeh, Khaghanizade, Mohammadi, & Mokhtari Nouri, 2014). Thus, the learning environment is one of the aspects that can influence nursing students' professional values. Professional values, such as caring, are the most crucial components in maintaining high-quality standards in the nursing profession. This caring value should be instilled in nurses earlier in their education to help them transition out of their student years (Ayla, Ozyazicioglu, Atak, & Surenler, 2018).

Paying attention to all three themes of faculty caring behavior experienced by nursing students can lead to a positive learning environment and professional caring development during the education program. One of the study's limitations was the possibility of participants being involved in daily activities, as well as time constraints for interviewing. To overcome this limitation, the researchers could coordinate and conduct interviews with lecturers too.

CONCLUSION AND RECOMMENDATION

This study obtained three research themes that support the experiences of nursing students with faculty caring behavior in learning. Tangible virtue, challenging interaction, and modeling were depicted as the main experiences. Six subthemes were derived from the three main themes, including moral attitude and moral action, supportive interaction and disruptive interaction, and personal model and professional model. These experiences were delineated from the point of view of nursing students at a nursing school in Indonesia. The study obtained three main themes of faculty caring and caring manifested by nursing faculty during learning that was perceived by the nursing students. Faculty members' behavior has an impact on the caring behavior of students personally and professionally. This study suggested that faculty caring behavior is a useful strategy for the development of nursing students' caring behavior during the program before they enter their real professional roles. However, the exact levels of faculty caring behavior experienced by participants could not be measured in this study. Therefore, future studies should further explore faculty caring behavior itself to enrich the experiences of caring behavior in nursing education.

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ORIGINAL ARTICLE

PERCEPTION AND READINESS OF NURSING LECTURERS ON INTERPROFESSIONAL EDUCATION

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ABSTRACT

Interprofessional education (IPE) has received considerable attention over the last 10 years due to the greater demand for improved health services and increasingly complicated health problems. The interprofessional team consists of healthcare practitioners with specialized knowledge, attitudes, skills, and abilities. They have specific objectives based on the patient's medical needs. The purpose of this study is to investigate the perspectives and readiness of nursing lecturers for IPE adoption in nursing education. A descriptive comparative analysis using ANOVA and correlation analysis using Pearson correlation were adopted in this research. Nursing lecturers (n=53) from five different institutions responded to the survey. In this study, the RIPLS and IEPS tools were employed. The overall lecturer's RIPLS scores were high with a mean score of 75.17 (SD=5.01) and an IEPS total score of 74.55 (SD=8.27). This study found that there were no significant differences between the demographic data and the total RIPLS and IEPS scores. In addition, there were statistically significant associations between RIPLS and IEPS (p >0.0001). This indicates that all nursing lecturers have a high level of readiness and comprehension of IPE.

Keywords: Interprofessional education (IPE); nursing; perception; readiness

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INTRODUCTION

For a long time, there has been a rigid and hierarchical relationship between the medical profession and other health professionals. The medical profession considered themselves to be the principal officers of the health service, while others were subjected to it (Wilkes & Kennedy, 2017). Whereas, healthcare providers need to work together (in collaboration) to improve the quality of care they deliver to patients (Mahler et al., 2014; Wilkes & Kennedy, 2017). Collaboration with other healthcare providers is essential for patient safety and security (Safabakhsh et al., 2018) as there will be fewer mistakes if everyone on the team understands their roles and responsibilities (Lapkin et al., 2013; Levett-Jones & Lapkin, 2014). However, not all healthcare professionals receive adequate interprofessional education (IPE) when studying (Safabakhsh et al., 2018). They come from various scientific backgrounds, thus their principles and educational programs are diverse (Mahler et al., 2018). When team members are well-informed about their roles and responsibilities, they are more likely to make minor errors. Therefore, the team must train together to fully comprehend their respective roles. Implementing IPE to ensure patient safety and security is a solution to some of the difficulties associated with collaborative work among healthcare professionals (Lapkin et al., 2013; Safabakhsh et al., 2018).

IPE has received considerable attention over the last 10 years as a result of the demand for better health services among patients. IPE may be accomplished by collaboration among health workers, as well as with changes in the healthcare system as a result of patients' increased demand for more sophisticated health services, thereby necessitating innovation and efficiency in the patient-care concept (Homeyer et al., 2018).

If there are students from two or more professions studying together, interprofessional education can be used to generate practical collaboration skills and improve health services (Davidson et al., 2020). One way to promote and preserve the values of cooperation and collaboration is to improve healthcare students' skills through IPE (Wilbur & Kelly, 2015). IPE has several benefits, including increased mutual respect and trust among healthcare professionals, increased awareness of their professional duties and responsibilities, effective communication, increased job satisfaction, and positive support regarding patient care (Homeyer et al., 2018). IPE and collaboration have become increasingly vital when students' confidence in their ability to modify their attitudes and actions is undermined. IPE may also help students alter their attitudes by minimizing negative behavior stereotypes and demonstrating a constructive working connection among healthcare practitioners (Kenaszchuk et al., 2012). IPE may also increase cooperation practices and improve patient care services by providing knowledge of attitudes and collaboration abilities. However, support for IPE is currently limited, but it is growing year after year (Brashers et al., 2016; Meyer et al., 2017). Although IPE is well-known, there is still a debate on when is the best time to offer it to students. The most recent perspective is that collaboration should be presented to children from the start of their education and integrated into the curriculum (Meyer et al., 2017).

Various research has been conducted on the IPE framework since it was introduced by the WHO in 2010. The analyses cover the IPE implementation paradigm as well as the perspectives of IPE actors, which would be students and lecturers in health science education. A past study found that IPE training strengthened the collaboration between nursing and medical students in Nicaragua, and IPE was delivered at a preclinic before they practiced in an actual clinic (Leathers et al., 2018). Furthermore, a study that evaluated the IPE initiation of nursing and pharmacy students in Qatar indicated that students' comprehension and respect for IPE are growing as a result of a curriculum designed in collaboration with scientists from other fields (Wilbur & Kelly, 2015). Previous studies have also found that the impact of interprofessional abilities held by medical, nursing, occupational therapy, pharmacy, physical therapy, and radiology students on pediatric patients with pain resulted in improved service in addition to smoother operations (Hunter et al., 2015). The IPE model was also created for first-year pharmacy students through high-fidelity patient simulation and it had a substantial influence on their capacity to collaborate (Meyer et al., 2017). In medicine, nursing, pharmacy, dentistry, obstetrics, and other health fields, students' implementation, preparedness, and perception of IPE have all been studied extensively. It can be concluded that IPE is crucial for improving health professionals' cooperation abilities and should be implemented as soon as possible to improve the quality of health services provided to patients and the general public (Darlow et al., 2015; Gilligan et al., 2014; Kenaszchuk et al., 2012; O'Shea et al., 2019; Salari et al., 2017; Tran et al., 2018; Victoroff et al., 2014).

The capacity and competence of educators to supervise students in their profession is an important element in IPE implementation. Educators who have previously worked in practical education will have a wealth of experience and will be familiar with the demands of their job. While there is no set standard for the amount of expertise, it is a good idea to ensure that each educator has supervised at least one uniprofessional placement before supervising students during practice-based IPE. Moreover, developing tailored practice-based IPE training might help to increase educator capacity and recruitment, as well as the stability of practice-based IPE (O'Leary et al., 2022).

Several studies on IPE implementation have been undertaken. However, students are not the only factors to consider when implementing IPE. The research should reveal the current state of lecturers' preparation as well as their attitudes for implementation in the future (Isrona & Susanti, 2021). Therefore, this study will analyze the nursing lecturers' preparation and perceptions of IPE. The objectives of this study are to characterize nursing lecturers' readiness and perceptions of IPE, to compare demographic data with nursing lecturers' readiness and perception data, and to define the relationship between nursing lecturers' readiness and perception.

METHOD

Study Design

The descriptive-comparative and correlation analytical study design was used in this research. In this study, 53 nursing lecturers who taught associate degrees and bachelor's degrees in five nursing schools in West Java, Indonesia, took part.

Sample

Purposive sampling was utilized in this study. The pilot sample criteria included nursing lecturers who taught both associate and bachelor's degree nursing programs, with disregard for their educational background, and who were willing to participate in the study. The sample was chosen at random for a duration of one month and 53 questionnaire forms were obtained.

Instrument

Parsell and Bligh's Readiness for Interprofessional Learning Scale (RIPLS) was used to assess attitudes toward various interprofessional teams as well as preparation for interprofessional education (Parsell & Bligh, 1999) The RIPLS consists of 19 statements that assess the strength of the lecturers' views on shared learning. Each statement was graded on a 5-point Likert scale, with anchors ranging from 1 (strongly disagree) to 5 (strongly/completely agree). The RIPLS was divided into subscales, where items 1–9 on the RIPLS were designated for "collaboration and teamwork," items 10–16 were on "professional identity," and items 17–19 were on "roles and responsibilities."

The RIPLS was confirmed to be valid and reliable in its original English version, and this scale has outstanding reliability with a Cronbach's alpha of 0.90 (Mahler et al., 2014). The Indonesian version of RIPLS has an excellent content validity index of 0.470-0.905. In addition, Cronbach's alpha value in our study was reported to be 0.914 (Mobalen et al., 2021). This scale's total score varied from 19 to 95, with higher scores indicating stronger interprofessional learning preparedness.

The Interdisciplinary Education Perception Scale (IEPS) has been used in other research with students in medical, nursing, and other healthcare fields, and it has been demonstrated to be reliable and valid. It has 18 items that are rated on a 5- or 6-point Likert scale. As in previous surveys, we used a 5-point scale ranging from "strongly disagree" (1 point) to "strongly agree" (5 points). A positive attitude toward interprofessional education is indicated by higher scores (Zanotti et al., 2015). Competence and autonomy, the perceived need for collaboration, perception of real cooperation, and understanding others' values were the four

subscales of the IEPS. The overall IEPS score varied from 18 to 108, with higher values suggesting a more positive attitude toward interprofessional education.

Data Collection

This study utilized online data gathering methodologies in August and September of 2021. The Zoho form tool was utilized to gather data, and links to study goals were disseminated through WhatsApp, Instagram, and Telegram.

Data Analysis

PSPP for Windows was used to evaluate the data. To summarize the demographic variables as well as the RIPLS and IEPS data, descriptive statistics (Mean (M) and Standard Deviation (SD)) were employed. As the data had a normal distribution, a one-way Analysis of Variance (ANOVA) was performed to assess the differences in total RIPLS and IEPS scores across the three groups of nursing lecturers with different work backgrounds. Moreover, an Independent Sample T-test was employed to analyze the differences between the genders in terms of RIPLS and IEPS scores. To determine the correlations between the RIPLS and IEPS scores, the Pearson correlation coefficient was utilized.

Ethical Consideration

The Ethics Committee for Research at Universitas Pendidikan Indonesia has authorized this study (number: B-1322/UN40.PUPJ.00.00/2021). All participants signed a written consent form. They were made aware of the study's voluntary nature and that they might opt out at any moment with no negative consequences. All study data were kept private, coded, and only the research team had access to it. Participants were not identified in the published findings.

RESULTS

This study enlisted the participation of 53 lecturers, all of whom we obtained their demographic information. The majority of the participants were between the ages of 41 and 57 (57%). This study included more female nursing lecturers (64%) than male nursing lecturers (47.5%), and the majority of the participants were married (90.8%). The majority of the participants have more than 10 years of experience as a professor (74%). Moreover, half of the participants (58.3%) had worked in emergency rooms, and a handful was from the medical-surgical nursing department (26%). The majority of them had no experience with IPE-related research (92%), did not teach the IPE topic (81%), and did not work at a university (55 %) (Table 1).

Table 1. Socio-demographic characteristics of participants (n=53)

Characteristic	n (%)
Age	
≤30 years	1 (2)
31-40 years	18 (34)
41-50 years	30 (57)
>50 years	4 (7)
Sex	
Female	34 (64)
Male	19 (36)
Work experience	
1-3 years	4 (7)
>3-5 years	3 (6)
>5-10 years	7 (13)
>10 years	29 (74)
Department	
Pediatric nursing	10 (19)
Maternity nursing	2 (4)
Medical-surgical nursing	14 (26)
Community nursing	13 (24)
Psychiatric nursing	2 (4)
Emergency nursing	4 (8)
Basic nursing science	8 (15)
Teaching IPE	
Yes	10 (19)
No	43 (81)
Previous experience involved in IPE research	
Yes	4 (7)
No	49 (93)
The place of work	
Academy	4 (7)
Polytechnic	20 (38)
University	29 (55)

The overall RIPLS scores of the lecturers varied from 66 to 90, with a mean of 75.17 (SD=5.01) and a mean of 75.17 (SD=5.01). Furthermore, their mean RIPLS subscale scores for teamwork and collaboration, professional identity, as well as duties and responsibility were 42.02 (SD=3.19), 24.30 (SD=2.56), and 8.85 (SD=1.54), respectively (Table 2).

The cumulative IEPS scores of the lecturers ranged from 59 to 90. The overall IEPS and the competency and autonomy, perceived need for collaboration, perception of real cooperation, and recognizing others' value subscales also had mean values of 74.55 (SD=8.27), 34.75 (SD=4.19), 8.00 (SD=1.53), 21.29 (SD=2.76), and 10.00 (SD=2.27, respectively (Table 2).

Table 2. The mean score of RIPLS and IEPS and their subscales

Variables	Min	Max	M (SD)
RIPLS	**66**	**90**	**75.17 (5.01)**
Teamwork and collaboration	36	45	42.02 (3.19)
Professional identity	21	35	24.30 (2.56)
Roles and responsibility	7	16	8.85 (1.54)
IEPS	**59**	**90**	**74.55 (8.27)**
Competency and autonomy	25	40	34.75 (4.19)
Perceived need for cooperation	5	10	8.00 (1.53)
Perception of actual cooperation	15	25	21.79 (2.76)
Understanding other's value	6	15	10.00 (2.27)

The independent sample T-test revealed that there was no statistically significant difference between the sexes in terms of RIPLS and its subscales (P >0.05) (Table 3). In terms of IEPS and its four subscales, the study found no statistically significant difference between the sexes (P >0.05) (Table 3).

Table 3. Comparison of the mean of RIPLS, IEPS, and their subscales according to gender

Variables	Male M (SD)	Female M (SD)	T-test	P-value
RIPLS	**75.29 (5.29)**	**75.53 (4.59)**	**-0.383**	**0.70**
Teamwork and collaboration	42.16 (2.60)	41.94 (3.51)	-0.235	0.815
Professional identity	24.16 (2.63)	24.38 (2.69)	0.303	0.763
Roles and responsibility	9.21 (1.96)	8.65 (1.25)	-1.278	0.207
IEPS	**73.58 (8.54)**	**75.09 (8.20)**	**0.633**	**0.530**
Competency and autonomy	34.1 (4.26)	35.11 (4.16)	0.841	0.404
Perceived need for cooperation	8.26 (1.91)	7.85 (1.28)	-0.934	0.355
Perception of actual cooperation	21.00 (2.76)	22.23 (2.69)	1.58	0.355
Understanding other's value	10.21 (2.07)	9.88 (2.40)	-0.499	0.620

*sig α <.05

Table 4 shows the three groups of lecturers, as well as the mean RIPLS and subscale scores. The university lecturers had the greatest overall RIPLS mean scores (75.38 SD=4.42). Nevertheless, the total mean RIPLS score of academy teachers (M=74.33, SD=5.50) was lower than that of university and polytechnic lecturers. The findings of the ANOVA also revealed no differences in overall RIPLS score across the three groups of lecturers (F=0.076, P=0.927). On the topics of cooperation and collaboration (F=0.037, P=0.964), professional identity (F=0.066, P=0.936), and roles and responsibility subscales of RIPLS (F=0.374, P=0.690), the results of the ANOVA test did not reveal any significant differences between the three groups of lecturers.

The academy and university lecturers had the highest and lowest mean IEPS scores and all of its subscales, respectively (Table 4). In terms of IEPS, the ANOVA findings revealed no statistically significant differences between the three group fields (F=0.628, P=0.538) (Table 4).

Table 4. Comparison of the mean of RIPLS, IEPS, and their subscales according to the worked place background

Variables	Academy M (SD)	Polytechnic M (SD)	University M (SD)	ANOVA	P-value
RIPLS	**74.33 (5.50)**	**75.00 (5.89)**	**75.38 (4.42)**	**0.076**	**0.927**
Teamwork and collaboration	41.67 (1.52)	42.14 (3.52)	41.97 (3.14)	0.037	0.964
Professional identity	24.33 (3.51)	24.14 (3.19)	24.41 (1.99)	0.066	0.936
Roles and responsibility	8.33 (.577)	8.71 (1.27)	9.00 (1.79)	0.374	0.690
IEPS	**76.00 (7.00)**	**75.95 (7.62)**	**73.38 (8.89)**	**0.628**	**0.538**
Competency and autonomy	36.33 (5.50)	35.33 (4.04)	34.17 (4.23)	0.684	0.509
Perceived need for cooperation	8.33 (1.15)	8.05 (1.46)	7.93 (1.64)	0.107	0.899
Perception of actual cooperation	22.67 (2.51)	22.33 (2.47)	21.31 (2.96)	0.994	0.377
Understanding other's value	8.67 (2.51)	10.24 (2.21)	9.96 (2.33)	0.622	0.541

*sig α <.05

According to Table 5, lecturers with less than 3 years of experience have the highest RIPLS scores (76.50, SD=5.50), whereas lecturers with 3-5 years of experience have the lowest RIPLS scores (63.00, SD=2.05). According to the ANOVA findings, there was no significant difference in length of time or work for RIPLS (F=35.80, P=0.0001), teamwork and cooperation (F=50.03, P=0.0001), or roles and responsibility (F=0.189, P=0.903). Whereas the 5-10 years group is connected with the greatest mean IEPS score in different ranges of work experience, which indicates a higher sense of interprofessional learning (Table 5). Furthermore, the ANOVA findings revealed no statistically significant variation in IEPS length of labor (F=0.970, P=0.415) (Table 5).

Table 5. Comparison of the mean of RIPLS, IEPS, and their subscales according to the length of work

Variables	<3 years M (SD)	3-5 years M (SD)	>5-10 years M (SD)	>10 years M (SD)	T-test(P-value)
RIPLS	**76.50 (0.007)**	**73.80 (5.21)**	**75.71 (3.50)**	**75.18 (5.40)**	**0.189 (0.903)**
Teamwork and collaboration	44.00 (1.41)	41.00 (3.93)	42.71 (2.62)	41.92 (3.28)	0.533 (0.662)
Professional identity	24.50 (2.12)	24.80 (1.78)	23.43 (1.98)	24.38 (2.77)	0.338 (0.798)
Roles and responsibility	8.00 (0.001)	8.00 (0.070)	9.57 (1.13)	8.87 (1.67)	1.227 (0.310)
IEPS	**75.50 (4.95)**	**69.00 (8.27)**	**77.00 (7.59)**	**74.77 (8.49)**	**0.970 (0.415)**
Competency and autonomy	33.50 (4.94)	31.80 (1.92)	37.14 (3.84)	34.77 (4.28)	1.71 (0.117)
Perceived need for cooperation	8.00 (1.41)	8.20 (2.04)	7.43 (1.39)	8.08 (1.52)	0.372 (0.774)
Perception of actual cooperation	23.00 (1.41)	19.20 (3.70)	23.00 (2.58)	21.85 (2.58)	2.18 (0.101)
Understanding other's value	11.00 (0.001)	9.80 (2.68)	9.43 (1.27)	10.08 (2.44)	0.290 (0.832)

*sig α <.05

The overall score of RIPLS correlates with the total score of IEPS (r=0.500, P=0.000), according to Pearson correlation coefficients. Furthermore, IEPS correlates with all RIPLS subscales (P >0.0001) and statistically significant associations between RIPLS and all IEPS subscales (P >0.0001) were discovered (Table 6).

Table 6. The correlation between readiness for and perception of interprofessional education among lecturers

Variables	IEPS, r(p value)	Competency and autonomy, r(p value)	Perceived need for cooperation, r(p value)	Perception of actual cooperation, r(p value)	Understanding other's value, r(p value)
RIPLS	**0.500 (0.0001)**	**0.454 (0.001)**	**0.228 (0.101)**	**0.379 (0.005)**	**0.368 (0.007)**
Teamwork and collaboration	0.332 (0.015)	0.289 (0.036)	0.153 (0.273)	0.305 (0.026)	0.207 (0.150)
Professional identity	0.394 (0.004)	0.358 (0.008)	0.127 (0.363)	0.289 (0.036)	0.336 (0.014)
Roles and responsibility	0.283 (0.040)	0.281 (0.041)	0.211 (0.130)	0.118 (0.399)	0.223 (0.108)

*sig α <.05

DISCUSSION

According to this study's findings, the mean RIPLS score of the lecturers was high, which is consistent with recent research that stated that lecturer preparedness to assist IPE is in a good category (Yuniawan et al., 2015). Another previous study found that antenatal care facilitators were enthusiastic about interdisciplinary learning in the classroom and would assist the student in becoming a better part of the healthcare team (Fuadah & Taukhid, 2018). IEPS nursing lecturers also had a reasonably high mean score, because they have fair confidence in the profession's competence and autonomy. Every health profession, according to the lecturers, requires collaboration with other healthcare professionals to obtain a thorough grasp of the other professions (Dariyanto, 2021) and understand the value of interprofessional teamwork at all levels of intervention. This is done to prevent mental illness and enhance the mental health of students (Ekornes, 2015).

Although gender and experience with IPE appear to be characteristics that were related to the attitudes of faculty members towards IPE, interprofessional teamwork, and interprofessional learning in the academic setting, Lindh Falk et al. (2015) suggested that gender and experience with IPE appear to be characteristics that were related to the attitudes of faculty members towards IPE, interprofessional teamwork, and interprofessional learning in the academic setting, lecturer's readiness in facilitating interprofessional learning is not influenced by gender.This is because practically all lecturers have never participated in training or interprofessional education programs.

This study also found that university lecturers had the highest RIPLS mean score. Universities are institutions that organize academic education as well as vocational education in a variety of scientific and technical disciplines. Furthermore, a certified university can plan professional training (Dariyanto, 2021). As professors at a university might be more diverse, instructors with university experience may be more exposed to collaborative approaches.

Furthermore, according to the results of this study, there was no difference in all examined variables, regardless of gender, age, or length of employment. The findings showed that the lecturers' perceptions of IPE are unaffected by gender, length of service as a lecturer, or kind of workplace lecturer. These findings support the idea that understanding the concept of IPE, understanding the competence of other health professions, appreciating other professions, having collaborative experience, being innovative, becoming leaders, and becoming role models is the ideal description for all lecturers in facilitating IPE learning. The capacity of lecturers to establish and develop IPE learning models exemplifies this (Sedyowinarso et al., 2011).

There was also no difference in the results for lecturers who have worked for more than 10 years and those who have worked for less than three years. Nonetheless, lecturers with less than three years of teaching experience had the greatest RIPLS mean score when compared to other lecturers. The study by Yusra (2019) revealed disparities in perceived obstacles to team cooperation between groups of people of various ages and work experience levels. The impediments to team cooperation were rated higher by those who were older or had more work experience (Yusra et al., 2019). A person's maturity and interaction pattern with others changes with age. Greater age and longer experience of working in a profession afford more face-to-face interaction and more opportunity to share experience.

The association between RIPLS and IEPS was found to be statistically significant in this study. Previous studies have also revealed a link between the RIPLS cooperation and collaboration subscale and the IEPS competency and autonomy subscale (Keshtkaran et al., 2014). According to the RIPLS and IEPS correlation, designing interdisciplinary learning materials may allow students to temporarily appropriate professional attitudes, promote stereotyped conceptions of other professions, and prevent students from developing unfavorable attitudes about one another's professions. The presence of professional profiling that was identified demonstrates the cross-cultural relevance and reality of professional stereotypes. As previously noted, these stereotypes can impact communication in the work environment, which has been shown to affect patient care (Thurston et al., 2017). Moreover, students' abilities and efforts to get their grades likely affect how they see IPE. However, lecturers with sufficient readiness to facilitate IPE can better support their students to achieve IPE competencies. Moreover, lecturers with favorable readiness to IPE might inspire new IPE implementers (Patricia et al., 2019). The lecturers' IPE behavior would also make students more willing to create and implement IPE in the future. Past studies have also found that the greater the lecturers' impression of IPE, the better their IPE preparedness (Dewi et al., 2019).

Nevertheless, this study contains some disadvantages, such as the limited sample of participants. This was because data collection was difficult during the ongoing pandemic, hence the majority of the data was gathered through online surveys.

CONCLUSION AND RECOMMENDATION

All nursing lecturers sampled in this study had a high level of readiness and understanding of IPE. RIPLS and IEPS scores were unaffected by lecturer characteristics. There was also a high association between preparedness and perception of IPE because the sampled lecturers were already

implementing collaborative practices when caring for patients.

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ORIGINAL ARTICLE

IMPLEMENTATION OF THE BLENDED LEARNING METHOD TO ENHANCE CLINICAL REASONING AMONG NURSING STUDENTS

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ABSTRACT

Clinical reasoning has an important role in nursing care. Therefore, an appropriate learning model is needed to produce great clinical reasoning among nursing students. The blended learning method is a flexible and technology-based learning model that has the potential to improve nursing students' clinical psychomotor skills and overall performance. This study aims to determine the effect of the blended learning method on the clinical reasoning ability of nursing students. This was a quasi-experimental study that used a pretest-posttest design and a control group. The number of samples was 35 respondents in each group. The samples were recruited using a simple random sampling method. The intervention was conducted for 14 weeks in the intervention group. Clinical reasoning was measured using the Clinical Reasoning Assessment Tools (CRAT). Data were then analyzed using the Mann-Whitney test. There were differences in the clinical reasoning ability between the experimental group ($p < 0.001$) and the control group ($p = 0.128$). A positive effect was found between the blended learning method and clinical reasoning ability among nursing students. Thus, a flexible learning process can provide repetition and continuity of the learning process and improve the students' critical thinking processes.

Keywords: Blended learning; clinical reasoning; nursing student

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INTRODUCTION

Nursing care consists of actions that provide a sense of security, comfort, and effective care in overcoming nursing problems (Huang, Huang, Lee-Hsieh, & Cheng, 2018). Therefore, nurses would also need to have clinical reasoning skills to overcome comprehensive nursing problems and provide professional nursing care (Andersson, Klang, & Petersson, 2012). Clinical reasoning skills are needed for nurses to understand and identify the patient's condition, establish the patient's nursing diagnosis, and determine the appropriate nursing interventions to implement (Forsberg, Ziegert, Hult, & Fors, 2014). Great clinical reasoning is important as it will affect the comfort and prognosis during patient care (Shellenbarger & Robb, 2015).

Clinical reasoning is the main factor in the accuracy of establishing a nursing diagnosis (Paans, Sermeus, Nieweg, Krijnen, & van der Schans, 2012). According to a previous study in Indonesia, the accuracy in establishing nursing diagnosis among nurses was moderate (64%) (Trisno, Nursalam, & Triharini, 2020). Diagnostic errors may be caused by a lack of clinical reasoning (World Health Organization, 2016). Moreover, poor clinical reasoning could lead to difficulty in understanding the patient's situation and adverse events (Jessee, 2018). The inability of students to identify and prioritize patient nursing problems, determine nursing interventions, and make clinical decisions would cause them to fail to provide nursing care (Mohammadi-Shahboulaghi, Khankeh, & HosseinZadeh, 2021). Therefore, clinical reasoning is vital for equipping nursing students with the skills needed to solve complex patient nursing problems (Hong, Lee, Jang, & Lee, 2021).

Nursing education plays a significant role in improving the students' quality and ability to understand the patient's clinical condition (Jamshidi, Molazem, Sharif, Torabizadeh, & Kalyani, 2016). Ideally, a nurse candidate who is still a beginner should be able to provide professional care (Fukada, 2018). However, a study in Indonesia found that 48% of the nursing students involved in the study had

competent clinical reasoning skills and 34% were in the advanced beginner category (Arisudhana, Anggayani, Kadiwanu, & Cahyanti, 2019). Therefore, improving the clinical reasoning ability among nursing students is essential (Forsberg et al., 2014).

The ability to conduct clinical reasoning should be shaped by the nursing education process. Clinical reasoning is an intellectual process used to understand a patient's health problem, which consists of analyzing the situation, formulating initial assumptions, gathering and processing information, making judgments, and reviewing decisions. This model is known as the cognitive approach. Cognitive models tend to improve clinical reasoning abilities. The clinical reasoning process also links classroom knowledge to clinical practice (Sadhuwong, Koraneekij, & Natakuatoong, 2016).

Various learning methods have been applied in the nursing learning process. However, practical skill performance with peer learning models has not been able to improve the students' clinical reasoning effectively (Wighus & Bjørk, 2018). A recent study found that traditional learning methods resulted in inadequate knowledge and low clinical reasoning scores among nursing students (Sinclair-Bennett, 2019). In addition, traditional learning methods also lack the flexibility of instructor-generated concepts and no option of learning the lecture repeatedly (Odhaib, 2018). Thus, the combination of learning methods along with the integration of technology in the blended learning method in nursing education required further study.

Blended learning is a method that combines conventional learning with online learning methods by utilizing various multimedia platforms, such as videos (Wright, 2017, Vojtesek & Hutak, 2019). Educational videos could help students to improve their psychomotor clinical skills (Forbes et al., 2016). A previous study found that the video-based learning method may improve nursing students' performance, self-confidence, and satisfaction compared with traditional methods (Forbes et al., 2016; Holland et al., 2013). Previous quasi-experiment research of the blended learning model integrated situated multimedia lessons with the cognitive apprenticeship method and found that this enhanced the clinical reasoning skills of nursing students (Sadhuwong et al., 2016).

With the era of the Industrial Revolution 4.0 and its emphasis on technology, nursing higher education must be able to adapt by investigating the effectiveness of blended learning models on the clinical reasoning abilities of nursing students. Thus, this study aims to determine the effectiveness of the blended learning model on changes in the clinical reasoning abilities of nursing students.

METHOD

Study Design

This was a quasi-experimental study with a pretest-posttest and control group design. The subjects in each group were matched (on a particular variable) (Fraenkel, Wallen, & Hyun, 2011).

Study Sample

The population in this study were nursing students at STIKES Bina Usada Bali. This study used a simple random sampling technique. The inclusion criteria were students who completed the medical surgical nursing course level 1, had a minimum grade point average (GPA) of 3, and were second-grade nursing students. While students who refused to be a respondent were excluded. The number of samples in this study was 35 for each group. The samples were assigned randomly using a simple random sampling method to the experimental and control groups.

Instruments

The data were collected in this study by using a demographic data questionnaire and a Clinical Reasoning Assessment Tool (CRAT). The demographic data questionnaire consists of gender and GPA. The CRAT was developed by Arisudhana & Puspawati in 2018 and consists of twenty-five cases (vignettes) with the highest composition consisting of diagnoses and data supporting the diagnosis. The assessment score was 0-3, where a score of 0 would mean the student had a dispersed knowledge structure, a score of 1 meant an elaborated causal network, a score of 2 is defined as an encapsulation knowledge structure, and a score of 3 would mean an illness script knowledge structure (Arisudhana & Puspawati, 2019). The maximum score on the instrument tabulation is 75, and the lowest score is 25. The validity and reliability test was conducted on the CRAT instrument. The validity test results showed that the CRAT instrument had good and stable validity with an accuracy value of 72%. The CRAT was also stable in the reliability test, with a Cronbach alpha value of 0.821 (Arisudhana et al., 2019).

Intervention

The blended learning method used in this study was an enriched virtual learning method. In this model, educational content was delivered through online meetings. Face-to-face offline meetings were only held when needed and were regarded as a supplement to the online meeting (Siyamta, 2015). The experimental group received a blended learning intervention with an enriched virtual method for 14 lectures that were held once a week (100 minutes of theory and 170 minutes of practice). The blended learning method used in this study was a modification of the procedure proposed by Stein and Graham (Stein & Graham, 2014). The intervention group received the following blended learning intervention steps:

a. *Interactive lecture*. The respondents would have access to their 100- minute-long lecture material that they can repeat at any time. The video lectures provided various features of interaction to complement the content delivered through auditory and visual media.
b. *Examples and practice activities.* The respondents obtained practice material through an illness script-based video with a duration of 50 minutes that they can repeat at any time.
c. *Demonstration.* The respondents did a practicum project by compiling a 60-minute nursing care analysis video. The students performed vignette analyses, determined nursing interventions, and practiced their skills by using phantom displays.
d. *Self-assessment and self-reflection.* This session was conducted in the laboratory with 60-minute sharing sessions. In this session, the students compared their performance against the set standards. By conducting some self-reflection, the student could make in-depth judgments about the learning process, their motivations, beliefs, plans, and outcomes.

Meanwhile, the control group received a face-to-face conventional learning method with interactive problem-based learning (100 minutes) and laboratory practice (170 minutes).

Data Collection

Before the data collection began, the enumerators were provided information about the research objectives, the principle of anonymity, and volunteered to participate in this

study. The prospective respondents in this study signed an informed consent form without including their identities (anonymity). All respondents obtained a coding number on the questionnaire sheet and provided their informed consent. The data collection in both groups was conducted using a paper-based method and was done separately at different times. This was done to prevent the respondents from the intervention and control groups to exchange any information about this study. The pre-test and post-test were conducted in January 2020 and September 2020, respectively.

The respondents in both groups received the same treatment by prioritizing the principle of justice. Both groups filled out a questionnaire with respondent data, such as age, GPA, and the CRAT questionnaire with 25 statements. After filling out the pretest questionnaire, the experimental group received a BL learning model intervention, and the control group followed a traditional learning session for 14 weeks. The posttest was conducted offline on the 15th week, with the same procedure as the pretest.

Data Analysis

Both univariate and bivariate analyses were done by using the SPSS 20 program. The univariate test was performed to determine the respondent's characteristic data such as gender and GPA. A Mann-Whitney test was used to examine the effect of the blended learning method on the clinical reasoning ability of nursing students.

Ethical Consideration

The research protocol was reviewed through the health research ethics committee of STIKES Bina Usada Bali and was declared ethically worthy based on the ethical approval number: 362/EA/KEPK-BUB-2020.

RESULTS

The research was conducted by providing intervention in the form of a hybrid or blended learning model to the nursing students. The learning model applied was in line with the Bali local government policy on face-to-face restrictions in the campus area. The face-to-face learning process in this study was conducted with a proportion of 20% of the entire face-to-face process. The learning activities on campus were carried out by following the health protocols set by the government during the COVID-19 pandemic. The following section will present the findings of this research.

Table 1 showed that the number of female students dominated in each group (88.5% in the control group and 86% in the experimental group). Meanwhile, the mean of GPA in the control group and experimental group were 3.55 and 3.66, respectively.

Table 1. Respondent characteristics (n = 70)

Variable	Control group		Experimental group	
	f (%)	Mean ± SD	f (%)	Mean ± SD
Gender				
Male	4 (11.5)		5 (14)	
Female	31 (88.5)		30 (86)	
GPA		3.55 ± 0.18		3.66 ± 0.24

Table 2 showed the Shapiro-Wilk test results for the normality test. The p-value of pre-test and post test score between intervention and control groups were <0.05. Thus, the data were declared as not normally distributed. This indicates the need to use nonparametric tests in statistical tests in this study.

Table 2. Variable normality test (n = 70)

Variable	Shapiro-Wilk		
	Group	df	p-value
Pre-intervention	Experiment	35	0.002
	Control	35	0.005
Post-intervention	Experiment	35	0.040
	Control	35	0.031

According to Table 3, there was no significant difference in the pretest scores between the experimental and control groups (p >0.05). However, there was a significant difference in posttest scores between the experimental group and control group (p <0.05).

Table 3. The difference between the levels of clinical reasoning of nursing students on medical-surgical nursing problems (n = 70)

Clinical reasoning	Group	n	Median	Min-Max	p-value
Pre-intervention	Experiment	35	40	35-51	0.264
	Control	35	40	35-47	
Post-intervention	Experiment	35	54	47-63	0.000
	Control	35	42	35-46	

As shown in Table 4, the p-value in the experimental group was said to be significant with a p-value of <0.001 (p <0.05). Meanwhile, the p-value in the control group is 0.069 (p >0.05), which means that the intervention is not significantly significant. The results of the comparison test between the pre-post differences between the groups resulted in a p-value of 0.000. This suggests that blended learning affects the level of clinical reasoning of nursing students in the medical-surgical nursing course.

Table 4. The effect of blended learning on clinical reasoning among nursing students (n = 70)

Group	Z	p-value
Experiment		
Pre-intervention	-5.092	0.000
Post-intervention		

Table 4. The effect of blended learning on clinical reasoning among nursing students (n = 70) (continue)

Group	Z	p-value
Control		
Pre-intervention	-1.523	0.128
Post-intervention		

DISCUSSION

There was a very significant increase in clinical reasoning ability in the experimental group compared to the control group. This suggests that the blended learning (BL) model could successfully assist students to interpret information and conduct case analyses, thereby increasing their critical thinking skills. Previous research has also found that the application of the BL model has a positive impact on students' problem-solving and decision-making skills (Makhdoom,

Khoshhal, Algaidi, Heissam, & Zolaly, 2013). Moreover, the results of this study are in line with the research findings of Tsai & Tang (2017) who found that BL positively affects students' problem-solving skills.

To solve nursing problems, students will need to go through the clinical reasoning process, which includes analyzing the patient's situation through a comprehensive cognitive process (formal and informal thinking strategies) and evaluating the patient's health information to consider an alternative therapy (Barratt, 2018; Simmons, 2010). According to several previous studies' findings, BL can improve students' clinical reasoning skills by helping students to transition faster from memorizing simple knowledge to being able to provide a more comprehensive level of analysis (Gouifrane et al., 2020). This method also allows students to develop their logical thinking and hone their reasoning skills (Giraldo-Garcia, Roy, & Alotebi, 2015). Improving the students' clinical reasoning skills has also made it easier for students to understand the clinical condition of patients (Choi & Kim, 2018).

Additionally, BL significantly improves nursing students' skills in the diagnosis process (Bösner, Pickert, & Stibane, 2015). Another study found that the BL model was effective in helping health students explore the patient's medical history, physical examination, medical and nursing knowledge, and patient education models. Therefore, it can enrich the students' cognition of the clinical reasoning process (Raharjo & Suparmi, 2021).

As students can combine online and offline literacy methods, BL is more flexible and efficient than conventional learning methods. The students also used video-based visualization to enhance their knowledge and skills needed in clinical practice. According to Hunter & Arthur's (2016) research findings, the virtual case learning system motivated and stimulated students to improve their clinical reasoning. A study in Indonesia found that during the COVID-19 pandemic, most of the teaching materials were provided through visual delivery methods (24%), text (21%), and audiovisuals (20%) (Haryanti et al., 2022). An efficiency study that compared the BL method with conventional methods in nursing education also proved that 68% of students preferred the BL model and that it contributed to the increase in the students' scores (Shang & Liu, 2018). BL can be implemented by watching videos, conducting quizzes, and reading articles (Kang & Seomun, 2018). Moreover, the BL method is the best alternative for improving nursing students' learning outcomes (Rowe, Frantz, & Bozalek, 2012).

Clinical reasoning in nursing students is a dynamic process (Yazdani & Abardeh, 2018) that is influenced by psychological, social, cultural, and contextual factors (Sedgwick, Grigg, Dersch, Hall, & Lethbridge, 2014). Technology can be one of the factors that can influence clinical reasoning and BL is flexible in its application (Lewin, Singh, Bateman, & Glover, 2009). Technology has been so helpful in the advancement of education. However, cognitive development does not always correlate with technological development. Each technology has its advantages and disadvantages. Therefore, educators and students need to be able to create a conducive learning atmosphere with the BL model.

This research investigated how technology as a learning medium can help students to create a more effective and efficient learning atmosphere. Through the ease of accessing information online, students can access lecture materials anywhere and anytime. The limitation of this study was that students may ignore the material given through the video and plagiarism may occur in the analysis of the self-reflection section.

CONCLUSION AND RECOMMENDATION

The study found there was an effect of using the blended learning method on the clinical reasoning ability of nursing students. This research recommends future studies to investigate other BL models to explore student learning strategies, reading materials, or other processes that can impact different learning outcomes. Moreover, the development of clinical reasoning measuring instruments based on Carper's known pattern of nursing is needed.

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ORIGINAL ARTICLE

RESILIENCE AND PARENTING STRESS IN MOTHERS OF CHILDREN WITH MENTAL RETARDATION DURING THE COVID-19 PANDEMIC

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ABSTRACT

The mental health of parents of children with special needs during the COVID-19 pandemic requires attention. The social restrictions enforced due to the pandemic triggered increased parenting stress in mothers of children with mental retardation. Mothers have multiple roles, not only as caregivers but also as therapists and educators who replace teachers in school. An individual's level of maternal resilience affects how good their coping management is at overcoming the stress they experience. The purpose of this study was to determine the effects of resilience and parenting stress experienced by mothers of children with mental retardation during the COVID-19 pandemic. The cross-sectional research design was used. The population in this study were mothers of a child with mental retardation who attended the Pembina Special School in Yogyakarta, Indonesia. The purposive sampling technique was applied to 38 respondents. The One-Way ANOVA test results showed that the p-value was 0.001 < 0.05, which means that resilience levels are influenced by parenting stress experienced by mothers of children with mental retardation during the COVID-19 pandemic. The level of maternal parenting stress is in the low category, but the resilience of the mother is in the moderate category.

Keywords: COVID-19; mother; mental retardation; parenting stress; resilience

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INTRODUCTION

The COVID-19 pandemic has affected all aspects of life for many people. Indonesia experienced an alarming rise in COVID-19 cases in July 2021 with a total of 50,000 daily cases and reaching the community transmission level. This caused Indonesia to be ranked 3rd in the world for the highest addition of new cases and deaths (Indonesia Ministry of Health, 2021). The government has also implemented various strategies to suppress the spread of the COVID-19 virus. One of these efforts is for companies to apply WFH (work from home) for their employees, to ensure that work and learning activities remain safe during the pandemic (Mungkasa, 2020).

The COVID-19 pandemic situation poses problems for parents who have children with special needs. For the most part, children with special needs have sensory disorders and should be given therapy periodically. Delaying or restricting therapy will have an impact on the development and psychological condition of the child. The pandemic has caused parents and their children to lose access to direct therapy as some clinics have been closed for an undetermined time. This poses a challenge for parents because, in addition to parenting, they would have the added role of a therapist and educator to replace teachers in school (Singh *et al.*, 2020). The parental adjustment process of parents of children with special needs during this pandemic can cause a psychological impact. Therefore, parents need to have the resilience to adapt and remain steadfast in this difficult situation (Cusinato *et al.*, 2020).

Resilience is an important factor that provides parents the opportunity to adapt to the stress of raising a child with intellectual disabilities. Several studies have found that parents with higher levels of resilience and self-efficacy can cope with the stress of raising a child with intellectual disabilities more effectively than those with low levels of resilience (Rajan and John, 2017).

In addition, the online learning system has caused stress for parents and children. Previous studies have shown that greater smartphone and internet usage, as well as decreased

physical activity during the pandemic, are associated with increased anxiety and depression in youths (F. Chen *et al.*, 2020). Some parents of children with learning disabilities also do not have a good understanding and lack experience in teaching children, this causes their children to become vulnerable to parental violence (Ghosh *et al.*, 2020).

Children are a vulnerable group and the vulnerability is higher in children with special needs and those with disabilities (Levin *et al.*, 2020). During the COVID-19 pandemic, children with special needs could be vulnerable to the loss of parenting rights because their parents or guardians died from COVID-19, exploitation by families who believe that their children's disabilities can bring them economic benefits, and experiencing either physical or verbal violence because of the misrepresentation of children with special needs in the surrounding environment (Ministry of Women's Empowerment and Child Protection of the Republic of Indonesia, 2021).

The high number of child deaths in Indonesia due to COVID-19 is quite alarming. Children aged 10-18 years have the highest death rate of 30% compared to children of other ages. This is because, at that age, children can already interact and socialize with the surrounding environment, so that they are more vulnerable to contracting COVID-19 (Indonesian Pediatrician Association, 2021). In addition, most children with special needs have congenital diseases such as respiratory diseases, thus increasing their risk of exposure to COVID-19. Therefore, the role of parents as guardians who provide education and protection is essential.

Children with special needs are children who experience delays in more than two aspects of developmental disorders (Szmukler, 2017). Mental retardation is a complete decline in intellectual function that occurs during development and is associated with impaired social adaptation. It can be caused by a disorder in the prenatal, perinatal, or postnatal phases (Seither *et al.*, 2020). The prevalence of mental retardation in children under the age of 18 in developed countries is estimated to be 0.5-2.5%, whereas in developing countries it is around 4.6%. Additionally, the incidence of mental retardation in developed countries ranges from 3-4 new cases per 1000 children in the past 20 years. The incidence rate of mental retardation in children is also 19 per 1000 live births (Boat, 2015).

Furthermore, children with mental retardation experience emotional disorders 4-5 times higher than children in general (Baker *et al.*, 2020). This causes high parenting stress, especially during the COVID-19 pandemic (Chen et al., 2020). Previous studies have also shown that parents who have children with special needs experience higher levels of stress and feel a higher burden compared to parents who have normal children (Bakara, Dahrizal and Burhan, 2014; Montirosso *et al.*, 2021).

Parenting stress is defined as a special type of stress that stems from the requirement to be a good parent. It is caused by the children's needs and emotional conditions as well as parents' health characteristics. These elements determine the overall level of stress a parent can feel in their parenting role (Cusinato *et al.*, 2020). Moreover, children's behavioral problems and the parenting stress felt by parents are interrelated (Puff and Renk, 2014). Children's behavioral problems and parents' psychological demands were common factors in predicting the mental health of all parents (Chen et al., 2020).

Resilience is a person's ability to judge, overcome, and improve oneself from adversity and misery (Taylor, 2019). It is defined as a positive personality trait that enables individuals to bounce back from adversity, adapt, thrive, and mature in the face of adverse circumstances (Southwick *et al.*, 2014). Parents who have high resilience will be able to provide optimal care. Conversely, if the parent has low resilience, they may not treat the child well and neglect them. Based on previous studies, parents caring for children with mental retardation are already more at risk of mental health problems, yet these risks further increased during the COVID-19 lockdown restrictions (Willner *et al.*, 2020). Therefore, a study is needed to investigate how resilience affects parenting stress in mothers of children with mental retardation during the COVID-19 pandemic. Some mothers may need interventions to improve their mental health as this will affect their parenting quality.

METHOD

Study Design

This is a quantitative study with a cross-sectional design.

Samples

The population in this study was 109 mothers of children with mental retardation who attended the Pembina Special School in Yogyakarta. Purposive sampling was utilized in this study. Based on the inclusion and exclusion criteria set, the number of samples used was 38 respondents. The following are the details of the inclusion criteria: guardians of students with mental retardation, ability to fill out the questionnaire on Google Form, and willingness to be respondents. While the exclusion criteria were guardians of students whose children were not active in school for 1 month and were experiencing physical or psychological pain.

Instrument

The data collection tool in this study was a questionnaire. The first questionnaire was adopted from the Brief Resilience Scale (BRS), which used as many as 6 items to measure maternal resilience (Smith *et al.*, 2008). The BRS instrument has passed the validity test with a correlation coefficient ranging from 0.30 to 0.69, which means that the questionnaire has a strong level of validity. The result of the alpha Cronbach reliability test (α) was also 0.8 to 0.91, which indicates that the question items from the BRS are reliable. Meanwhile, the second questionnaire to measure parenting stress consisted of 29 items adapted from the parenting stress scale (Abidin, 1995). The results of the parenting stress instrument validity test with the correlation Pearson product were between 0.364 - 0.762 > r-table (0.361), while the alpha Cronbach reliability test (α) result was 0.915.

Data Collection

This study was conducted in April-July 2021 at the Pembina SPECIAL School in Yogyakarta, Indonesia.

Data Analysis

The data analysis in this study used the One-Way ANOVA and Linear Regression Test. Data analysis was performed using a statistical program with a significance level of 0.05. Multivariate analysis was conducted using regression logistic with a backward method for data analysis. The variables with a p-value of < 0.25 were included in the multivariate analysis (Dahlan, 2014).

Ethical Consideration

Ethical clearance was obtained from the Ethics Committee of Surya Global Institute of Health Science Yogyakarta, with No. 5.28/KEPK/SSG/IV/2021. All participants received a

complete explanation regarding the research and provided their informed consent before taking part in the research.

RESULTS

Based on Table 1, the demographic characteristics of the subjects included education, occupation, guardian, and children's sex.

Table 1. Characteristics of the respondents (n = 38)

Respondents	Frequency	Percentage (%)
Education		
Undergraduate	11	28.9
Senior high school	18	47.4
Junior high school	6	15.8
Elementary school	3	7.9
Occupation		
Housewife	26	68.4
Worker	12	31.6
Guardian		
Parents	37	97.4
Other than parents	1	2.6
Children's sex		
Boys	20	52.6
Girls	18	47.4

In this study, most of the parenting was done by the mothers (97.4%) and the majority of the respondents' children were boys (52.6%). Based on Table 2, the parenting stress experienced by mothers is caused by their lack of knowledge and competence in being good parents was 31.6% and the behavior of their children who are hyperactive and find it difficult to follow parental orders at 34%. But mostly, mothers can accept the condition of their chidren as much as 47.4%.

Table 2. The respondents' parenting stress domains (n = 38)

Domain	Indicator	Frequency	Percentage (%)
Parents distress	Sense of competence	12	31.6
	Depression	4	10.5
	Restriction of parent	7	18.4
	Parental health	3	8
	Social isolation	8	21
	Relationship with spouse	4	10.5
The difficult child	Adaptability	6	16
	Demandingness	8	21
	Mood	11	29
	Distractibility/hyperactive	13	34
The parent-child dysfunctional interaction	Attachment	7	18.4
	Acceptability	18	47.4
	Reinforce parent	13	34.2

According to Table 3, the value of significance is 0.001 (<0.05), which can be concluded that parenting stress influences mothers' resilience.

Table 3. The effect of resilience on parenting stress in mothers who have children with mental retardation

	Model	Sum of squares	Df	Mean square	F	Sig
1	Regression	3990,938	1	3990,938	14,367	,001[b]
	Residual	10000,457	36	277,790		
	Total	13991,395	37			

Based on Table 4, especially in step 3, the variable child's sex has 2.1 times the risk of maternal resilience (95% CI: 0.478-9.257). However, these variables did not significantly affect maternal resilience (p: 0.325 > 0.05).

Table 4. Multivariate analyses

	Variable	Coefficient	p	OR	(CI 95%)
Step 1[a]	Education	0.795	0.128	0.452	(0.162-1.257)
	Occupation	-0.159	0.847	0.853	(0.171-4.266)
	Parenting	20.808	1.000	1088954094.325	(.000)
	Children's sex	0.821	0.282	2.273	(0.510-10.127)
	Constant	-18.533	1.000	0.000	
Step 2[a]	Education	-0.772	0.125	0.462	(0.172-1.238)
	Parenting	20.765	1.000	1042719360.372	(.000)
	Children's sex	0.831	0.274	2.296	(0.517-10.199)
	Constant	-18.842	1.000	0.000	
Step 3[a]	Education	-0.793	0.119	0.453	(0.167-1.227)
	Children's sex	0.744	0.325	2.105	(0.478-9.257)
	Constant	2.163	0.276	8.693	
Step 4[a]	Education	-0.818	0.098	0.442	(0.168-1.162)
	Constant	3.300	0.042	27.125	

And then, the mother's education variable in step 4 had 0.442 times the risk of maternal resilience (95% CI: 0.168-1.162) but had no significant effect on maternal resilience (95% p: 0.98 > 0.05). Thus, the variables of mother's education, mother's occupation, children's sex, and guardian do not affect maternal resilience.

DISCUSSION

The COVID-19 pandemic has caused challenges for parents and their children, especially regarding the parents' added role in educating their children remotely as mandated by the ministries of education, despite the parents' preference for face-to-face education. The deficiencies in online education methods have led to resistance to this form of education by parents. In addition to the lack of time and sufficient technical skills necessary to support the education of their children, there was also the children's inability to self-organize and manage their education. Therefore, untrained parents found it difficult to implement remote learning methods (Dong, Cao and Li, 2020).

Children with disabilities are members of at-risk groups according to the effects caused by the pandemic. This is because their cognitive and intellectual disabilities limit their ability to comprehend the warnings issued to help them protect themselves from contracting and spreading the COVID-19 infection (Courtenay and Perera, 2020). The social distancing and quarantine measures have led to the suspension of services, support, and official and nonofficial sponsorship provided to children with disabilities. For example, educational institutions and special education centers closed their doors across all educational levels, presenting a challenge for families with disabled children. Consequently, negative psychological emotions of stress and irritability have emerged among families. Thus, parents and caregivers needed more services to compensate for the closure of service centers (Abdelfattah *et al.*, 2021).

Mothers provide the initial foundation of life learning for children. They have a major role in providing childcare, such that the good and bad behavior of a child is influenced by the mother's personality while parenting. As shown in Table 1, most of the highest levels of education of the mothers sampled were high school. Education is a requirement of being a parent. The higher the education of the mother, the lower the parenting stress. Education is generally a reference to a person's intellectual abilities. Mothers with higher education are considered to have better intellectual abilities compared to individuals who have lower levels of education because they can use their intellectual abilities to solve the problems they face (Prickett and Augustine, 2021).

Past studies have found that working mothers showed higher parenting stress than nonworking mothers. This may be due to the short- and long-term impact of work events and conditions on family life. For example, negative interactions at work will affect the parents' interaction with their children (Rakhmawati, 2022). However, in this study, there was no difference in the parenting stress experienced between working and not working mothers. Interviews with five mothers found that since the COVID-19 pandemic they lost their jobs, but they accepted that now they would have more time to take care of the children and know the difficulties faced by them (Gloria, 2020). This is supported by the results of research that most childcare is done by mothers.

This study showed that resilience affected the parenting stress experienced by mothers, as indicated by a value of $p = 0.001 < 0.05$. Other studies have also shown that parenting stress is influenced by parental resilience levels. Parents of children with mental retardation have varying levels of stress. This is due to social support, coping mechanisms, and optimism. The coping mechanism that some mothers implement to overcome stress is increasing their spirituality and sharing their experiences with other parents of children with mental retardation to reduce their feeling of isolation and to help them understand and accept their child's condition (Peer and Hillman, 2014). This is shown from the results of interviews with three mothers who stated that they are in a community of parents who have children with mental retardation. Through the community, mothers can share their experiences, provide solutions, and provide support to each other.

The level of stress experienced by parents during the COVID-19 pandemic increased, especially those with children with special needs. These parents would experience psychological problems and parenting pressures in addition to being worried about their child's condition. This increased anxiety is influenced by family income factors, parents' educational background, and the type of special needs that their children experience (S. Chen *et al.*, 2020).

A person who has high resilience would have a low stress level (Zhao, Fu and Ai, 2021). Resilience is a person's ability to judge, overcome, and improve, or transform themselves from adversity (Peer and Hillman, 2014). A mother with high resilience would be able to control her emotions when facing her child (John and Roblyer, 2017). The results of interviews with five mothers found that during the COVID-19 pandemic, they had to practice their patience and think creatively when their child does not follow their instructions. These mothers tried to always be gentle and patient when facing their child's unstable mood.

In this study, the stress experienced by mothers is mostly due to their lack of knowledge about the growth and development of their children, especially those with congenital diseases. The current condition of the COVID-19 pandemic caused children to become more vulnerable to illness. Moreover, access to routine therapy was also difficult, so that mothers had to try to learn to cope with the problems experienced by their children. This is supported by other studies that state that stressors commonly experienced by mothers are associated with behavioral problems and diagnoses of childhood diseases (John and Roblyer, 2017). In addition, due to their children's hyperactive behavior and mood disorders, some mothers had to isolate themselves and their children to make the surrounding environment comfortable. Therefore, during the pandemic, parenting stress is an effective predictor of parental anxiety. Due to the pandemic, parents need to spend more time and energy taking care of their children than usual. This is especially so for special needs children as they may not be able to adapt to online education. In addition, there are only a few ways for parents to prevent viral infections during the pandemic (Ren *et al.*, 2020).

Low maternal parenting stress indicates that the mother has good social integration, emotional closeness to the child, high health level, no symptoms of depression, does not experience rigid freedom restrictions and frustration in maintaining self-identity, and obtained support from those around her (Willner *et al.*, 2020). This is supported by the results of research which showed that most mothers are in the acceptance category, thus they can accept the presence of their children who have special needs. In addition, support from their partners also greatly contributes to maternal

resilience. Partner support also has implications in maternal stress parenting. Mothers who have high partner support will have good mental health which will also affect the care of their children (Kanter and Proulx, 2019).
In the face of the pandemic, parents have limited power, therefore, all sectors of society need to help them to find coping strategies to pass this difficult period more smoothly. Social support is a protective factor for excessive anxiety. Support from family members, friends, and people in the community also helps to reduce parents' anxiety (Ren *et al.*, 2020).

Based on the analysis of the parenting stress domain, family or partners are factors that are very influential in increasing the resilience of mothers of children with mental retardation. This is because family members or partners are the closest people to the mother and are a source of strength for them. Encouragement and support from a partner can make the mother feel less alone in facing the problems that arise from raising their children.

The surrounding environment is also an important factor in increasing the resilience of mothers of children with mental retardation. Having an attitude of openness to the surrounding environment about their child's condition is crucial. This will make parents, especially mothers, not feel different or isolated from other parents who have normal children. Other research has also shown that family resilience, such as finding ways of coping together and supporting others, was associated with better mental health. This suggests that there are opportunities to build positive community support for the recovery processes (Bryson *et al.*, 2021).

Nevertheless, this study contains some disadvantages, such as the limited sample of participants. This was because data collection was difficult during the ongoing pandemic, hence the majority of the data was gathered through onlinesurveys.

CONCLUSION AND RECOMMENDATION

The COVID-19 pandemic has triggered increased stress in mothers of children with mental retardation. The mothers' level of resilience affects their stress levels. Resilience is a person's ability to be able to cope and adapt to stressors. It was found that mothers who have high resilience also had low stress levels. Social support and maternal assistance during the COVID-19 pandemic need to be provided to improve the mental health of mothers of children with mental retardation as it will also affect the quality of their children's care.

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ORIGINAL ARTICLE

STRESS MANAGEMENT OF EMERGENCY NURSES DURING THE COVID-19 PANDEMIC: SCOPING ARTICLE

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ABSTRACT

Nurses are front-line health professionals. This is especially so for those in the Emergency Room (ER) and during the COVID-19 pandemic, as they are the key to controlling virus transmission. The purpose of this article is to review the stress management strategies applied by nurses in emergency rooms throughout the COVID-19 pandemic. A scoping review was done by searching for related literature using databases from Science Direct, ProQuest, SAGE Journal, and BMJ. We explored the literature from a relevant point of view and assessed the quality of the research. The data were then mapped to identify the main themes found in the literature. A total of 36 articles were found from the search results and six articles were selected to be analyzed. We observed that stress on nurses is caused by an excessive burden of several factors, such as having a family or child, lifestyle changes, lack of access to personal protective equipment (PPE), lack of self-confidence, as well as feelings, and fatigue. We also observed how nurses managed stress, namely, by strengthening training, positive spiritual coping, social support, and access to mental health services.

Keywords: Covid-19 pandemic; emergency room nurse; stress; stress management

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INTRODUCTION

The Coronavirus (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. This disease has become a global pandemic and affected health care systems around the world. The World Health Organization (WHO) officially declared this issue an international emergency on March 11, 2020 (Soltany et al., 2020) . COVID-19 is transmitted quickly, widely, and generally unnoticed, through droplets and contact. Currently, therapy for COVID-19 is still limited due to the lack of supporting evidence regarding its treatment and vaccines (Hou et al., 2020). As front-liners, doctors, nurses, and ambulance workers were more likely to be infected than other groups. Of the confirmed cases worldwide, 6% or 90,000 cases were healthcare professionals (Cui et al., 2021).

Nurses are health workers with an important role in fighting infectious diseases. This is especially so for Emergency Department (ED) nurses, as they work at the threshold of the hospital health care system. They have the role of differentiating confirmed cases from suspected patients through the careful evaluation of clinical manifestations, contact history, and patient travel history (Cui et al., 2021) . Thus, ED nurses hold the key to controlling transmission among patients, staff, visitors, and the community.

During the pandemic, there are several types of pressure experienced by nurses in the ER, both physically and psychologically, as triggers for stress. This pressure can cause burnout, loss of enthusiasm, and depersonalization (Nishimura et al., 2021). The common risk factors that cause stress and anxiety during a pandemic include lack of an effective hospital management system, lack of personal protective equipment (PPE) and training, exposure to confirmed cases, fear of infection, fear of spreading the virus to family members, concerns about their children, long working hours, and heavy workload (Cui et al., 2021).

During previous epidemics, there has been previous research on the experience of nurses in dealing with epidemic conditions and how they coped. For example, during the

Ebola epidemic, supportive supervision, peer support networks, and better use of communication technologies were needed, along with programs that would rebuild trusting relationships with community structures (Raven et al., 2018). However, limited research has been done regarding the COVID-19 pandemic, especially on the work stress of nurses in the ER during COVID-19. Much of the research has focused on the mental health of nurses caring for patients with definite diagnoses in isolation wards. Therefore, this narrative review provides a global perspective on the impact of the COVID-19 pandemic on the ED. This study discussed the impact of the pandemic on the mental health of ED staff and investigated how emergency room nurses managed their stress during the COVID-19 pandemic.

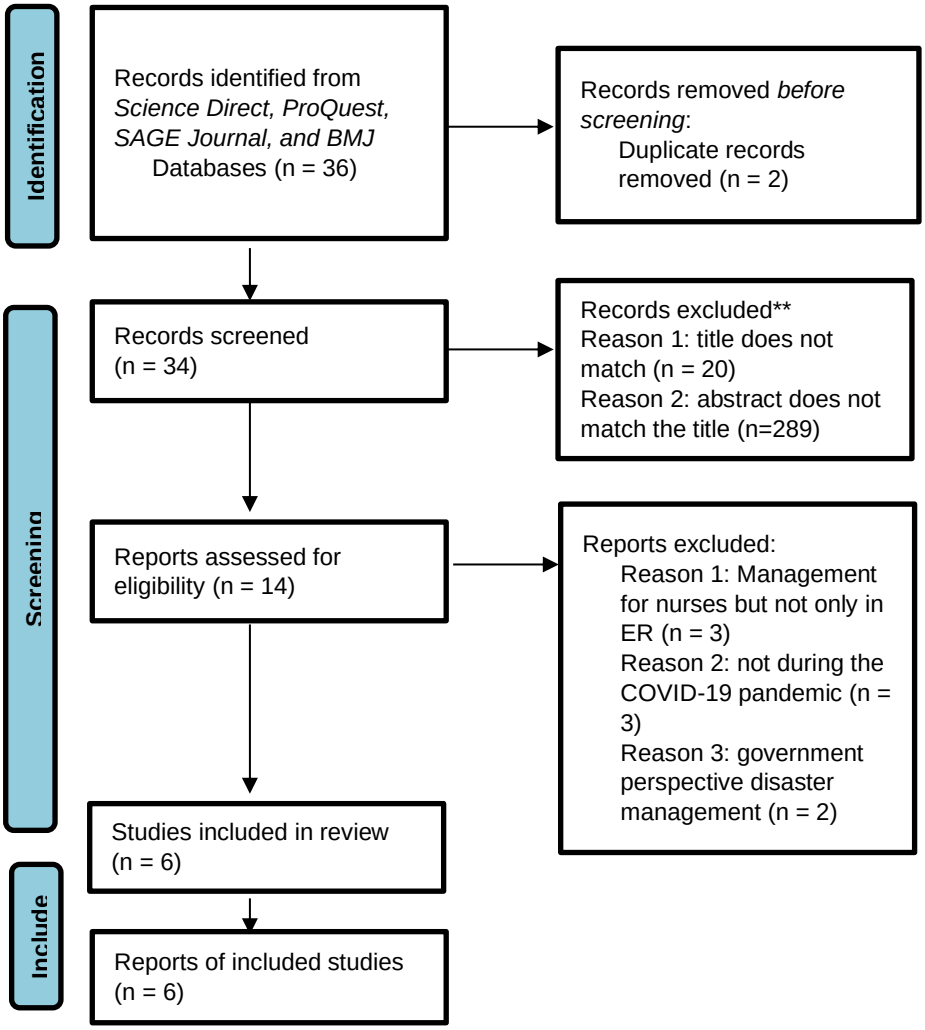
METHOD

The research used the scoping review technique with a methodological framework as suggested by Arksey and O'Malley for the literature review. The following five steps were taken for the review: 1) identification of research questions, 2) identification of relevant articles, 3) selection of relevant articles, 4) selection of literature related to articles and data extraction, as well as 5) compiling, summarizing, and reporting results.

When developing the review's focus and search strategy, the researchers applied the Population, Concept, Context (PCC) format to manage and determine the focus of the review. In this study, P = emergency nurse, C = strategies to reduce work stress/stress management/coping strategy, and C = stress in the pandemic era. The question asked in this article is "How do emergency room nurses manage their stress during the COVID-19 pandemic?"

Relevant literature was searched on databases, including Science Direct, ProQuest, SAGE Journal, and BMJ, as well as using the Boolean operator "OR/AND". The following keywords were used in the search: "Emergency nurse" AND "strategies to reduce work stress" OR "stress management" OR "Coping Strategy" AND "stress in a pandemic era".

The limitation of this study is the selection of only free, full-text articles from 2020-2021 in English. The screening process obtained 36 articles (picture 1). The duplicate articles were then identified from three databases using the Mendeley application to simplify the search process. The researcher then screened the articles by reading the title and abstract based on the inclusion criteria. Finally, 6 articles were selected to be analyzed (Table 1).



Picture 1. Identification of studies via databases and registers

Table 1. Literature collection

No	Title/ author/ year	Research purposes	Research design	Sample characteristics	Results
1	Impact of COVID-19 on Anxiety, Stress, and Coping Styles in Nurses in Emergency Departments and Fever Clinics: A Cross-Sectional Survey Shasha Cui, Yujun Jiang, Qianyu Shi, Lei Zhang, Dehua Kong, Meijuan Qian, Jing Chu (2021)	To identify the impact of COVID-19 on the psychology of Chinese nurses in the ED and fever clinic and to identify associated factors.	Cross-sectional study	453 nurses, 16 (3.53%) were male, and 437 (96.47%) were female. The mean age was 33.15 years, and the average length of employment was 11.33 years.	Participants who had the following characteristics had more mental health problems: female gender, fear of infection among family members, regrets about being a nurse, less rest time, more night shifts, had children, lacked confidence in fighting infection, did not get emergency protection training, and attitude. Effective measures are needed to maintain the mental health of nurses in emergency departments and fever clinics. This includes strengthening protection training, reducing night shifts, ensuring adequate rest time, and timely update of the latest pandemic situation.
2	Perceived Stress and Affecting Factors Related to the COVID-19 Pandemic of Emergency Nurses in Turkey Çınar, Derya; Nazan Kılıç Akça; Pınar Zorba Bahçeli; Yaşarğ (2021)	To investigate the stress experienced by emergency nurses and the factors that influence it during the COVID-19 pandemic.	Descriptive study, cross-sectional study	169 emergency nurses, registered with the Emergency Nurses Association, aged 18 years or older, volunteered to participate in the research, working in the ED during COVID-19.	5 factors were found to influence the stress levels of emergency nurses during the COVID-19 pandemic, such as (1) the application of respiratory isolation guidelines, (2) lifestyle changes, (3) lack of access to PPE, (4) lack of human resources in the ED room, and (5) fear of contracting COVID-19.
3	The Effectiveness of a Time Management Workshop on the Job Stress of Nurses Working in Emergency Departments: An Experimental Study Azam Karbakhsh Ravari, MSN, Jamileh Farokhzadian, Ph.D., Monirsadat Nematollahi, Ph.D., Sakineh Miri, MSN, and Golnaz Foroughameri, MSN, Kerman, Iran (2020)	Evaluating the effectiveness of time management to reduce stress on emergency nurses	Randomized controlled trial	80 emergency nurses	There was no significant difference in the stress level changes of emergency nurses in the intervention group and the control group after the time management training.

Table 1. Literature collection (continue)

No	Title/ author/ year	Research purposes	Research design	Sample characteristics	Results
4	Religious Coping, Depression and Anxiety Among Healthcare Workers During the COVID-19 Pandemic: A Malaysian Perspective Soon Ken Chow, Benedict Francis, Yit Han Ng, Najmi Naim, Hooi Chin Beh, Mohammad Aizuddin Azizah Ariffin, Mohd Hafyzuddin Md Yusuf, JiaWen Lee, and Ahmad Hatim Sulaiman (2021)	Evaluating the prevalence of stress and depression in health workers and their relationship to spiritual coping	Cross-sectional study	200 health workers, most of whom are health workers on duty in the ER, UMMC health workers, managed COVID-19 patients, 20 years old and over, and have faith (not atheists).	Positive spiritual coping can help overcome stress and depression for health workers during COVID-19.
5	Prospective Study of the Wellness of Emergency Medicine Providers Across Ten Academic and Community Hospitals During the Initial Surge of the COVID-19 Pandemic Heather Kelker, Kyle Yoder, Paul Musey Jr, Madison Harris, Olivia Johnson, Elisa Sarmiento, Punit Vyas, Brooke Henderson, Zachary Adams, and Julie Welch (2021)	Assessed well-being, resilience, fatigue, health factors, and the needs of Emergency Medicine (EM) physicians and advanced practice providers (e.g., nurse practitioners and physician assistants; APP) during the early phase of the COVID-19 pandemic	A descriptive, prospective, cohort survey study	157 employed EM doctors and 56 APP working in 10 emergency departments	This study of frontline physicians and APP during the initial spike of the COVID-19 pandemic in Indiana found significant levels of stress, anxiety, fear, safety concerns, and relationship tension, all of which gradually improved. Psychological stress and burnout are also reduced when specific health needs are addressed early and resources are made quickly available through department, institutional, and community initiatives. Examples of interventions include increased availability of PPE, hospital-provided scrubs and on-site bathrooms, access to sleeping areas on-site or at local hotels, and community-based laundry services. Adequate PPE and rest are also more important for frontline healthcare providers early in a pandemic to reduce stress than access to psychologists.
6	Emergency Department Mental Health Presentations Before and During the COVID-19 Outbreak in Western Australia Milan DragovicViki PascuTammy HallJesse IngramFlavie Waters (2020)	To check whether the ED also noted an increase in mental health presentation	Research examining the number and type of presentations regarding mental health between 2019 and 2020	Mental health personnel in three ED North Metropolitan Health Services was selected from the Emergency Department Data Collection database. The population of the area consists of about 800,000 people.	There has been an unexpected increase in mental health presentations in the ED due to the increase in COVID-19 cases. Evidence showed a positive impact on individuals who have visited counseling services via telephone.

RESULTS

Overall, six articles met the inclusion criteria, and two themes were discovered: the factors that cause work stress in ER nurses during the pandemic and the stress management strategies of ER nurses during the pandemic.

Theme 1: Factors that cause work stress in ER nurses during a pandemic

A total of three studies discussed the factors that cause stress and anxiety in ER nurses. Research conducted by Cui, et al (2021) found that excessive workload, fear of infecting family members, death of medical staff/colleagues, feelings of regret being a nurse, female gender, less rest time, more night shifts, having children, lack of confidence in fighting contagion, and not receiving emergency protection training are causes of stress for ED nurses. Another study by Kelkel et al. (2021) showed that nurses felt isolated and exhausted while working in the emergency room during a pandemic. Another study also found the following five factors that influence the stress of ER nurses during the COVID-19 pandemic: (1) implementation of respiratory isolation guidelines, (2) lifestyle changes, (3) lack of access to PPE, (4) lack of human resources in the ED room, and (5) fear will be infected with COVID-19 (Derya, Akça, Bahçeli, & Yaşarğ., 2021).

Theme 2: Stress management strategies of ER nurses during the pandemic

Five articles discussed the stress management strategies during the COVID-19 pandemic. Research by Cui, et al (2021) stated that effective actions are needed to maintain the mental health of ER nurses, including strengthening protective training, reducing night shifts, ensuring adequate rest time, and providing timely updates on the latest pandemic situation. Time management can also reduce the stress levels of ER nurses (Ravari, et al., 2020). Another study by Chow, et al. (2021) found that positive spiritual coping that prioritizes the religious understanding of bonding, surrendering, and drawing closer to God can help generate and increase positive coping mechanisms to overcome mental health problems. Research from Kelker, et al. (2021) identified the specific needs of EM providers through advocacy work and targeted interventions per department and institution. Furthermore, counseling services via telephone can be an option for health workers who are on duty in the ER during the COVID-19 pandemic to have access to mental health services (Dragovic, Pascu, Hall, Ingram, & Waters, 2020)

DISCUSSION

COVID-19 patients will be handled by ER nurses when they arrive at the hospital. This is why ED nurses are considered to be the first group in providing health services to COVID-19 patients (Derya, Akça, Bahçeli, & Yaşarğ., 2021). As an important area in the hospital, the ED is always busy with high levels of stress due to workload, surges in patients, and other unexpected situations when providing health services (Ravari, et al., 2020). The high level of stress, fear, anxiety, and worry about safety was felt by most health care providers in the ED during COVID-19 (Kelker et al., 2021) . This is supported by Derya, et al.'s (2021) study who found that half of the ER nurses had above-average stress levels during the COVID-19 pandemic.

Stress on health workers sometimes arises when they face difficulties in providing or accessing optimal care and treatment due to negative stigma in society (Aflakseir in Chow, et al., 2021). The application of respiratory isolation guidelines, changes in lifestyle both in the work environment and other social environments, lack of access to PPE, lack of human resources for nurses in the ER, and fear of being infected with COVID-19 are the main factors that cause the increased stress levels of ER nurses (Derya, Akça, Bahçeli, & Yaşarğ., 2021). Fear of infecting family members, death of a colleague, excessive workload, and internal shocks that contribute to negative thoughts such as feelings of regret in choosing a nursing profession are factors that cause stress in ER nurses (Cui, et al., 2021).

Based on this phenomenon, the psychological health of ER nurses needs to be considered and solutions need to be found, especially to deal with the stress during the COVID-19 pandemic to obtain optimal health services. Good social support from family members, patients, colleagues, and effective communication with leaders can also protect and reduce the stress levels of health officers in the ED during the pandemic (Kelker et al., 2021).

The nursing manager can also contribute to helping overcome the stress levels of ER nurses that are on duty. The following are steps that can be taken to solve this issue: meeting the nurses' physiological needs, providing counseling or psychological guidance to help ER nurses to manage stress, and strengthening the nurses' coping mechanisms. Furthermore, it is necessary to conduct comprehensive and effective infection control in the ED to increase the number of nurses and avoid a high workload (Derya, Akça, Bahçeli, & Yaşarğ., 2021). According to Cui, et al. (2021), the application of positive coping coupled with infection prevention through training can result in lower stress levels for ER nurses during the COVID-19 pandemic. Calculation of the optimal number of nurses in the emergency room, including proper and coordinated shift scheduling, can also help to overcome high workloads as one of the factors that cause stress in ER nurses.

Another action that can help overcome stress-related health problems for ER nurses during the COVID-19 pandemic is appropriate and effective support and training (Mukhtar in Derya, Akça, Bahçeli, & Yaşarğ, 2021). Counseling services by telephone can be an option to help the health workers on duty in the ER get mental health services during the COVID-19 pandemic (Dragovic, Pascu, Hall, Ingram, & Waters, 2020).

The solutions above offer several external methods for emergency room nurses to manage their stress. An internal solution that has been proven to be able to reduce the stress levels of nurses during the COVID-19 pandemic is spiritual coping. Improving negative spiritual coping and increasing positive spiritual coping through spiritual counseling can optimize mental health during the COVID-19 pandemic and help ER nurses go through difficult times while on duty (Derya, Akça, Bahçeli, & Yaşarğ., 2021).

The limitation of this study is that there are still few studies that specifically discuss stress management in nurses during the COVID-19 pandemic. The pandemic occurred in 2019 and the studies that were found generally discussed health workers including nurses. Most of the articles found also discussed the situation outside the ER such as in the isolation ward.

CONCLUSION AND RECOMMENDATION

Mental health problems that arise in nurses require great attention because nurses, as health care professionals on the front lines during the COVID-19 pandemic, have a high risk

of exposure to the virus. Therefore, effective action is needed to maintain the mental health of ER nurses during the COVID-19 pandemic. Nurses should receive protection training and update their knowledge of the pandemic situation. This can reduce the anxiety and fear felt by ER nurses and enable them to protect themselves and their family members. Moreover, ensuring adequate rest periods and reducing long shifts is one way to reduce stress on nurses in the ED. Spiritual coping can also help generate and enhance positive coping. Guidance and counseling services to encourage mental health services are also needed. Nevertheless, it is not only the management within the ER nurse that needs to be considered, but support from institutions and departments related to social support and nurse safety is needed.

This study recommends this scoping review be used as a reference to further studies on the stress management of nurses in the ER during the pandemic because it is still rarely done, especially in Indonesia.

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ORIGINAL ARTICLE

IKHLAS: A SPIRITUAL RESOURCE FOR INDONESIAN MUSLIM WIVES IN ACCEPTING THEIR HUSBAND'S HIV-POSITIVE STATUS

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ABSTRACT

Staying in HIV-serodiscordant relationships may cause some psychological distress for the HIV-negative spouses. Indonesian Muslim wives who decide to continue their marital relationships after knowing their husband's HIV-positive status leaned toward both religious and cultural philosophies as resources in maintaining their marriage life. This research aimed to understand the spiritual perspective among Muslim wives in accepting their husband's HIV-positive status. This study used a qualitative study with 15 wives who had a husband with HIV-positive. The interview was run 2-4 times for each participant, and around spent 50-90 minutes for each interview. Data were analyzed simultaneously using a content analysis method. Three themes were articulated, including:1) the meaning of being a Muslim wife to a husband with an HIV-positive, 2) Life experiences after knowing a husband's HIV-positive status, and 3) Philosophy of life in accepting a husband's HIV-positive status. Muslim wives' experiences often depend on gender power relations, cultural and religious values, and family roles. The result of the study could be used in developing specific strategies with a gender approach to reduce the transmission of HIV/AIDS among Muslim wives.

Keywords: HIV-positive; husband; Ikhlas; muslim wives; spirituality

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INTRODUCTION

Islam in Indonesia, especially in the Javanese community, is known for *transcultural religion*. Most Javanese people are Muslim; while they do Islamic teaching as proof of modesty, they also absorb the Islamic values translated according to the traditional Javanese values, forming a new religious value unique to local culture (Rubaidi, 2019). Therefore, in Javanese culture, a woman is placed in two forms, a wife and a mother (Ekawardhani & Santosa, 2017). The Islamic-Javanese proverb '*wadon iku suwargo nunut, neroko katut*' (a wife will follow wherever her husband goes, either to hell or heaven) shows women's place in the marital relationship and family. In the traditional Javanese society, married women perceived that they had responsibilities from the beginning of their married life. An unwritten standard of being a good wife means they have to take care of their family and do all domestic work by themselves. They do their responsibilities without asking for something in return (Huda, 2016).

Bound to those spiritual and cultural values, Muslim wives were put in a difficult situation when they received news about their husband's HIV-positive status. Mostly, Indonesian Muslim wives know their husband's HIV-positive status after being married to him for several years. Receiving the news while the husband was hospitalized made them have mixed feelings. On the one hand, there was an invisible knot for caring for their ill husband. On the other hand, there was a fear of the husband's HIV-positive status impacting their life since HIV/AIDS is one of the stigmatized diseases in Indonesia (Agnes & Songwathana, 2021). Most of them decided to continue their marriage, even though there was a risk of HIV transmission (Agnes et al., 2020).

While marriage in Islam is explained in the Quran as a set of equitable, proportionate rights and obligations for each party, most studies in some Muslim countries showed that religious dogma puts married women in a vulnerable situation, even making them powerless (Bani & Pate, 2015; Omar, 2014). Some studies showed the impact of the different HIV status

on marital relationships. For those who staying at their relationships, serodiscordancy is reported to have caused psychological distress on varying levels, including excessive alcohol and subtance use, social isolation, heightened level of anxiety, and infedility (Cherayi, 2013; Mwakalapuka et al., 2017).

Limited studies have explored how religious and cultural values influence accepting their husband's illness. To prevent HIV household transmission among Muslim wives in Indonesia, Nurses, as a part of health providers, should understand the Muslim wives' values in their marriage. Therefore, the aim of this paper is to explore Muslim wives' spiritual perspectives in accepting their husband's HIV-positive status. Their acceptance will relieve the psychological distress in their relationships.

METHOD

Study Design

This study was used a qualitative method with a grounded theory approach.

Participants

The 15 participants were recruited from four towns: Blitar District, Kediri Municipality, Kediri District, and Nganjuk District in East Java Province, Indonesia. The study sites were selected because of the geographic locations, which are located near to each other and have similar characteristics in terms of ethnicity, types of women's social activities present, and socio economic condition,and practical need for face to face interview and because the NGOs were well respected organizations in the community. The field research was conducted in four towns The participants in this study were purposively recruited until the data was saturated. To be eligible for this study, an individual would have to meet the following inclusion criteria: 1) being a wife with an HIV-positive husband (based on the NGO/VCT clinic reports), 2) having been married for at least one year, 3) and reported HIV-negative after taking an HIV test at least twice.

Data Collection

Through in-depth interviews and observations, data were collected over 15 months between April 2016 and July 2017. Each participant was interviewed 2-4 times, and around 50 - 90 minutes were spent for each interview. The place for interviews was decided based on the agreement between the participants and the researcher, including participants' homes, researcher's office and cafes.

Instrument

The interview guide was developed through the literature review, and consulted to some experts. The sample questions included "how was your life after your husband's diagnosis? And "what was your reaction when you knew your husband's HIV status?". The interview was recorded using a tape recorder and transcribed verbatim before being translated into English. The member checking technique was applied to enhance trustworthiness.

Data Analysis

Data were analyzed qualitatively. The content analysis method was used to analyze the data. The codes from the transcripts were written down in separate electronic worksheets to develop preliminary categories. The researcher reviewed the codes from the initial coding and grouped the similar codes into preliminary subcategories. The saturation was reached when the researcher extended to sample and code data until no new categories could be identified and up to when new cases of variation for the existing categories have stopped arising (Kyngäs et al., 2020).

Trustworthiness

Patton (2014) identifies five essential elements; credibility, authenticity, dependability, conformability, and transferability. To increase conformability, the researcher can use processes such as data audits (Patton, 2014). In this study, the various forms of data were collected from personal interviews and observations. The participants' quotes were used to confirm the categories used in theory. Therefore, the categories emerged from the participants' experiences and were not based only on the researcher's interpretation. In order to ensure dependability, detailed memos were provided prior to the beginning, during the planning and discussion stages, and after each session.

Furthermore, the researcher presented the study with a thick description related to the audit trail, including how the data were gathered and analyzed. The intent of transferability is to transfer findings from one context to another. By offering rich narratives and thick descriptions of context and participants and clearly stating the purpose of the study, transferability to other individuals and/or situations becomes a possible result of the qualitative research process (Patton, 2014).

Ethical Consideration

The study was approved by the Institutional Review Board Committee, Faculty of Nursing, Prince of Songkla University, #MOE 0251.1.05/2148. All participants were informed of the study's objective and signed a free informed consent form. Furthermore, the participants also agreed to record the interviews. When approaching the participants, their secrecy and anonymity were ensured in the study; therefore, all names presented were initial.

RESULTS

The key participants of the study were 15 Muslim wives with HIV-positive husbands. The characteristics of the participants can be seen as below.

Table 1. Characteristics of the participants

Characteristic		Frequency (f)	Percentage (%)
Age	26 – 30	2	13.3
	31 – 35	3	20.0
	36 – 40	2	13.3
	41 – 45	6	40.0
	46 – 50	2	13.3
Education	primary education (1 – 6 grade)	4	26.7
	secondary education (7 – 12 grade)	9	60.0
	tertiary (college and above)	2	13.3

Table 1. Characteristics of the participants (continue)

Characteristic		Frequency (f)	Percentage (%)
Ethnicity	Javanese	14	93.3
	Sundanese	1	6.67
Religion	Islam	15	100.0
Occupation	housewife	10	66.7
	self-employed	4	26.7
	Teacher	1	6.7
Type of family	Nuclear	9	60.0
	Extended	6	40.0
Marital status	married	15	100.0
Length of marriage	1 – 5	3	20.0
	6 – 10	2	13.3
	11 – 15	2	13.3
	16 – 20	4	26.7
	21 – 25	2	13.3
	26 – 30	2	13.3
Duration of husband's diagnosis	< 1 year	3	20,0
	1 – 4 years	9	60.0
	≥ 5 years	3	20.0
Way of knowing husband's HIV-positive status	told by the husband	5	33.3
	told by health care provider (HCP)	10	66.7

In order to organize results, data were distributed into three themes as follows:

Theme 1: Meaning of being a Muslim wife to a husband with an HIV-positive

The participants stated they took a moment, hours, and days to realize the meaning and consequences of living with HIV-positive husbands.

Wife as a caregiver

At the time the participants received news about their husband's HIV-positive status, the first thing that came to their mind as a proper wife was that they had to take care of their sick husbands.

As a good wife, I have to care for my husband when he is sick. There's no way I can just let him go, even though he sometimes doesn't care about his illness (Mrs. E, age 30).

I was mad at him. Yet, I continued to care for him, cheering him on. In Islam, not serving a husband properly is a sin. My husband's illness was not caused by a human. It (HIV) comes from Allah (God). If I am not caring for my husband, I am afraid Allah will not give His blessing to me (Mrs. S, age 41).

As a wife, it's my job to support him. I feel sorry for him. Who will take care of him if not me? I take care of him as best I can because it's my duty. I hope that if I take care of him well, Allah will shower me with His blessing. I always ask Allah to show me the right direction (Mrs. MA, age 46).

Wife as a companion

The participants viewed marriage as an essential and sacred union between a woman and man that is a part of religious obligations. It is also considered an act of worship to Allah (God). When they sign the marriage contract document, it reflects the couple's consent to the union without duress. For them, any illness could not break the contract and make them leave their husband.

I told him that I married him because of Allah. I would accept whatever Allah gives me in this marriage since I said *aqad nikah* (marriage contract) many years ago (Mrs. A, age 38).

I feel happy because my HIV test result is negative. But I am also sad because my husband's result is positive. I decided to stick with him forever. I assured my husband that I would not leave him, that he need not worry (Mrs. W, age 42).

Even though he has HIV, I will not leave him; the important thing is he loves me. We love each other deeply. It is my destiny to have a husband with HIV (Mrs. A, age 26).

Theme 2: Life experiences after knowing husband's HIV-positive status

The participants were shocked when they were notified about their husband's test result since they were never told before. At the time, the participants tried to control their emotions by responding to the news while caring for their husbands. The participants were having an internal conflict and seeking an HIV test to ensure their HIV status.

Having mixed feelings

Most of the participants (n=13) were shocked at the time they received bad news about their husbands' HIV-positive status. They felt shocked for a moment to several days. They could not understand how their husbands got the disease. For instance, Mrs. N, a 41-year-old housewife and married for 23 years, questioned how her husband got HIV. She expressed her feelings as follows:

When I was told my husband got HIV, I felt very shocked. How come he got the disease (Mrs. N, age 41).

Mrs. A, a 38-year-old housewife, was a newlywed when she received her husband's diagnosis seven years ago. Several

days after their wedding, her husband was hospitalized for two weeks. When the HCPs informed her about her husband's HIV-positive status, she was very shocked. She revealed her feelings in the following quotation:

At that time, I felt very shocked. I was just married to him for a month when I got the news about his HIV status (Mrs. A, age 38).

Thirteen participants were confused after the shock had worn off. They felt angry, upset, hopeless, lost, and wanted to cry at the same time. The following account was a participant's quotation expressing her feeling at that time:

Arrhhh…. I just couldn't explain what I felt. I felt confused. Really confused. I was furious with him, but I also wanted to cry. I just couldn't handle my feelings (Mrs. S, age 41).

Unfortunately, Two participants were unsurprised when they knew about their husbands' HIV-positive status. Both participants explained that their husbands had been involved with female sex workers (FSWs); one of the husbands used to be married to a FSW, and another had affairs with some women for a long time. They assumed their husbands got the disease from the FSWs. Mrs. E, a 30-year-old housewife, stated her feelings as follows:

Actually, I felt unsurprised about it (husband's HIV status). He might get the disease from his first wife since she was a *wanita nakal* (FSW) (Mrs. E, age 30).

Realizing the difference in HIV status: *Alhamdulillah*, I am HIV-negative

All participants found their HIV-negative status after knowing their husbands'. After finding out about their husbands' HIV-positive status, the participants also took the test. The time of HIV tests ranged from several hours to weeks after learning of their husbands' HIV-positive status. The participants wanted to know their HIV status to decide what to do next. The following statement is the participant's account indicating how she found out about her husband's HIV-positive status:

We had been married for one year when he started getting sick; he had itches for more than two weeks. At last, he took an HIV test, and the result was positive. I felt shocked when I knew he got HIV. I felt sad for my husband. Then he asked me to take test; *Alhamdulillah* (thanks to Allah) the result was negative. When I got my result, I felt pleased (Mrs. W, age 43).

Theme 3: Philosophy of life in accepting husband's HIV-positive status

Islamic teaching and Javanese values played an important part in the Muslim wives' decisions to accept their husband's HIV-positive status. Based on those two values that emerged in the study, Muslim wives pulled themselves together to take their new situation. They reconciled themselves with their husbands' prior and present sexual behavior that had led to HIV. They just had to accept it and continue their life as usual.

Believing in *nasib* (taqdeer / destiny)

Believing in *nasib* means believing that everything that happened in their life was their destiny. *Nasib* is a Javanese word, meaning that every good or bad thing that happened to people was Allah's will. In Javanese society, people used the word *nasib* (Javanese) and *taqdeer* (Arabic) interchangeably. When their husbands have diagnosed HIV-positive, they presumed the illness was their *nasib/taqdeer*. It was Allah who put them in their current situation; they just had to face it and overcome the problems that came along. The following participants' quotations provided good examples:

I put some thought into the news (husband's HIV-positive status). In the end, I accepted it as my *'nasib'* (destiny). I took for whatever he was (Mrs. W, age 43).

The nurse told me that my husband got HIV. I was resigned since we already had a daughter. I just had to accept my *taqdeer* (fate) (Mrs. R, age 26).

At that time (2009), I had been married to him for one month when we found out he got HIV. I told him I would not leave him no matter what since I had said my vow and married him because of Allah. So, I would accept whatever it was (Mrs. L, age 36).

Accepting husband's illness with *ikhlas* (sincerity)

Accepting the illness with *ikhlas* referred to a set of actions that the participants took to accept their husbands' illness sincerely in an attempt to worship Allah. Mrs. SUN, a 41-year-old kindergarten teacher, explained her situation in the following statement:

It (husband's HIV-positive status) might be a *berkah* (blessing) from Allah. At first, he was hospitalized to remove a mass in his butt. In the end, he just needed to take medicine to remove it. I told him it (husband's HIV-positive status) didn't matter to me. I accepted his condition. It was Allah's will. Allah gives trial to every human being. The important thing is we have to face it with *ikhlas*. Allah gives a solution to every problem (Mrs. SUN, age 41).

Feeling secure from HIV because of Allah's will

Most participants had less worries about HIV transmission after having a new understanding of HIV transmission. They also adopted the device to protect them while they could still have their sexual life. Some of the participants believed that Allah would keep them safe. This could be seen in the following quotation:

At first, I was worried. Later, deep in my heart, I was sure I wouldn't contract the disease. I believed Allah would keep my safety (Mrs. N, age 45).

Furthermore, the participants strongly believed that they could get HIV if Allah let it happen to them, regardless of whether they used a condom. They mostly put their safety in Allah's hands by making du'a. *Du'a* is a part of a Muslim's life. By making *du'a* to Allah, participants believed that everything would be possible for them. The following statement indicated how they made *du'a* as an action to face their emotional problems:

At that time, I was perplexed. I returned everything to Allah. I did *Tahajjud* prayer (additional prayer). I was very shaken. I made *du'a* to Allah for my safety. Safe from everything. Safety in this life and hereafter. I truly believed in Allah's will. Allah would always keep me safe (Mrs. NUR, age 45).

Feeling secure from HIV put one participant, a 38-year-old housewife, took the risk of having sex without using a condom with her husband because she wanted to have children. Pressure to have a child would be more critical than HIV. She described her feeling as follows:

I never forced him to use a condom every time we had sex. It didn't matter to me. I never worried about getting HIV because I believe in Allah's will (Mrs. L, age 38).

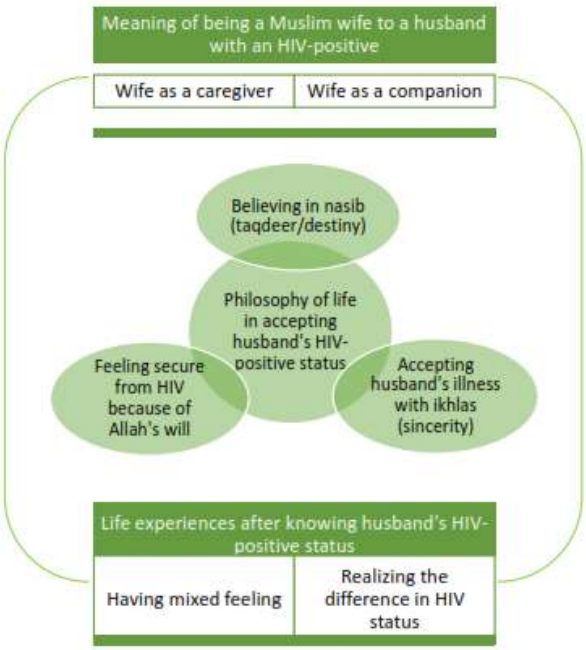

Figure 1 The spirituality of Muslim wives in accepting their husband's HIV-positive status

DISCUSSION

Most participants got the news about their husbands' HIV-positive status when their husbands were hospitalized. At the time, they were more concerned about their husbands' bad condition than the news. In Javanese culture, women are destined mainly to become wives and mothers. Therefore, some women in the study were more likely to be concerned about their husband's health and ignored their feeling at the time they knew about their husband's HIV-positive status. Taking care of a husband in his health and sick was a form of fulfilling their duties as a wife and worshipping Allah.

All participants had married Javanese men and lived in the Javanese community. The relationship in the Javanese family was influenced by Javanese philosophy called 'ngabekti-ngayomi' (devotion-protection), in which women shared the men's role in maintaining and supporting their family (Huda, 2016). This philosophy affected how the participants reacted and took action to overcome the problems caused by the news. Participants' acceptance of the husband's HIV-positive status and the willingness to take care of their husbands could be interpreted as a form of *ngabekti* (devoted) to their HIV-positive husband. It was similar to the emotional-focused coping strategies that people usually perform for declining emotional distress when incidents are not changeable (Grech et al., 2018).

Moreover, the seriousness of how a person perceives a challenge as stressful depends on many factors, involving the individual's sight of his capability to manage new demands, successful experiences in dealing with resembling situations, the level to which someone could handle the event, perception of being overloaded or having contradicting needs and the standards for one's performance (Lewis, Sperry, and Colson in Mwakalapuka et al., 2017) It revealed that self-previous successful experiences influenced the success in encountering emotional distress. At the same time, this study found that making *du'a* to Allah and believing in *nasib* (destiny) were two crucial values that derived from both Islamic and Javanese values. Those two values made the participants acknowledge God's power over their thoughts and realize they could not control everything in their lives. The distinction between the existing literature and the finding in the study could be caused by the difference in the context of culture and local values.

The Javanese saying of *narima ing pandhum* means "accept what God has given to you sincerely/without resisting." The attitude of *narima/trima* is often associated with hardship. In such a situation, an individual who was *narima/trima* would face the circumstances without grumbling (although he/she may have complained before achieving his state of the heart) (Myrlinda, 2019; Setiawan & Tjahjani, 2019). *Narima/trima* "brings peace through accepting the inevitable" (Myrlinda, 2019). In addition, Javanese values that prescribed people to accept their fate in life are usually used to shield or escape from the burdens of their real lives (Rubaidi, 2019). This result contradicted the statement that the difference in HIV status has caused marital dissolution and disruptions (Mwakalapuka et al., 2017).

Furthermore, the acceptance of their husband's HIV-positive status might have been influenced by the length of their marriage. The findings showed that 12 of the participants were married for more than five years. The length of marriage could be interpreted as showing that the couples have strong marital commitment and good communication. In Javanese society, their commitment to each other for a length of time reflected the Javanese proverb *'witing tresno jalaran soko kulino'* which means that love itself would grow with familiarity to one another (Andayani et al., 2018).

The researcher found there were some limitations in this study. This study focused on HIV-negative women with HIV-positive husbands. The number of this group was very limited. Another limitation was that the women participants were asked to recall events that for some could have occurred several years ago.

CONCLUSION AND RECOMMENDATION

This study identified four spiritual/cultural perspectives, including believing in *nasib* (taqdeer/destiny), accepting the husband's illness with *ikhlas,* and feeling secure from HIV because of Allah's will, which contributed to Muslim wives' acceptance of husband's HIV-positive. Understanding the heterogeneous composition of married Muslim wives will aid in developing culture/spiritual specific strategies to reduce the transmission of HIV/AIDS. Though this study begins to illuminate some ethnic-specific realities that can lead to safe or risky behavior, more empirical studies are needed to fully understand spiritual/cultural roles in preventing HIV transmission among Muslim wives.

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ORIGINAL ARTICLE

THERAPEUTIC EFFECT OF *HIJAMAH* (CUPPING THERAPY) ON LIPID PROFILES AND APOLIPOPROTEIN IN HYPERCHOLESTEROLEMIC PATIENTS

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ABSTRACT

Hijamah or cupping therapy has a therapeutic effect on cholesterol. However, there is still a lack of studies that investigate the potential effect of cupping in managing apolipoprotein B as a proatherogenic agent and apolipoprotein A-1 as an anti-proatherogenic agent. This study aims to explore the effect of cupping therapy on lipid profiles and apolipoproteins in hypercholesterolemic patients. A pre-post experimental design without controls were used. Consecutive sampling was applied to 40 dyslipidemia respondents. The lipid profiles and plasma apolipoproteins A-I (ApoA-I) and apolipoproteins B (ApoB) were measured after the respondents fasted for 12 hours before cupping therapy and 24 hours after cupping therapy. The Wilcoxon sign-rank test was used for the data analysis. The following results were found: average lipid profile (mg/dL) and apolipoprotein (µg/mL) pre vs post cupping: Total Cholesterol (Pre-test vs Post-test) 328 vs 283 (P-value 0.003); TG 238 vs 204 (P- value 0.007); HDL 78.5 vs 85 (P- value 0.000); LDL 195 vs 158 (P- value 0.001); ApoA-1 0.07 vs 0.67 (P-value 0.000); ApoB 2.04 vs 1.82 (P-value 1.000); ApoB/ApoA-1 ratio 30.22 vs 2.93 (P- value 0.000); cholesterol/HDL ratio 4.06 vs 3.08 (P- value 0.332); TG/HDL ratio 3.01 vs 2.83 (P- value 0.104); LDL/ApoB ratio 90.75 vs 83.82 (P- value 0.0837). In conclusion**,** cupping therapy reduces total cholesterol, TG, LDL, and apoB/ApoA-1 ratio and increases HDL significantly in dyslipidemic patients.

Keywords: Apolipoproteins; cupping therapy; hypercholesterolemia; hijamah; nursing

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INTRODUCTION

Atherogenic dyslipidemia occurs when there are elevated levels of triglycerides (TG) and small-dense Low-density Lipoprotein (LDL) in the body. They both play a critical role in atherosclerotic or Cardio Vascular Disease (CVD) (Manjunath et al., 2013). Atherosclerosis is a chronic condition where arteries harden through the build-up of plaques (Bergheanu et al., 2017). Patients with hypercholesterolemia are at risk of atherosclerosis due to their poor awareness of the risks associated with the condition, poor adherence and persistence to prescribed treatment, and consequently low rates of reaching lipid management targets (Wake et al., 2019).

An example of traditional lipid-lowering therapy is cupping therapy. Cupping is a minor excretory surgery that has been medically and scientifically proven to be able to clean the blood and interstitial space from Causative Pathological Substance (CPS). Pathological substances that form CPS consist of total cholesterol, LDL, TG, and Apolipoprotein-B. Additionally, the mechanism of cupping in reducing cholesterol has been described by *Taibah* theory (Al-Bedah et al., 2019).

Taibah theory explains that wet cupping therapy has similar excretory functions to the kidney through its skin capillary filtration and size-dependent excretion resulting from negative suction pressure and scarification. Moreover, while the kidney is only able to excrete hydrophilic materials, cupping therapy can excrete hydrophilic and hydrophobic

substances, such as lipoproteins (cholesterol). The process of wet cupping therapy consists of cupping, puncturing/scarification (about 0.1 millimeters in depth), and then second cupping at the same location.

Wet cupping therapy reduces LDL cholesterol and has the potential to prevent atherosclerosis. The apolipoprotein ratio (Apo-B/ApoA-I) represents the balance between Apo-B atherogenic and Apo-AI antiatherogenic particles. This ratio is a marker of cardiovascular risk as patients with an Apo-B/Apo-AI percentage ratio above 0.9 are at risk of CVD. This ratio is characterized by high TG levels and Atherogenic Index of Plasma (AIP), LDL/apoB ratio, and low Apo-B levels (Kaneva, Potolitsyna, & Bojko, 2015).

Nurses are eligible to deliver cupping therapy to their patients under Nursing Law No.38-Year 2014. However, the mechanism of how cupping can lower the lipid profile and apo-lipoprotein is not yet understood. Therefore, this study aims to review biomedical aspects, identify a causal relationship, and modify the theory of the intervention-outcome paradigm.

A reverse research strategy was used as this therapy has been used as a clinical treatment for thousands of years. Although cupping has been reported as a therapy against cholesterol, there is no explanation yet for its potential reduction in apolipoprotein B and the lipid profiles of LDL. Therefore, researchers need to understand the theoretical basis underlying this therapy as a disease treatment technique (Al-Bedah et al., 2019). Controversial opinions state that cupping therapy only has a placebo effect. The placebo theory is still believed until a valid mechanism is determined. It is hoped that this research will open the doors to scientific theories and evidence-based scientific explanations that will help with the application of safe and effective cupping therapy (Fikri et al., 2017).

According to the *Standard Intervensi Keperawatan Indonesia (SIKI)* or the Indonesian Nursing Intervention Standards, cupping therapy is included as a nurse intervention (PPNI, 2018). Thus, the results of this study can be added to support this evidence-based practice in the nursing field so that nurses may offer cupping therapy to their hypercholesterolemic patients in the clinic. The finding may also contribute to the development of complementary nursing therapies as cupping is regarded as a traditional method rather than conventional therapy.

METHOD

Study Design

This study implemented a pre-post experimental design with one intervention group and no control group. All respondents with a history of hypercholesterolemia were assigned to the intervention group.

Sample

The subjects of our study were 40 respondents with dyslipidemia. All participants were considered free from serious and chronic illnesses at the time of recruitment. Consecutive sampling was used and the participants were recruited from the university's clinic (Assabil Holy holistic, a *Hijamah* clinic) and the nearby community (UIN staff who live close to the Faculty of Health Science, UIN Syarif Hidayatullah Jakarta). The inclusion criteria were any patient who has a history of hypercholesterolemia as diagnosed by doctors and those who have elevated total cholesterol levels (above 200 mg/dL) detected by peripheral blood sampling before recruitment. The exclusion criteria were anyone who suffered from acute and chronic illnesses and who regularly consumed prescribed medicines. Each subject gave their informed consent to participate in this study.

Instrument

Blood samples were taken from the respondents' antecubital veins into vacutainers (containing EDTA) before and after the wet cupping technique was performed. The respondents were asked to fast 12 hours before blood sampling, and after that, they were asked to break their fast while the therapist prepared for the intervention. The second round of blood samples was taken 24 hours after the intervention (Widada & Anggraini, 2020). The blood samples collected were stored in a cool box before being delivered to the laboratory. The samples were then centrifuged, and the plasma was placed into Eppendorf microcentrifuge tubes and stored at −40◦C until analysis.

Intervention

Wet-cupping therapy (*hijamah*) was performed according to the Indonesian Cupping Association's (PBI) standard procedure. A lancet device was used for the scarification and 7 *hijamah* acupoints were used (also called *sunna* points as these points were suggested by the Prophet Muhammad SAW). These 7 points are called *al-akhda'ain, al-kaahil, al-katifain,* and al-waarik (Assabil holy holistic, 2018). The intervention was performed by certified therapists from the Assabil Holy Holistic Education Center, who is also the founder of the Indonesian Cupping Association (PBI).

Data collection

Data was collected between September to October 2019 by the nursing staff in our university clinic. The respondents' informed consent was obtained before the study.

Data analysis

The measurement of lipid and proatherogenic profiles; cholesterol, triacylglycerol, LDL, and plasma HDL concentrations were conducted using enzymatic methods with commercially available kits (Diasys). The measurement of plasma ApoB and ApoA-I concentrations was done using the ELISA technique (Abcam).

Next, each parameter was measured for all samples in duplicate. The absorbance readings and levels were calculated with the help of standard solutions. The calculations were also conducted through the Cholesterol/HDL ratio; ApoB/ApoA1, LDL/ApoB, and Atherogenic Index of plasma AIP (TG/HDL). Statistical analysis was performed using SPSS version 21. The difference between the groups before and after the cupping intervention was analyzed using the Wilcoxon sign rank test due to the data's abnormal distribution (non-parametric test). Values of P <0.05 were accepted as statistically significant.

Ethical consideration

This study was approved by the ethics committee of the Faculty of Health Sciences at the State Islamic University Syarif Hidayatullah Jakarta (ethic number Un.01/F10/KP.01. 1/KE.SP/09.00.017/2019).

RESULTS

The respondents in this study were individuals who had a history of hypercholesterolemia or elevated total cholesterol before the intervention. The profiles of the respondents in this study are shown in Table 1. Table 2 exhibits the decrease in the levels of cholesterol, triacylglycerol, and LDL, as well as an increase in HDL and ApoA-1 protein levels. ApoB protein

was also found to have decreased after cupping therapy. This causes the ApoB/ApoA-1 ratio to decrease significantly.

Table 1. Respondents' characteristics (N = 40)

Characteristic	n (%)
Gender	
Man	18%
Woman	82%
Age	
Adult	94%
Elderly	6%
IMT	
Normal	82%
Obesity	18%
Cupping therapy experience	
1-3 time	69%
4-6 time	23%
≥7 time	8%

Table 2. Lipid and Apolipoprotein levels in pre-post cupping therapy among hypercholesterolemic patients (N = 40)

Parameter	Pre-cupping Median ± SD (min – max)	Post-cupping Median ± SD (min – max)	*P* value <0.05
Cholesterol (mg/dL)	328 ± 53 (228.9 – 450.3)	283 ± 54 (147.2 – 383.6)	0.003**
Triglyceride (mg/dL)	238.2 ±61.9 (134.8 –368.5)	204 ± 53,8 (151.1 – 359.8)	0.007**
HDL (mg/dL)	78.5 ±10.2 (58.2 – 90.4)	85.2 ± 18 (68.5 – 151.9)	0.000**
LDL (mg/dL)	195 ± 49 129.5 – 323	158.9 ± 48 21.8 – 232.9	0.001**
Apo-A1 protein (ng/mL)	0.07 ± 0.026 (0.027 – 0.118)	0.67 ± 0.242 (0.197 – 1.106)	0.000**
Apo-B protein (ng/mL)	2.04 ± 0.74 (0.82 – 3.55)	1.82 ± 0.71 (0.51 – 3.28)	1.000
Apo-B/Apo-A1 ratio	30.22 ± 1.66 (25.36 – 33.96)	2.93 ± 0.18 (2.59 – 3.35)	0.000**
Cholesterol/HDL ratio	4.06 ± 0.79 (2.49 – 6.34)	3,80 ± 0,66 (2.72 – 5.31)	0.332
AIP (Triglyceride/HDL ratio)	3.01 ± 1.2 (1.48 – 6,2)	2.83 ± 0.83 (1.48 – 5.2)	0.104
LDL/Apo B ratio	90.75 ± 98 (33–477)	83.82 ± 104 (41–481)	0.0837

**Wilcoxon sign-rank test *P* <0.05

DISCUSSION

The increase in Apo-A1 after cupping intervention indicates that proatherogenic cholesterol is reduced through its excretion into the liver and bile salts. The increase of Apo-A1 levels in the plasma will also increase proatherogenic cholesterol levels that will be discharged into bile salts through the liver. HDL synthesis is influenced by Apo-A1, Pre-HDL, and cholesteryl ester transfer protein (CETP). Pre-β-HDL is a form of HDL that induces the release of cholesterol from tissues to form HDL. It has a very important role in the process of cholesterol transport in peripheral tissues (Trajkovska & Topuzovska, 2017).

HDL particles are small and flat newborn particles that contain Apo-A1 and are synthesized in the small intestine and liver. Apo-A1 is a component of HDL that supports the efflux of cholesterol from cells and is important for maintaining cellular cholesterol homeostasis. In addition, receptors are involved in the binding of HDL to cell membrane proteins. The smaller HDL precursors (pre-β-HDL) in tissues take up free cholesterol from cell membranes. Free cholesterol is also esterified by the action of LCAT, which makes it more hydrophobic. The increase in Apo-A1 is very significant in cupping therapy and indicates the protection of blood vessels from lipid oxidation and atherosclerosis formation (Rousset et al., 2009).

The decrease in Apo-B in this study is a good sign because it is proatherogenic. The lower the plasma Apo-B level, the less proatherogenic cholesterol will be in the blood circulation. Apo-B is the main apolipoprotein of chylomicron particles, VLDL, IDL, and LDL in all tissues. Apo-B in LDL particles acts as a ligand for LDL receptors in various cells. LDL particles are easily internalized into the subintimal space where they adhere to the proteoglycan matrix, which would then be oxidized and increases the risk of atherothrombotic events. One Apo-B particle represents one LDL cholesterol. Therefore, the decrease in the amount of Apo-B in this study showed that cupping therapy could reduce the ABC1 protein and result in a 70% reduction in cholesterol, especially in plasma phospholipids, and if continued to be HDL, almost no LDL (McNeish et al., 2000).

Furthermore, this study can prove that wet cupping therapy can significantly reduce the Apo-B/Apo-A1 ratio in hypercholesterolemic patients. The lower the ratio of Apo-B/Apo-A1 in plasma, the less proatherogenic cholesterol in the blood circulation. Apo-B is a protein involved in fat metabolism and is a major constituent of proteins such as VLDL and LDL lipoproteins. Chylomicrons are lipoprotein particles that carry dietary lipids from the digestive tract, through the bloodstream to tissues, and especially to the liver. In the liver, the body repackages these dietary lipids and

combines them with Apo B-1 to form triglyceride-rich VLDL (Rousset et al., 2009).

Cholesterol reduction in cupping therapy can control other stable lipid profiles to normal. A diet high in saturated fat and trans unsaturated fat, or genetic factors can cause high blood cholesterol levels. Excess cholesterol is stored in plaques on the walls of blood vessels. This plaque can narrow blood vessels and consequently result in atherosclerosis, which puts you at risk for heart disease and stroke. In this study, the respondents' cholesterol levels decreased, which can lower LDL and prevent atherosclerosis (Calabrese et al., 2015).

Furthermore, the HIF-1α transcription factor activates macrophages in the skin, which in turn induces proinflammatory genes such as IL-1, IL-4, IL-6, and TNF-α. Interleukin-6 plays a role in stimulating the immune response. For example, after tissue damage due to cupping, the release of IL-6 will stimulate young macrophage cells to mature and perform phagocytosis. The accelerated migration of macrophages can also increase due to IL-6 stimulation. Additionally, IL-6 particles also stimulate monocytes to produce inflammatory cytokines that play a role in local and systemic inflammation, thereby accelerating the proliferation and differentiation of macrophages (Duque & Descoteaux, 2014).

The total cholesterol levels in the body are comprised of HDL, LDL, and TG levels. In the body, cholesterol is found in the form of free cholesterol and esterified cholesterol. Normally, about two-thirds of total plasma cholesterol is present in the form of esters. About 60-70% of cholesterol is transported by LDL and a small portion (15-25%) is transported by HDL (Uydu et al., 2012). The control of blood lipid levels, especially LDL reduction, could be done by drugs through the inhibition of HMG-CoA reductase in the liver. This lowers total cholesterol levels and increases the formation of LDL receptors in liver cells. This increases the number of LDL transport on the surface of hepatocytes from blood vessels to liver cells (Fikri et al., 2017).

This study found a significant decrease in TG. Patients with hypercholesterolemia generally have a high level of cholesterol, TG, and LDL. LDL is a primary atherogenic lipoprotein and is the main therapeutic target for coronary heart disease. In general, TG-rich lipoproteins include HDL and LDL. Approximately 50% of patients with this atherogenic lipoprotein disorder have an increased risk of CVD. Therefore, treatments also aim for a decrease in TG in target hyperlipidemia.

Cholesterol and triglycerides are non-polar or insoluble in water. Lipoproteins are fatty-acid-binding proteins/transport proteins. These complex particles have a central core that contains cholesterol esters and triglycerides surrounded by free cholesterol, phospholipids, and apolipoproteins (Rousset et al., 2009). Cholesterol, free fatty acids, and triglycerides are difficult to remove through cupping therapy because their solubility is small, so they bind to the protein. Its large macromolecule structure also makes it difficult to penetrate the skin barrier and remove it through cupping therapy. When hypercholesterolemia occurs, the Sterol Binding Protein Element (SREBP) in the endoplasmic reticulum is inhibited. In this study, it is suspected that the inhibition of SREBP in cells and inhibition of HMG-CoA reductase activation prevents the mevalonate pathway of intracellular cholesterol synthesis. Blood that comes out through cupping therapy is likely to secrete the transcription factor SREBPs (Benito-Vicente et al., 2018).

HDL has protective properties against heart disease, therefore therapeutic intervention efforts aim to increase HDL concentrations. HDL removes lipids from macrophage phagocytosis to other lipoproteins. It also contains the highest proportion of apolipoproteins compared to other lipoproteins. The major apolipoproteins, ApoA-I and ApoA-II, are secreted into plasma by the liver and intestines. Thus, the presence of both apolipoproteins slows down atherogenesis, protects the body against atherosclerosis, and increases cardioprotective function.

Cells in extrahepatic tissues also transport cholesterol from the periphery to the liver for biliary secretion and excretion of cholesterol through feces, even though it is only 5% of body lipid (Mika et al., 2020) This mechanism is quite effective compared to cupping therapy. However, it is difficult for HDL to cross the skin barrier through cupping therapy. The increase in HDL due to increased Apo-A1 was seen in this study.

TG synthesis is the liver's attempt to store and export fatty acids. The main pathway for TG synthesis is the Glycerol-3-P pathway, which accounts for more than 90% of total TG synthesis. Conversely, TG levels could decrease through the inhibition of long-chain acyl-CoA esterification to G3P and inhibition of microsomal Glycerol-3-P acyltransferase enzyme. Molecular lysophosphatidic acid is not produced in this reaction and the resulting compound is acylated, so no phosphatidic acid is formed by acylglycerol-3-phosphate acyltransferases in the ER membrane. PA is also not formed, thereby causing cytidine diphosphate diacylglycerol to not be formed due to decreased TG synthesis.

The decrease in TG can also be thought to be caused by a decrease in the expression of lipogenic enzymes in the cupping tissue, such as the group of enzymes involved in the synthesis of oleic acid, the main component of triglycerides. The decrease in TG occurs due to the rapid release of blood through cupping as this reduces the components needed for the synthesis of TG. In addition, increased lipolysis is associated with increased carnitine activity via beta-oxidation metabolism. As less TG is formed, fatty acids accumulate, thereby causing carnitine palmitoyl transferase to be involved in the transport of FA into the mitochondria for degradation (Mika et al., 2020).

The decrease in LDL can also be caused by several factors such as a decrease in TG synthesis, cholesterol ester transfer protein activity, and liver lipase activity. The mechanism of wet cupping therapy is to inhibit cholesterol synthesis and TG also effectively inhibits LDL synthesis. Therefore, anything that has predicted TG levels through cupping therapy can increase HDL cholesterol levels and decrease LDL particles. Cupping therapy is effective in reducing cholesterol, TG, and LDL to prevent the risk of CVD events. This type of therapy also reduces the ratio of AIP (TG/HDL) with a smaller molecular size. This ratio can be used to identify patients with an atherogenic lipid profile and may be relevant for assessing CVD risk (Boizel et al., 2000).

The Apo-B/Apo-A1 ratio reflects the balance of proatherogenic and antiatherogenic particles. A higher Apo-B/Apo-A1 ratio was associated with a higher risk of all-cause and CVD-related mortality. A higher Apo-B/Apo-A1 ratio is an important parameter for predicting the risk of cardiovascular events and causes of death. This overexpression of ApoA-I causes atherosclerotic regression. High LDL levels and high Apo-B/Apo-A1 ratios are also associated with coronary arteriosclerosis. Whereas LDL levels were independently

associated with aortic valve calcification but not coronary artery calcification in the familial hypercholesterolemic population (Ljungberg et al., 2017).

Next, the Apo-B/Apo-A1 ratio in this study showed a significant decrease. Apolipoproteins are small molecules and are easily soluble in water. Therefore, it could be easily removed through cupping therapy, as evidenced by the significant reduction ratio by being 10 times lower compared to before cupping.

Cupping is effective in reducing the risk of death from CVD regardless of the respondent's normal BMI (Table 1). This study showed a positive effect of cupping therapy in hypercholesterolemic patients by reducing total cholesterol, triacyl glycerides, LDL, and increasing HDL.

As a limitation, this study did not control other factors that may interfere with the results, such as age, gender, food consumption, regular physical exercise, smoking habits, and prescribed medications (a few respondents had a history of using statin medications). The factors that may interfere with the results such as diet and exercise were not controlled in this study. The respondents at the time of the study were also not undergoing lipid therapy or taking prescribed medication.

CONCLUSION AND RECOMMENDATION

This study used cupping therapy techniques to reduce lipid levels in the blood. This intervention was implemented on hypercholesterolemic patients before and after cupping. Blood samples were taken to test for their lipid profiles and apolipoproteins. The results showed that cupping therapy could reduce cholesterol, triacylglycerol, LDL, the ratio of Apo-B/Apo-A1 levels, and increase HDL levels. This shows that cupping therapy may have the potential to reduce the incidence of vascular disorders due to the blockage of blood vessels by lipids.

Hijamah or cupping therapy may become a nurse-independent intervention for the management of hypercholesterolemia in adult patients.

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