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REVIEW ARTICLE

ARE INDONESIAN NURSES READY FOR HEALTHCARE ROBOTS DURING THE COVID-19 PANDEMIC?

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Abstract

Healthcare robots are used in Indonesia and other countries to combat COVID-19 pandemic. This article was aimed to describe a perspective about healthcare robots, and to recommend ways for Indonesian nurses to engage with healthcare robots during the COVID-19 pandemic. One view hindering healthcare robot appreciation as partners of nurses is its threat to their practice. However, with the current environment of COVID-19 'frontline' situations, increasing infections of patients with SARS COV2, limited personal protective equipment, and the fastidious nature of maintaining social distancing and mask-wearing, it may be best to view healthcare robots as significant partners to facilitate safety, and ease the demands of nursing care activities in order to safeguard human lives while enhancing human well-being. Educating healthcare practitioners about healthcare robot programming and assurance of its safe and secure use can advance robot appreciation as partners in healthcare. These goals, challenges, and recommendations can provide Indonesian nurses some pathways-to-readiness towards a partnership involving healthcare robots, particularly during this COVID-19 pandemic, and in the future.

KEYWORDS

robotics; nurses; pandemics; COVID-19; Indonesia

BACKGROUND

After the presentation on the topic, "Increasing aging population, humanoid nurse robot, and the Transactive Relationship Theory of Nursing (TRETON) in Japan" during the 2nd Andalas International Nursing Conference in Indonesia on September 2019, one participant asked about the possibility of using healthcare robots in Indonesia, saying, *"Wouldn't this be a threat for nurses if healthcare robots will be implemented in Indonesia"? "Healthcare robots may replace nurses if they will be used in Indonesia!"*

A news item was reported by *Kompas TV* on April 6, 2020, entitled, "A medical robot is prepared to treat patients with corona virus in Pertamina Jaya Hospital", publicizing that this may be the first time that a hospital in Indonesia will be using healthcare robots for patient care. Furthermore, it explained that the purpose of using these robots is to prevent infection through direct contacts between healthcare providers and patients (Reza, 2020). Similarly, this article featured healthcare robots because of the heightened awareness in the increasing numbers of patients with SARS COV 2, the virus responsible for the COVID-19 pandemic.

While using robots in healthcare may be relatively new in Indonesia, healthcare robots have been used in other countries. Several hospitals in China have used healthcare robots because of the COVID-19 pandemic. Functions of these robots were to deliver meals to healthcare personnel and patients, medicines to nursing departments, and information to patients. Healthcare robots also performed disinfection procedures, and cleaned floors (Arthur & Shuhui, 2020). Moreover, Yang et al. (2020) also found specific functions of healthcare robots during COVID-19 pandemic such as measuring patient temperatures and assisting human nurses in taking specimens by swabbing patients' throats with precision to determine accurate medical diagnosis of patients. This article aims to describe a perspective about healthcare robots, and to recommend ways for Indonesian nurses to engage with healthcare robots during the COVID 19 pandemic.

RESEARCH INVOLVING HEALTHCARE ROBOTS

Long before COVID-19 became a pandemic, in Japan, healthcare robots were widely used as subjects of healthcare research. This was due to the demographics of Japan as a super-aging society with a low birth rate and high turnover rate among nurses. Thus, Japan is facing

an increased demand for healthcare providers (Takase et al., 2009). Using healthcare robots in healthcare settings has been touted to be a welcome solution (Masui, 2016).

Research on healthcare robots have been increasing, particularly as a tool or as an instrument for interventions especially for patients with mental health conditions. Similarly, subjects of studies with robots included its utilization during exercise programs (Tanioka et al., 2019a), and as conversation companions (Miyagawa et al., 2019) particularly among older persons. Currently, a team of Japanese nurse researchers headed by Tanioka and colleagues have been conducting clinical research on transactive relationships between Pepper, a humanoid robot, with specific functionalities and interactive capabilities involving human nurses and their patients (Tanioka et al., 2017). Tanioka (2017) developed the *Transactive Relationship Theory of Nursing (TRETON)*, a nursing engagement model for persons and human beings. Understanding the theoretical framework of healthcare robot development imbued with caring science perspectives to assist nurses with health care tasks such as performing care-related activities (Tanioka et al., 2019b).

It is important for nurses to consider healthcare robots as competent colleagues (Pepito & Locsin, 2019). Particularly in dangerous situations such as the current circumstance of infections with COVID-19 dominating and rendering human health care personnel exhausted yet unyielding in pursuing health care despite higher incidences of infections. Nonetheless, with healthcare robots functioning with competent capabilities for communication and infection prevention, these robots can also undertake the role of a *conversation partner* for patients. If these healthcare robots are equipped with capabilities for expressing caring in nursing and engage in interactive communication, these robots can become expressive *"caring robots"* that is able to connect with patients' families who cannot have limited human to human physical contacts. This can be expressed as a simple touch with those who are isolated because of the COVID-19 pandemic. Tanioka et al. (2017) has described a caring robot to be more of a humanoid nurse robot, an entity that is expected to express caring behaviors much like human nurses do, i.e., with capabilities to respond to emotion, feeling, mood, and expressions of suffering through eye contact, facial expression, personal touch, and knowing persons through verbal and nonverbal communication. Locsin et al. (2018) indicated that "a person's humanness certainly includes an emotional content regardless of well-intentioned activity. For humanoid nurse robots, however, to be more human-like and manifest caring in health care situations, they will need to show facial expressions and gestures as functionally imbued by their humanness as much as possible" (p. 152). In essence, healthcare robots will not be a threat to nurses, but instead will become "competent colleagues" that can play important roles in providing quality nursing care.

Nonetheless, several issues exist in using robots in healthcare settings. Despite the benefits of healthcare robots as caring entities, ethico-legal problems may arise such as safety, potential leakage of personal information of patients from stored data, and ethical issues pertaining to healthcare practice (Yasuhara et al., 2019). Nurses and other healthcare providers need to increase their awareness of this ethical concerns and be educated about these situations prior to partnering with healthcare robots.

INDONESIAN NURSES, FOURTH INDUSTRIAL REVOLUTION, AND HEALTHCARE ROBOTS

Indonesian nurses need to be prepared to participate in fostering technological advancements that revolutionize healthcare, particularly in consideration of the tenets of the Fourth Industrial Revolution. In this regard, there were studies using technological advancements involving perceptions of Indonesian nurses: hospital information systems (Setyohadi & Purnawati, 2018); telehealth (Hariyati & Sahar, 2012); and technological competency of nurses (Anggraini & Ismail, 2018). These provide critical information regarding the barriers and challenges of nurses` acceptance of technology use in Indonesia.

Focusing on information technology, infrastructure and systems, training concerns, regulation of technologies, and social systems (Hariyati & Sahar, 2012; Setyohadi & Purnawati, 2018), these studies include referencing Indonesian nurses' perceived technological competency as expressions of caring that is critical to nursing (Anggraini & Ismail, 2018). Due to lack of devices and technological supports (Anggraini & Ismail, 2018), highlighting the needs for training and education related to technology, the influence of the Fourth Industrial Revolution towards increasing nursing practice quality have been clearly identified. The Fourth Industrial Revolution is about more than just technology-driven change; it is an opportunity to help everyone, including leaders, policymakers and people from all income groups and nations, to harness converging technologies in order to create an inclusive, human-centered future. The real opportunity is to look beyond technology and find ways to give the greatest number of people the ability to positively impact their families, organizations and communities (World Economic Forum, n.d.). It is a fusion of advances in artificial intelligence (AI), healthcare robotics, and other technologies. It is the collective force behind many products and services that are fast becoming indispensable to modern life. Nevertheless, little is known about studies on AI and robotic technology, and nursing practice in Indonesia within the purview of the Fourth Industrial Revolution.

Will Indonesian nurses be ready for healthcare robots as partners in their practice? The need to educate nurses on the functionalities of robots pertaining to healthcare demands, and attuning nursing practice to competencies involving future advances in technologies encompassing nursing practice, are becoming critical nursing education topics (Tanioka et al., 2019c). There was a huge change during the pandemic COVID-19 in the way most of learning process in Indonesia, by which changing the conventional way to the online learning process. Moreover, the new policy for "Campus Freedom" that launched by the Ministry of Education and Culture, would open the new perspective of most Indonesian generation that technology is not only a need but become a must in the future.

RECOMMENDATIONS TO ENHANCE APPRECIATING HEALTHCARE USING AI AND ROBOTIC TECHNOLOGIES

Being technologically competent is being caring in nursing (Locsin, 2005). Theory-based practice engages technology, caring and nursing, thereby promoting nursing practice as the recognition of technological competencies as expressions of caring in nursing. To enhance the use of robots in healthcare, healthcare personnel need to have increased awareness of robot capabilities, from elemental functionalities of robot

actions to contributory tasks, and ultimately, the ability to engage in 'troubleshooting' robot performance. So that healthcare personnel have readiness to have these robot-based practice concerns, future contents of nursing education need to include not only concepts and theories of nursing practice, but importantly, content about principles of computer science, engineering, robotics, and software programs such as information data mining, etc. These contents are envisioned for nursing education because of the need for partnership with healthcare robots. Nurses need to learn and be skillful on how these technologies can be used in their practice.

Robots programmed with technologies will be efficient, safe, and will be enabling nurses to be involved in more patient-centered practices, including increased time to interact with patients, and to know more about patient conditions and preferences, while establishing emotional relationships, and responding appropriately to their health care needs (Shishehgar et al., 2018). This patient-centered care viewpoint underscores the important reality of nursing engagements in partnering with healthcare robots. As Locsin (2005) has emphasized, it is critical that nurses are able to understand their patients more fully as participants in their care, rather than simply as objects of care.

Nurses should be aware that technology is critical for understanding disruptive information in nursing education and practice (Aungsuroch & Gunawan, 2019). The theory of Technological Competency as Caring in Nursing (Locsin, 2005) enables nurses to understand that the future is infused with technological dependency and healthcare is not excluded. The challenge of nursing education in facilitating the integration of knowledge about AI, health informatics, and communication strategies with technological proficiency, including multidisciplinary modalities in the teaching-learning nursing situations (Tanioka et al., 2019c) is clearly the future reality for nursing education curriculum.

CONCLUSION

This article aimed to describe a perspective on healthcare robots, and to recommend ways for Indonesian nurses to engage with healthcare robots during the COVID-19 pandemic. Rather than allowing healthcare robots to be perceived as threats to healthcare and nursing, it is recommended that it may be best to envision these robots as significant partners towards facilitating and easing the demands of human health care activities in critical conditions such as during COVID-19 pandemic, while similarly enhancing human well-being. Healthcare providers such as nurses need to be educated as integral healthcare practitioners in their participation in quality practice through the integration of technologies in nursing. Educating healthcare practitioners about healthcare robot programming and assurance of its safe and secure use can advance robot appreciation as partners in healthcare. These goals, challenges, and recommendations can provide Indonesian nurses some pathways-to-readiness towards a partnership involving healthcare robots, particularly during this COVID-19 pandemic, and in the future.

Declaration of Conflicting Interest
Authors declare no conflict of interest associated with this article.

Authorship Contribution
F.B., T.T., R.L., H.M., and D.L. contributed to the conception, analysis, and manuscript writing.

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ORIGINAL RESEARCH

EXTENT OF HEMODIALYSIS NURSES' PRESENCE AS PERCEIVED BY PATIENTS

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Abstract

Background: Nursing presence is an essential nurse caring behavior of being with the patient. This is particularly true for those with chronic renal disease and who regularly undergo maintenance hemodialysis treatment in the hospital setting. When nursing presence is perceived by patients in a nurse-patient relationship, it is more likely to result in enhanced satisfaction with the quality of nursing care. Thus, it is important for hemodialysis nurses to be aware of the relevance of nurse-patient interactions in planned care considering that these interactions are integral to the extent to which nursing presence is experienced and perceived by patients.

Objective: This study aims to determine the hemodialysis nurses' extent of nursing presence as perceived by patients undergoing hemodialysis treatment in two hospitals in Iligan City, Philippines.

Methods: Utilizing the descriptive research design, the study was conducted in two hospitals in Iligan City, Philippines. A total of 121 hemodialysis patients were purposely selected to determine their perception as to the extent of hemodialysis nurse's nursing presence utilizing the 25-item Presence of Nursing Scale (PONS) instrument. Descriptive statistics were used for data analysis.

Result: The overall rating by the hemodialysis patients in both hospitals was "always" on the hemodialysis nurses' extent of nursing presence with an average mean score of 4.47 in all 25 items of the PONS. The highest rated item which reflects that the nurse cares for the patient as a person had an average mean score of 4.63 (always) while the lowest rated item indicating that the nurse is meeting the spiritual needs of the patient had an average mean score of 4.23 (always).

Conclusion: The nurse-patient relationship is enhanced by the presence of nurses who are more responsive and interactive with the patients, resulting in patients who are more satisfied with nursing care. Thus, it is suggested that nurses in dealing with patients of varying backgrounds should consider their unique needs when giving information, explanations, health education and nursing care.

KEYWORDS

pons; nursing presence; nursing care; nursing; caring; nurse-caring behavior; nurse-patient relationship; extent of care; hemodialysis patients; hemodialysis unit

BACKGROUND

Nursing presence as a caring behavior is a unique component of the nursing profession. "Nursing involves an intimate relationship-centered partnership between the nurse and patient" (Finfgeld Connett, 2008, p. 527). Nurses are recognized for their caring behavior and are expected by their patients to show care (Tanking, 2010). Patients appreciate it when a nurse is there to cater to their needs and when the nurse consciously cares for them (Schwerin, 2004).

The evidence of nursing presence during olden times paved the way for the recognition of the importance of caring behavior among nurses. Nursing presence was evident during the time of Florence Nightingale as "rare healing presence" for the soldiers in the Crimean War (Dossey, 2000 as cited in Zyblock, 2010, p. 121). More recently, Jean Watson formulated her theory of transpersonal caring which serves as a guide to both the discipline and professional development of nurses (Graham, 2008; Hanson & Stenvig, 2008; Wade & Kasper, 2006). Watson (2010) believes that caring is "being authentically present and enabling, and sustaining the deep belief system and subjective life world of self and one-being cared for" and that caring implies "being present to and supportive of the expression of positive and negative feelings" (p. 2).

Although presence is defined in various contexts, some theorists present similarities in their concepts. Paterson and Zderad, 1976 as cited in Minicucci (1998), stressed that authentic presence focuses on intentionality of doing with and being with in a nurse-patient relationship as an integral part of nursing care management. The being with refers to the "nurse's ability to be present to patient's experiences in

care settings," and to "respond to the fullness of the patient's personhood" (para. 8). Presence is the "medium through which health in and between both patient and nurse is catalyzed" (para. 10) as mutual partners in well-being and authenticity of care (Nebres, 2016, p. 16).

An increase is observed in the awareness of the benefits of nursing presence as a caring behavior (Kostovich, 2002; Papastavrou et al., 2011; Papastavrou et al., 2012; Turpin, 2014). Caring behavior constitutes an active role wherein "the patient experiences a sense of acceptance and feels cared for and respected" (Crane Okada, 2012, p. 157; Papastavrou et al., 2012; Tanking, 2010) thanks to "the nurse's use of self as an agent for healing" (Minicucci, 1998, para. 2), using professional knowledge and skills in connecting with and respecting the individual's uniqueness.

Nursing presence as a caring behavior in the care of patients involves various aspects, namely: the cognitive (use of learned nursing knowledge and reasoning ability); affective (in terms of feelings, attitudes, and motivation to care); behavioral (physical ability to acquire and perform nursing skills); and spiritual aspect (ability to give spiritual care through prayers) (Kostovich, 2002). These nurses' cognitive, affective, behavioral and spiritual aspects of care are not clear-cut, but overlap and interrelate in the practice of nursing presence. Thus, nursing presence is described as a "multidimensional unified whole, fluidly existing in the cognitive, affective, behavioral, and spiritual experiential domains all at once" (Kostovich, 2002, p. 55). It is "by consciously being with the patient, displaying care and empathy" that nurses enhance healing (Boeck, 2014, p. 3).

Nursing presence as an intervention has been associated to being with and providing quality nursing care for patients resulting in a therapeutic outcome (Nebres, 2016). It has been identified as an essential aspect in enhancing the nurse-patient relationship that is beneficial to both patients and nurses (Crane Okada, 2012; Jesse, 2010; Papastavrou et al., 2012; Tanking, 2010). Kostovich (2002) stressed that patients "believed that the presence of the registered nurse made a difference to them during their hospitalization" (p. 84). Furthermore, Kostovich emphasized that a high level of nursing presence would positively correlate to high levels of patient satisfaction with the quality of nursing care. Through nursing presence, the healing force of care, compassion, competence, commitment, confidence and the time spent in a nurse-patient interaction, improve healing that a patient yearns for. However, there is a need to arrive at a better understanding of how nursing presence functions in diverse ways as well as what is its impact on the patient's well-being and satisfaction.

A quantitative systematic review of 23 comparative studies conducted by Papastavrou et al. (2011) revealed that there is no congruency of perceptions between nurses and patients as regards nursing presence, although some studies reported congruence. For instance, a meta-synthesis of 14 qualitative studies revealed how presence was defined both by patients and nurses as "close physical proximity that includes availability, attending to patient's personal needs and sensitive communication" (Finfgeld Connect, 2006 as cited in Papastavrou et al., 2012, p. 371). Moreover, "there is a growing body of literature suggesting that congruency of perceptions and goals is important for the patients profiting from caring and nurse-patient agreement may be

the key factor in patient satisfaction..., comfort, health behaviors and compliance" (Papastavrou et al., 2011, p. 1202).

The studies reviewed did not recommend generalization of the findings to the nursing community due to established limitations (Papastavrou et al., 2011). Most studies examining nursing presence were conducted in medical, surgical, and critical care areas of hospitals (Hansbrough, 2011; Kostovich, 2002; Palese et al., 2011; Papastavrou et al., 2012; Tanking, 2010).

Evidence is lacking concerning hemodialysis nurses' extent of nursing presence as perceived by hemodialysis patients (Palese et al., 2011; Papastavrou et al., 2012). Hemodialysis nurses are the primary caregivers providing long term nursing care to end stage renal disease patients in hemodialysis units (Minn, 2014). Patients expect nurses to express care by being with them in giving nursing care while the former are attached to the hemodialysis machine for a number of hours during treatment. These nurses are to demonstrate "human responses as compassionate expression of care" and focus on nursing practice that is balanced between "working with technology and providing hands-on nursing" while being genuinely present with the patient (Locsin, 2005, p. 103).

The nursing profession is interested in understanding the art of nursing practice. To meet the unique needs of clients effectively, it is important for nurses to be aware of their patients' perceptions in order to enhance a nurse-patient relationship that satisfies their patients. Kostovich (2002) stressed that the redundancy of qualitative findings "warrants research to be expanded into the quantitative realm" to further explore the concept of nursing presence where the "knowledge gaps lie" (p. 52). In order to realize this, empirical knowledge is required in identifying how hemodialysis nurses augment, maintain and express the extent of nursing presence to the hemodialysis patients they are caring for. In addition, no published reports are available in the country concerning nurses' caring behavior of presence.

The study aims to fill the gap and add to the body of nursing knowledge about hemodialysis nurses' nursing presence at the hemodialysis unit. Thus, the study intends to determine the hemodialysis nurses' extent of nursing presence as rated by the hemodialysis patients undergoing hemodialysis treatment in hospitals in Iligan City, Philippines.

METHODS

Study Design
This was a descriptive research design, conducted to describe, analyze and document new facts on hemodialysis nurses' extent of nursing presence to hemodialysis patients in two hospitals in Iligan City, Philippines on June - July 2016.

Participants
The target population in this study consisted of patients with chronic kidney diseases admitted in the Hemodialysis Units (HDU) and who had been undergoing hemodialysis treatment for a period of at least one month in two hospitals in Iligan City. There was a total of 129 patients from both hospitals; however, only 121 patients (government hospital n=16 and private hospital n= 105) who met the selection criteria were selected using purposive sampling. The inclusion criteria to select

sample were: 1) 18 years and above, 2) received hemodialysis treatment for at least three sessions in the HDU (in order to have received nursing care and having been able to experience nursing presence), 3) grade six graduates and above educational attainment who have the ability to communicate (ability to read, write, speak, and understand English as a second language), and 4) were willing to participate in the study.

Instrument

The extent of HD nurses' nursing presence was measured using the 25-item Presence of Nursing Scale (PONS) questionnaire, which was adopted from Kostovich (2002). In 2002, the PONS which was administered among 330 adult patients hospitalized on acute care medical-surgical units demonstrated stability using the test-retest reliability of 0.729, confirming high internal consistency with a Cronbach's alpha of 0.95 (Kostovich, 2002).

The PONS questionnaire is the first instrument developed that measures the extent of nursing presence as a holistic concept (affective, behavioral, cognitive and spiritual domains) from the patient's perspective using the five point Likert-type scale, ranging from 1=never, 2=rarely, 3=occasionally, 4 = frequently, and 5=always (Kostovich, 2002). Patients were asked if the presence of the hemodialysis nurse made a positive or negative difference during their hemodialysis treatment. Only patients who stated they felt some degree of nursing presence were to rate the extent (always to never) of nursing presence displayed by their nurse.

Data Collection

The data were collected from patients in dialysis units after approval of the study was obtained from the acting chief of hospital and human resources director of two hospitals (government and private) in Iligan City, Philippines. Permission to access the list of all the names of hemodialysis patients meeting the inclusion criteria was obtained and their respective schedules were taken from the head nurses of the respective hospitals. This was to ensure that all patients have an equal chance to participate in the study and answer the questionnaire once only during the entire period of data collection. The data collection was conducted by the researchers from June 10 to July 1, 2016.

Data Analysis

The researchers made use of descriptive statistics for data analysis to describe frequency distribution and the mean and standard deviation. The Statistical Program for the Social Sciences (SPSS) v. 17 was used to analyze these data.

Ethical Consideration

Data collection commenced after the study had been approved by University Research Ethics Committee on June 7, 2016. The researchers ensured that all respondents obtained appropriate informed consents.

RESULTS

Table 1 shows that the number of the respondents was 121 from both hospitals. Majority of hemodialysis patients were middle age adults

(44.63%), male (57.85%), married (72.73%), college level (either attended college or graduated with a college degree) (69.42%), and had been undergoing hemodialysis for 12 months or more (59.51%).

Table 1 Demographic and Health Profile of the Respondents

Demographic Profile	Total Frequency (%)
Age Range	
20-40	22 (18.18)
41-64	54 (44.63)
65-above	45 (37.19)
Total	121 (100.00)
Gender	
Male	70 (57.85)
Female	51 (42.15)
Total	121 (100.00)
Civil Status	
Married	88 (72.73)
Single	16 (13.22)
Widow	10 (8.26)
Widower	4 (3.31)
Separated	3 (2.48)
Total	121 (100.00)
Educational Attainment	
Elementary level	9 (7.44)
High School level	24 (19.83)
College level	84 (69.42)
Graduate level (Master's Degree)	4 (3.31)
Total	121 (100.00)
Number of Months Having Hemodialysis	
6 and below	19 (15.70)
7-11	30 (24.79)
12 and more	72 (59.51)
Total	121 (100.00)

Table 2 shows that patients in both hospitals rated "always" on the extent of nurses' nursing presence during HD treatment. The succeeding items in the PONS are presented from the highest to the lowest overall mean scores. The highest overall mean score was 4.63 reflecting the behavioral aspect of nursing presence, whereas the second highest ranking presents the affective domain of nursing presence with an overall mean score of 4.59. The next four items also depict the behavioral aspect of nursing presence with the overall mean score of 4.58. The two items that are ranked 7th and 8th describe both affective and behavioral aspect of nursing presence with the overall score of 4.57 and the 9th item shows the cognitive domain of nursing presence with the overall mean score of 4.56. The succeeding 15 items reflect the affective characteristic of nursing presence with the following overall mean scores: 4.53 (items 10-12), 4.52 (item 13), 4.51 item 14), 4.50 (item 15), 4.48 (item 16), 4.45 (item 17 and 18), 4.44 (item 19), 4.43 (item 20), 4.33 (item 21), 4.32 (item 22), 4.30 (item 23), and 4.28 (item 24) respectively. Overall, results reveal that the lowest rated item was on the spiritual domain of nursing presence with the overall mean score of 4.23 (item 25).

Table 2 Mean Scores on the Extent of Nursing Presence of Hemodialysis Nurses

Rank	Presence of Nursing Scale (PONS) Items	Overall	
		M±SD	Description
1	Took care of me as a person, not as a disease.	4.63±0.81	Always
2	"Checked" on me.	4.59±0.89	Always
3	Were there if I needed them.	4.58±0.84	Always
4	Listened and responded to my needs.	4.58±0.86	Always
5	Made me feel safe.	4.58±0.91	Always
6	I had confidence in these RN.	4.58±0.89	Always
7	Earned my trust.	4.57±0.77	Always
8	Concerned about me.	4.57±0.89	Always
9	Skilled in providing my care.	4.56±0.87	Always
10	Talked to me as a friend.	4.53±0.96	Always
11	Physically comforted me.	4.53±0.84	Always
12	Gave me control over my healthcare as possible.	4.53±0.87	Always
13	Made me feel at peace.	4.52±0.94	Always
14	Created a sense of healing around me.	4.51±0.91	Always
15	Committed to care for me.	4.50±0.93	Always
16	Understood my feelings.	4.48±0.95	Always
17	Made the quality of my life better.	4.45±1.03	Always
18	I felt a connection between one or more of these RNs.	4.45±0.96	Always
19	Calmed my fears.	4.44±0.96	Always
20	Helped my day run smoothly.	4.43±1.00	Always
21	The presence these RN made a difference to me.	4.33±1.06	Always
22	Open to my concern.	4.32±1.12	Always
23	Taught me what I needed to know.	4.30±1.13	Always
24	Emotionally comforted me.	4.28±1.11	Always
25	Met my spiritual needs.	4.23±1.16	Always
	Average	4.47±0.72	Always

Note: Mean±Standard Deviation (M±SD) Registered Nurse (RN)

DISCUSSION

This study aims to determine the rating on the extent of hemodialysis nurses' nursing presence as perceived by the hemodialysis patients during the months of hemodialysis treatment in the hospital. More than half of the patients (n =72 or 59.51%) had been undergoing hemodialysis for more than a year, the longest being around six years. In this group, majority (n = 55 or 76.40 %) rated "always" and only 17 (23.60%) rated "rarely to frequently" as to the extent of nurses' nursing presence. For the 30 patients who experienced between 7 to 12 months of dialysis treatment, 20 (66.70%) rated the extent of nursing presence as "always" while only 10 (33.30) rated it as "rarely to frequently". In a manner similar to the previous groups, 12 (63.20%) out of 19 patients who had undergone less than six months of hemodialysis treatment rated nurse's presence as "always" and 7 (36.80%) rated it as "rarely to frequently".

This shows that patients experience nursing presence regardless of the duration of their hemodialysis treatment. Thus, nursing presence is evident in hemodialysis nurses during every dialysis treatment. Nursing presence is portrayed "a caring behavior of the nurse to be present with the patient in a clinical setting" (Nebres, 2016, p. 19) with an intention of focusing on the patient through attentiveness of the patient's needs and providing healing during hemodialysis treatment (Tavernier, 2006). This leads to the patients experiencing a feeling of safety and comfort in disclosing with the nurse their thoughts and feelings about

their health that fosters healing and improves satisfaction with care (Mitchell, 2008).

The results also show that patients chose the rating "always" on the extent of nurses' nursing presence more on the affective and behavioral domain of nursing presence than on the technical, cognitive, and spiritual aspects of nursing presence. This is inconsistent with the results of the study conducted by Greenhalgh et al. (1998) in which patients rated highly the technical aspect of nurses' care, and that caring is an unending expression of nursing (Acob, 2018). The results of the study support the premise that nurses treat their patients as unique individuals with different nursing care needs.

Moreover, the low ratings in spiritual domain of nursing presence are supported by Hansbrough (2011) finding where lower scores in PONS possibly indicate that patients tend to perceive that their spiritual needs are not given much attention, and that nurses are doing only the necessary work in response to a patient's call for help, avoiding intrapersonal interaction in work. Items with higher scores were related to patients' perception that they were attended to by the nurse with professional interaction, that the nurse took time to establish rapport and were committed to care, saw them as individuals in the nurse-patient interactions, and felt confident in the nurse's skill and knowledge. Patients' perceptions varied from "feelings of being alone and the object of the work, toward a more caring relationship with a nurse who was there for them" (Hansbrough, 2011, p. 78).

This finding is also consistent with Hansbrough (2011) finding that high PONS scores meant that patients felt more rapport with the nurse, more trust and more security, while low PONS scores indicated that the patients did not feel they were treated and respected as unique individuals. Instead, they felt that their need of reassurance that the nurse was there to take care of them as partners in achieving their health goals was unmet. The high scores indicated positive perceptions on "professional nurse-patient relationships that resulted in the achievement of the patient's health care goals" (Hansbrough, 2011, p. 85).

Moreover, the result most likely reflects the impact of increasing demand for nurses outside the country. In just about every healthcare institution in the Philippines, the current situation is that experienced nurses migrate to meet the demand for nurses abroad where there are offers of stable jobs and bigger salaries, such as in the USA, the Middle East, Europe, and other Asian nations, leaving the country with the younger and inexperienced nurses (Choo, 2003). Younger nurses entering the workforce are less experienced and may be less capable at using nursing presence (Turpin, 2014). Such nurses have "different communication styles as compared to the prior generations, preferring to communicate via text, email, etc., versus face-to-face communication" but are valuable in filling vacant positions due to lower salary rates (Metcalf & Putnam, 2013 as cited in Turpin, 2014, p. 15).

The nurse antecedents of personal characteristics and professional maturity (knowledge, practice, and experiences) serve as an important aspect in nurse-caring behavior of presence promoted by a favorable practice environment believed to result in enhanced well-being (mental, physical, social, and spiritual) among patients (Nebres, 2016). In this sense, "nursing can be a path not only to personal and professional development…but…for self-realization and authentic use of self as the ultimate instrument of human caring" (Nebres, 2016, p. 24).

The limitation of this study is that it utilized only the PONS 25 items rating. Two open ended questions of the PONS dealing with qualitatively eliciting a personal meaning of presence from the participants were excluded due to the weak condition of the patients and their unavailability for prolonged interview at the hemodialysis unit. In addition, the research encompassed only hemodialysis patients in two hospitals, thus the study results will be generalizable only for the patient population of these two hospitals in Iligan City.

CONCLUSION

The study supports Watson's transpersonal caring theory on the importance of presence as an essential nurse caring behavior. Nursing presence as a nurse-caring behavior shown in nurse-patient relationships is an important aspect in enhancing quality nursing care. Nursing presence is shown to be relevant in this study and significant insights are provided to guide the practice of nursing presence as a caring behavior.

Overall ratings show that more of the nursing presence experienced by patients was on the behavioral and affective aspects and less on the spiritual aspect of nursing care. This reflects the fact that patients expected more spiritual care to help them cope with chronic kidney disease and hemodialysis treatment. This insight should provide nurses significant awareness and encouragement to enhance spiritual care by being with the patient, offering prayers, and coordinating with the hospital chaplain to help patients' ability to manage the debilitating condition and the stress of hemodialysis treatment.

The findings may be used as a basis for future research development on the caring behavior of nursing presence in various nursing fields in order to address areas in nursing practice that need improvement. The PONS questionnaire is recommended to be administered to other groups of patients with other disease conditions aside from chronic renal disease, and in other hospitals using other socio-demographic characteristics of patients, in order to determine what caring behavior would enrich the nursing practice of both professional nurses and nursing students.

Authorships Contribution
Ma. Almira P. Nebres was responsible for the study conception, design, data analysis and interpretation.
Clarence Bien L. Nebres was responsible for the drafting, data acquisition and analysis.
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BNJ BELITUNG NURSING JOURNAL

ORIGINAL RESEARCH

THE RELATIONSHIP OF EMOTIONAL INTELLIGENCE, WORKPLACE CULTURE, AND NURSE PERFORMANCE IN A PRIVATE HOSPITAL IN MEDAN INDONESIA

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Abstract

Background: Nurse performance plays an important role in ensuring high quality care to achieve patient outcomes in hospitals. Therefore, factors related to the performance warrant investigation. Emotional intelligence and workplace culture are assumed to be related to nurse performance.

Objective: To determine the relationship of emotional intelligence, workplace culture, and nurse performance at one of private hospitals in Medan Indonesia.

Methods: This study employed a cross-sectional design with 126 associate nurses who were selected using a simple random sampling technique. Emotional intelligence, workplace culture, and nurse performance were measured using valid questionnaires. Spearman-Rank correlation test was used for data analysis.

Results: Majority of nurses had high performance, emotional intelligence and workplace culture. There were significant relationships between emotional intelligence, workplace culture, and nurse performance, with a strong ($r= .68$; $p= .01$) and medium level ($r= .30$; $p= .01$), respectively.

Conclusion: Nurses with high emotional intelligence and good workplace culture would show good performance in providing professional nursing care to patients. It is recommended for the hospital managers and nurse managers to improve emotional intelligence of nurses and create better workplace culture in order to improve the nurse performance.

KEYWORDS

emotional intelligence; workplace culture; nurse performance; Indonesia; cross-sectional study

BACKGROUND

Nurse performance is one of the current issues in health service today. It describes a consequence of people's demands on the need for high-quality services, which can be achieved by increasing efficiency and effectiveness. Hameed and Waheed (2011) reported that organizational success or failure, particularly in hospitals, depends on nurse performance. Success can be achieved by improving the quality of service and meeting the stipulated requirements by taking into account social values in the community. De Oliveira Toso, Filippon, and Giovanella (2016) conducted a study on the performance of nurses in primary health care centers in the UK. The results reported that nurses performed the tasks following their roles, such as consultation, monitoring chronic conditions of patients, conducting comprehensive communication, and providing care.

Work performance represents the real work of the employees, which can be measured and should be based on the standard of work in an organization (Suroso, Cherntanomwong, Sooraksa, & Takada, 2011).

The standard of nursing practice in Indonesia has been developed by the Indonesian National Nurses Association (INNA) in 2005, which aims to improve nurse performance particularly in hospitals. But, despite the existence of the standard, low nurse performance is still identified. Maimun and Yelina (2016) found that 53.4% of nurse performance at one of hospitals in Indonesia was in a low category.

There have been many factors influencing nurse performance in hospitals, such as salary, human resource management, work culture, emotional intelligence, and others (Gunawan, 2019). However, their relationships remain inconsistent. In this study, we focus on emotional intelligence and work culture that are considered important factors on nurse performance.

Various dynamic situations occurring in the area where nurses work today have a significant influence on the nurses' emotions. Nurses are often encountered with problems in the workplace, such as criminal charges, inability to communicate effectively with patients, and rejection to criticism from others. Such incidents may serve as

indicators of low emotional intelligence among the nurses. In fact, Bakr and Safaan (2012) reported that the emotional intelligence of nurses at Shebin El Kam University Hospital in Egypt, on average, was in a low category. Similar with Indonesia, Mangkunegara (2010) reported that the majority of nurses in Indonesia have low emotional intelligence, which will lead to low performance of nurses. This is also described by AlHamdan, Manojlovich, and Tanima (2017) who conducted a study on registered nurses in Jordanian hospitals and reported that there was a relationship between emotional intelligence and nurse performance in hospitals. However, nurses are demanded to have good emotional intelligence, which is the basis of how successful or unsuccessful a person or company is in providing excellent service (Daniel Goleman, 2015).

Similar with emotional intelligence, workplace culture is believed to be related with nurse performance and patient outcomes (Hesselink et al., 2013; Manojlovich & Ketefian, 2016). Culture has been defined in numerous ways. It can be defined as consistent practices, beliefs and attitudes, within a whole group or a specific group (Braithwaite, Herkes, Ludlow, Testa, & Lamprell, 2017). As there is a dearth of study discussed about the relationship between emotional intelligence, workplace culture, and nurse performance in Indonesia, therefore, this study aimed to determine their correlations in the hospital setting in Indonesian context. This study would be benefit for nurse managers to improve the nurse performance in the hospitals beyond Indonesia.

METHODS

Study Design
This study employed a correlational design, which aims to find out the relationship of two or more variables, in which the collection of data is carried out at one time, and there is no follow-up (Polit & Beck, 2010).

Participants
The population in this study was associate staff nurses at inpatient wards of Mitra Medika Hospital, Medan Indonesia amounted to 196 nurses. The sample was 126 nurses recruited using a simple random sampling technique. The calculation of the ample size based on a study of Farshi, Vahidi, and Jabraeili (2015) using $(1-\beta)$ = .80, *effect size* (γ) = .25 and α = .05. The inclusion criteria of the participants were associate nurses who have educational background at least diploma degree in nursing and working at inpatient wards.

Instruments
There are three instruments used in this study:
1. Emotional Intelligent Questionnaire (EIQ) was used to measure emotional intelligent of nurses. It is modified from Schutte, Malouff, and Bhullar (2009). The questionnaire consisted of 32 items and 4 domains (emotional perception, emotional integrity, emotional understanding and emotional regulation). The answer was rated on five-point Likert scale (5=strongly agree, 4=disagree, 3=not agree, 2=agree, 1=strongly disagree). The EIQ was translated from the original English version to an Indonesia version for conceptual equivalence across the languages by using three translators. The EIQ was valid and reliable with good content validity index (.94) and acceptable value of Cronbach's alpha (.81).
2. Work Culture Questionnaire (WCQ) was adopted from Kennerly et al. (2012) which aims to assess the workplace culture of nurses. This

questionnaire consisted of four components including behavior, team work, communication, satisfaction and responsibility. There were 30 items in this questionnaire using dichotomous choices. The WCQ was originally developed in the English language and already translated using the back-translation technique. The CVI of the instrument was .94 and the internal consistency was .85.
3. Indonesian version of the Nurse Performance Questionnaire (NPQ) was used to measure the performance of nurses at hospital. It was developed by Ilyas (2002) that consisted of 20 items using dichotomous options. The NPQ includes work achievement, responsibility, obedience, and collaboration. The internal consistency of NPQ was .83 and content validity index of .92.

Data Collection
Data were collected by the researchers using the questionnaires at Mitra Medika Hospital Medan on December 2018. There were no research assistants during data collection.

Data Analysis
To find out the relationship between the variables of this study, the Spearman's rank correlation was used. There would be a relationship between the variables if the *p*-value was <.05 (Polit & Beck, 2010). The data showed that there was no normal distribution of the variables and the scale level was ordinal.

Ethical Consideration
Ethical clearance was obtained from the Research Ethics Commission of the Faculty of Nursing Universitas Sumatera Utara (No.1601/XII/SP/2018). The researchers explained clearly about the objectives of the study and provided information to each participant that they had the right to choose whether to participate or not in the study. Each participant was asked to sign an informed consent.

RESULTS

Table 1 shows that majority of participants aged 21-30 years (80.95%) and female (72.22%). Most of them had work experience of 1-5 years (96.03%), and majority had educational background of Diploma degree in Nursing (69.05%).

Table 1 Characteristics of Respondents (n = 126)

Characteristics	f	%
Age		
21-30 years old	102	80.95
31-40 years old	24	19.05
Gender		
Male	35	27.78
Female	91	72.22
Work Experience		
1-5 years	121	96.03
6-10 years	5	3.97
Educational Background		
Diploma in Nursing	87	69.05
Bachelor in Nursing	39	30.95

Table 2 shows that all participants had high emotional intelligence. Of the total participants, 89.68% had high level of workplace culture and

10.32% had low level of workplace culture. In regards to the nurse performance, 87.30% showed high level of performance in carrying out their duties as staff nurses while 12.70% showed low level of performance.

Table 2 Description of Emotional Intelligence, Workplace Culture and Nurse Performance (n = 126)

Variables	f	%
Emotional Intelligence		
High	126	100
Workplace Culture		
High	113	89.68
Low	13	10.32
Nurse Performance		
High	110	87.30
Low	16	12.70

Table 3 shows that there was a positive and strong relationship between emotional intelligence and nurse work performance (r=.68, p=.001). In addition, there was a positive and medium relationship between workplace culture and nurse work performance (r=.30, p=.001).

Table 3 Relationship between Emotional Intelligence, Workplace Culture, and Nurse Performance (n=126)

Variables	Nurse Performance	
	r	p-value
Emotional Intelligence	.68	.001
Workplace Culture	.30	.001

DISCUSSION

The aim of this study was to determine the relationship between emotional intelligence, workplace culture, and nurse performance. Findings of this study revealed that there was a significant correlation between emotional intelligence, workplace culture, and nurse performance, with a strong and medium level. These findings were in line with AlHamdan et al. (2017) who revealed the correlation between emotional intelligence and nurse performance, and in line with Hesselink et al. (2013); Manojlovich and Ketefian (2016) in regards to the relationship between workplace culture and nurse performance.

The emotional intelligence of nurses in this study was also in a good category, which is therefore positively related to better nurse performance. The emotional intelligence is very important factor for nurses in their duties because various problems and challenges that they may encounter in the workplace, such as workload, work demands, environment or work atmosphere and problems related to other people. Such problems require good management that does not harm many parties. To be able to deal with those, a nurse is required to have the ability to be aware of self-emotion, control emerging emotions, and motivate themselves (AlHamdan et al., 2017). D. Goleman (2009) stated that good emotional intelligence plays more critical roles than any other intelligence in general as it provides a significant influence to achieve a successful career and performance. A study conducted by Rankin (2013) claims that emotional intelligent would scale up theirs' clinical practice performance. Therefore, it is necessary to have high

emotional intelligence so that professional nurse performance can be achieved. Otherwise, low emotional intelligence indicated as unplanned and unanticipated actions, feelings of anger, impatience, less sensitive to others, and unable to appreciate or empathize lead to poor performance of the nurses (Paomey, Mulyadi, & Hamel, 2016).

Besides, workplace culture in our study was also in good category and therefore it had a significant positive relationship with nurse performance. This is in line with Sangadji and Sopiah (2013) said that the better the workplace culture, the better the performance of the members of the organization will be. It is because the purpose of the employees for joining and working in an organization is not only to get financial needs but also to work in a comfortable and good situation. Workplace culture is an organizational value, which interacts and becomes a norm serving as guidelines for achieving the organizational goals. Hence, workplace culture helps unite the organization in making the right standards.

In this study, the workplace culture becomes a norm that guides nurses in carrying out their duties or establishing interactions with other people in the hospital. The creation of the workplace culture which directs nurses into good work ethics and produces good quality work is influenced by several factors. These factors include the integrity of the nurses, namely the socialization skills, discipline in carrying out regulations, ability in promoting the vision and mission of the organization, and honesty in expressing ideas and thoughts. Other factors are professionalism, which includes corrections of work, fair competition, and respect for work outcomes (Simamora, Purba, Bukit, & Nurbaiti, 2019). Support from the management personnel is also an important factor that encourages the creation of work culture, such as paying attention to nurses' welfare, taking care of nurses' needs for the work, and support of inventory vehicle for work outside the office (Simamora et al., 2019). However, these factors should be confirmed in the future studies.

The implications of this study are that the hospital managers and nurse managers should be able to improve emotional intelligence of nurses and create better workplace culture to improve the performance of nurses in implementing their duties. Proper management of emotions makes an individual work better (Paomey et al., 2016). In addition, this study provides the insight of knowledge that the nurse performance in Indonesian context was influenced by their emotional intelligence and workplace culture. The limitation of this study might include the limited setting. Therefore, the results of the study might not be able to generalize in the whole context. Bigger and equal sample size should be used for future studies.

CONCLUSION

Majority of nurses had high performance, in line with high emotional intelligence and better workplace culture. There were significant relationships between emotional intelligence, workplace culture, and nurse performance, with a strong and medium level. The results of this study could be used as an input in the attempts of improving nurse performance through emotional intelligence and workplace culture specifically in hospital settings.

Declaration of Conflicting Interest
There is no conflict of interest.

Authorship Contribution

Criteria	Author Initials
Made substantial contribution in this manuscript such as writing the manuscript, data analysis and discussion	FAA, JMP, MLN
Revised manuscript based on editor suggestions	FAA, JMP, MLN
Each author has participated in writing the manuscript with critical analysis based on crucial content	FAA, JMP, MLN
The author works together in discussing input from the editor and giving ideas in completing the manuscript. Together, looking for references to analyze the results of the study.	FAA, JMP, MLN

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BELITUNG NURSING JOURNAL

ORIGINAL RESEARCH:
RESEARCH METHOGOLOGY PAPER

VALIDATION OF ELDERLY ABUSE ASSESSMENT TOOL

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Abstract

Background: Several screening tools for elderly abuse have been developed but they have rarely been validated properly for wider use. The multiplicity of the tools available revealed the need to develop through collaborative research, a simple and reliable tool that can be adapted and used in different geographical and cultural settings. As the cases of abuse increase, nurses are in a position to rescue this vulnerable population through equipping knowledge and be knowledgeable on using elderly assessment tool for abuse cases.

Objective: To validate the developed Filipino-based elderly abuse assessment tool.

Methods: The study utilized descriptive confirmatory method design and underwent validation and reliability process. Five experts conducted the scrutiny during validation and 220 elderly clients subjected the tool for reliability tests. Data are analyzed using SPSS version 23, while frequency and percentage were used for continuous variable.

Results: The Elderly Abuse Assessment Tool is valid and reliable. The tool is clear in terms of the word composition, the texts are understood easily, comprehensive, and relevant based on expert reviews. It has I-CVI of 0.84 (44 items) and increases value in its second version to 0.87 (42 items). On one hand, the tool obtained a very high degree of reliability with Cronbach's Alpha of 0.974 during the second version. Regardless of item numbers are retained, the value remains high. Constructs identified from the validated tool. Kaiser's criterion or the Eigenvalue result of the second version of the developed tool revealed six factors that can be extracted. However, in the Scree test or plot, only two factors located above the inflection points. This means that two factors or constructs can be named. The researcher decided to choose the lesser number for easier naming of factors. The tool was classified into two constructs, namely physico-sexual and psycho-financial factors, respectively.

Conclusion: The Elderly Abuse Assessment Tool (EAAT) is valid and has a very high degree of reliability. Physico-sexual and Psycho-financial are the two major constructs of the tool. Filipino nurses can now articulate their expression of unending caring through the utility of the validated Elderly Abuse Assessment Tool (EAAT).

KEYWORDS

elderly; elderly abuse assessment tool; caring; tool validation; reliability; nursing

BACKGROUND

Older people are the fastest growing segment of the population worldwide. Globally, the number of persons aged 60 years or over is expected to almost triple within decades from now. With the communities rapidly aging, there is always a clear need for greater knowledge on how to serve the elders. In 2005, the World Health Organization estimated 672 million counts of elderly and is expected to reach as high as 1.9 billion by 2050. Nonetheless, the very old population aged 80 and over are likely to be vulnerable or at risk of being abused. Nonetheless, such people will increase even faster (WHO, 2005). Professionals must be able to recognize cases of abuse and neglect and provide appropriate follow up services. The problem of elderly abuse and neglect is present and is an increasing threat in today's society while accompanying exponential growth in older adult

population. However, elderly abuse is not a new phenomenon; the speed of ageing population worldwide is likely to lead to an increase in its incidence and prevalence. It becomes a social and a health problem not just in the country but also even in a large-scaled populace. It is just as great as the problem of child abuse, yet in society as a whole, there is only little interest in helping older adults. Elderly abuse, like other types of interpersonal violence, remained hidden and is even considered taboo throughout history. Older people do not stimulate the protective instincts of the populace in the same way as what they do for children. Although like children, they are in many cases unable to help themselves and are defenseless in the face of the abuser.

However, abuse against older people is not easily recognized. The abused person is afraid and ashamed to admit they are. They often rely on the person who is abusing them for support in various acts of daily

living, and may fear that without them they will not survive ([Acob, 2018](#)).

Assessment is difficult due to efforts to conceal the perpetration by both the perpetrators and the abused. Professionals must know what questions to ask as well as what visible signs of abuse to look for in a brief time. The lack of recognition of elderly abuse is due to poor education and the scarcely effective assessment tools. The misinterpretation of data as signs of many chronic medical conditions associated with aging and of findings as normal age-related changes is also rampant. The need to develop an elderly abuse-screening tool is vital to protect the elderly from forms of abuse and to recognize local community partners in the implementation to early detection of the abused cases. In macro lens, many literatures mentioned the need to develop screening tools of abuse for the elderly. Foreign authors developed elderly abuse screening instruments; however, they are only specific to one type of abuse.

Several screening detections tools have been developed, but they have rarely been validated for wider use. The multiplicity of the tools available and the need to develop through collaborative research, a reliable and simple tool that can be adapted and used in different geographical and cultural settings to help maximize the full understanding of the problem. Nonetheless, screening tools have several limitations. For instance, some tools have low efficiency in clinical settings and the sensitivity and specificity rate of some were not fully addressed. The aim of the study is to identify the validity and reliability of the developed tool. Constructs of the tool was also determined and the scoring scheme in utilizing the tool.

METHODS

Study Design
The study utilized descriptive confirmatory methodological design ([Creswell, 2014](#)). This design followed specific steps. First, was to state the premise concepts that were used to develop the tool frequently based from either an existing theory or product from qualitative studies. Second was the collection of data that were used to test and confirm the premise. In this study, the process of validation and reliability to test the developed tool was made. Lastly, the researcher decided to accept or reject the premise through results of reliability of the scale (Cronbach's alpha) based on the data.

Participants
For the face and content validity of the tool, the researcher identified five expert participants to review and gave comments based on their fields of expertise. Experts were all females, with at least five years of continuous experience on their concerned field of specialization. The expert reviewed the tool contents, and comments were then consolidated and incorporated. The group of panels of experts included a nurse practitioner, a registered social worker, a nurse gerontologist, a nurse educator, and a psychologist. Moreover, for the test of reliability, there were 220 elderly clients aging 70 to 82 years old, male and female who constituted the study. They were able to give permission to be part of the study and were living in the community with sufficient cognitive ability to accomplish the assessment tool. Trained research assistants also facilitated the tool accomplishments to those who were unable to read texts following old age. To ensure that elderly participants have the same mind conditioning prior to answering the tool, socialization

activities were executed in a common area to ensure all were ready for the activity.

Instrument
Themes derived from the qualitative study constituted the developed Elderly Abuse Assessment Tool (EAAT). The first version had fifty (50) declarative statements that measured and detected abuse among elderly population. Each statement was scored with a 3-point Likert scale, such as (1) never, (2) once and (3) more than once. The tool underwent both face and content validity of the experts. The panel of experts on the other hand conducted the critiquing and careful analyses of the proposed EAAT. Recommendations and comments were incorporated in the tool prior to the validation process. After careful critic and review process of the experts, only 44 items left which constituted the second version of the elderly abuse assessment tool. Factor validity was identified through factor analysis, while reliability value was established through purposively identifying 220 respondents of the study.

Data Collection
The researcher presented the proposal to the Dissertation Panel Committee for approval of the study. After which, the proposal was then submitted for endorsement to the Ethics and Review Committee for the issuance of Ethics Clearance and for other administrative concerns. The tool had undergone the process of validation. The first version (50 items) of the tool underwent layers of validation process through (a) convergence of the expert panel members for tool analyzing, and (b) revising the tool based from expert's comments. For the face and content validity aspect of the tool, the researcher took form and created a group of five panel experts to comment on the first version of the developed tool. The poll of experts composed of a nurse practitioner, a registered social worker, a nurse gerontologist, a nurse educator, and a psychologist. Experts reviewed the items found in the first version of the proposed instrument. Experts were given ample time to critique, gave comments and set the correction. Their ability to explore beliefs, behaviors, and attitudes in the target population were essential to the enhancement of the instrument. Further, members of the expert team were asked through guide questions that sought to seek and express their insights for the enhancement of the proposed tool statements and to determine whether they were appropriate and relevant. Initially, items were reduced by removal of entries that were repetitive or not relevant to the subject matter; items generated were modified according to the comments from the experts. Later, the items were modified according to information from the pooled experts. Summation score were completed in every item as follows: (1) not relevant, (2) relevant, (3) very relevant.

The second version of the tool with 44 items underwent pilot testing. Then, the revision of the tool according to pilot tests results followed. Later on, the results were tested using factorial analysis. In all cases, confidentiality and anonymity of the key informants were assured through completed informed consent procedures, which included the main order about the study. To determine the reliability and for factorial analysis of the second version of the tool, the recruitment of potential research participants occurred after the primary investigator explained the aim of the study. The primary investigator with the help of the community leaders, each respondent was informed about the study purpose, including his/her rights, confidentiality, and anonymity. The tool was pilot tested using a sample as described by [Nunnally (1978)](#)

suggesting that 5 participants/cases for each item is adequate in most cases. The 44-item developed tool will need 220 respondents. The preliminary tool was applied to those population concerned and further item reduction and modifications of weight age were carried out according to the results of the pilot study.

Data Analysis

All statistics were carried out using SPSS software version 23.0. Initially, descriptive statistics were calculated for the characteristics of the sample: frequency, and percentages for categorical data and mean, standard deviation and range for continuous variables. The face validity was the ability of an instrument to be understood and relevant for the targeted population. It concerns the critical review of an instrument after it had been constructed and generally includes a pilot testing (Hossain et al., 2016). Face validity was assessed to the elderly who became participants during the pilot testing phase were asked about the clarity of each item. They were encouraged to ask questions and clarifications encountered during the answering of the tool. If the participants did not express any difficulty in understanding any words or items found in the tool, it clearly demonstrates face validity. On one hand, a group of five experts established appropriate coverage of the subject matter discussed the content validity. Experts were asked to comment on the face structure, organization of the instrument. Further, they considered if the statements described abusive situations clearly, without using the word abuse, thus avoiding cueing the participants.

The content validity index was used to compute for the extent of content validity of the elder abuse assessment tool. Content validity index have considered in terms of the content validity index of the items (I-CVI) and also content validity index of the scale (S-CVI). Anywhere I-CVI is computed as the number of experts giving a rating of 2 or 3 in the items, divided by the total number of experts. However, S-CVI computing as the average of the I-CVI value (Hove, Fålun, & Fridlund, 2016). S-CVI outcome that have been used in the study. The experts were asked to evaluate each item of the instrument for content equivalence (content-related validity [relevance]) using the following scale: 1 = not relevant; 2 = relevant; 3 = very relevant Items classified as 1 (not relevant) were eliminated. Content validity index at the item level (I-CVI) and at the scale level (S-CVI) were calculated. Items that did not achieve the minimum acceptable indices were revised and re-evaluated. New content validity indices were calculated. The process continued until acceptable indices of content-related validity or content equivalence were achieved. It had also recommended that the kappa

coefficient of agreement were determined to increase confidence in the content validity of the instrument.

The Kaiser-Meyer- Olkin test (KMO) and the Barlett's test of sphericity were also utilized to evaluate the adequacy of the sample. The KMO test ranges from 0 to 10 and is acceptable if it is higher than 0.5; if the Barlett's test has a very low significance (p< .05), the factorial model is considered adequate. Hardy, Rönnerman, and Edwards-Groves (2018), mentioned that the reliability of the items in a questionnaire is usually determined during the data collection phase and needs to be noted in the research report. If a scale is used to collect data, the Cronbach alpha procedure needs to be applied to the scale items to determine the reliability of the scale. If the Cronbach alpha coefficient is unacceptably low (<0.80), the researcher must decide whether to analyze the data collected by the instrument. A value of 0.80 is considered acceptable, especially for newly developed scales. Following this, Cronbach's alpha coefficient and split- half correlations were conducted to examine the reliability of the tool. An exploratory factor analysis was performed with the use of principal component analysis as the estimation method to analyze the factor structure of the tool.

Ethical Consideration

The study had been approved by the Ethics and Review Committee of St. Paul University Philippines, Tuguegarao city, Cagayan Valley Philippines dated November 23, 2018, with approval protocol code of 2018-01-DNS-12. The proponent assured that the participants, stakeholders have obtained appropriate informed consent.

RESULTS

Validity Attributes of Elderly Abuse Assessment Tool
Face validity

The 50-item (first version) proposed the Elderly Abuse Assessment Tool (EAAT) was reduced to 44 following comments from the five experts. Revisions were made based from the recommendation of the expert members. However, there is no solely objective method to measure content validity of an instrument (Polit & Beck, 2004). Nonetheless, using experts in the field has become a common method to evaluate and document contents of a new instrument. The experts identified that the words used were clear, precise, and easily understood. Statements were relevant in the topic being surveyed were retained. The experts also determined whether the tool is simple, straightforward to read and the styles and format were consistent.

Table 1 Presentation of Expert's Comments (First Version)

Items	Comments	Retained /Deleted	Changes
1-43	No comment	Retained	None
44, 45	Redundant	Rephrased and retained	I am all alone and left most of the time
46	Not a sign of abuse	Deleted	
47	Not a sign of abuse	Deleted	
48	Though a sign of abuse, however, we cannot assure as to why deprivation happened. Maybe the elderly is allergic to it (food and medication), or just hardheaded following very old age.	Deleted	
49	Does not fit in the tool	Deleted	
50	Not a form of abuse	Deleted	

The expert members, on the other hand, commented on the overall appearance of the tool. The wordings and statements were clearly declared and do not cause any problem in comprehending them at all. The accounts did not need to be rephrased since the wordings were clear and precise. The tool was relevant and comprehensive. Statements were generally addressing both sexes since abuse may happen regardless of status and gender (see **Table 1**).

Content Validity
Table 2 shows that out of the total 44 items in the second version of the developed tool, 20 or 45.45% of the items had been rated by all five (5)

content experts as relevant, 16 or 36.36% of the items had been rated by 80% of the content experts as relevant, 6 or 13.64% of the items had been rated by 60% of the content experts as relevant and 2 or 4.55% of the items had been rated by 40% of the content experts as relevant. The findings imply that two items, specifically, items 15 and 44 need to be discarded in the 2nd version of the developed tool since these items had been rated only by 40% (2 out of 5) of the content experts. The table further reveals that if all 44 items are retained, its overall scale content validity index (S-CVI) is 0.84.

Table 2 Item-Content Validity Index (I-CVI) and Scale-Content Validity Index (S-CVI) of the Developed Tool Version 1

Content Validity Index		Item Number	Frequency	Percentage
Item Content Validity Index (I-CVI)	1.00	1, 2, 3, 4, 5, 18, 19, 21, 24, 26, 28, 29, 30, 31, 32, 38, 39, 40, 41, 42	20	45.45
	0.80	7, 8, 9, 10, 17, 20, 22, 23, 35, 27, 33, 34, 35, 36, 37, 43	16	36.36
	0.60	6, 11, 12, 13, 14, 16	6	13.64
	0.40	15, 44	2	4.55
	TOTAL		44	100.00
Scale Content Validity Index (S-CVI)	0.84			

Individual items were revised for clarity or with CVI below 0.80; whereas, items with CVI scores of less than or equal to 0.50 implied unacceptability and were omitted (Thomas & Magilvy, 2011). With thorough deliberation from the panel experts (Content and Face validities), of the Elderly abuse Assessment Tool, the proponent made

revision of the items. The second draft of the tool was identified having over-all CVI score (S-CVI) of 0.87. Upon careful analysis of the content validity index, the Elderly Abuse Assessment Tool 2nd version with 42 items finalized and was found to be very relevant and clearly stated (See **Table 3**).

Table 3 Item-Content Validity Index (I-CVI) and Scale- Content Validity Index (S-CVI) of the Developed Tool Version 2

Content Validity Index		Item Number	Frequency	Percentage
Item Content Validity Index (I-CVI)	1.00	1, 2, 3, 4, 5, 18, 19, 21, 24, 26, 28, 29, 30, 31, 32, 38, 39, 40, 41, 42	20	47.62
	0.80	7, 8, 9, 10, 17, 20, 22, 23, 35, 27, 33, 34, 35, 36, 37, 43	16	38.10
	0.60	6, 11, 12, 13, 14, 16	6	14.28
	TOTAL		42	100.00
Scale Content Validity Index (S-CVI)	0.87			

Exploratory Factor Analysis
Step 1: Assessment of the Suitability of the Data for Factor Analysis
The first step in performing factor analysis is the assessment of the suitability of the data for factor analysis. There are two main issues to consider in determining whether a particular data set is suitable for factor analysis: sample size, and the strength of the relationship among the variables (or items). While there is little agreement among authors concerning how large a sample should be, their recommendation generally is: the larger, the better. Tabachnick and Fidell (2011) reviewed this issue and suggested that 'it is comforting to have at least 300 cases for factor analysis. However, they do concede that a smaller sample size (e.g.150 cases) should be sufficient if solutions have several high loading marker variables (above.80). Some authors suggest that it is not the overall sample size that is of concern—rather the ratio of subjects to items. Nunnally (1978) recommends a 10 to 1 ratio: that is, 10 cases for each item to be factor analyzed. Others suggest that five cases for each item would be adequate in most cases. In this study, the

researcher involved a total of two hundred and twenty (220) participants which is more than adequate as sample size following the five cases is to one item rule. Since the second version of the developed tool involved 42 items, it then supposedly requires only 210 participants. The sample size for this study had 10 cases in excess of the sample size requirement for factor analytic procedures to proceed.

Step 2: Determining the Strength of the Inter-Correlations among the Items
Tabachnick and Fidell (2011) recommended an inspection of the correlation matrix for evidence of coefficients greater than 0.3. If few correlations above this level are found, then factor analysis may not be appropriate. Two statistical measures are generated by SPSS to help assess the factorability of the data: Bartlett's test of sphericity (Bartlett, 1954), and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (Kaiser, 1974). The Bartlett's test of sphericity should be significant ($p < 0.05$) for the factor analysis to be considered

appropriate. The KMO index ranges from 0 to 1, with 0.6 suggested as the minimum value for a good factor analysis (Tabachnick & Fidell, 2011).

Table 4 KMO Measure of Sampling Adequacy and Bartlett's Test Results for the 2nd Version of the Developed Tool

Kaiser-Meyer - Olkin Measure of Sampling Adequacy		0.930
Bartlett's Test of Sphericity	Approx. Chi-Square	10673.344
	Df	0.861
	Sig.	Less than 0.001

Table 4 presents the obtained results of the Kaiser-Meyer - Olkin Measure of Sampling Adequacy as well as the Bartlett's Test of Sphericity. The obtained KMO value from the data collected from 220 participants is 0.93. This value implies that the developed 2nd version of the tool exceeded the minimum requirement of at least 0.6 as suggested by Tabachnick and Fidell (2011) for a good factor analysis. Furthermore, the table also shows that the P-value for the instrument's result with respect to the Bartlett's Test of Sphericity is less than 0.001, which implies that the instrument is compliant to the 2nd requirement, that is, the Bartlett's Test of Sphericity should be significant ($p < 0.05$) for the factor analysis to be considered appropriate.

Step 3: Factor Extraction
Factor extraction involves determining the smallest number of factors that can be used to best represent the interrelations among the set of variables. There are varieties of approaches that can be used to identify (extract) the number of underlying factors or dimensions. Some of the most commonly available extraction techniques include the following: principal components; principal factors; image factoring; maximum likelihood factoring; alpha factoring; unweighted least squares; and generalized least squares. The most commonly used approach is principal components analysis.

It is up to any researcher to determine the number of factors that he/she considers best that describes the underlying relationship among the variables. This involves balancing two conflicting needs: the need to find a simple solution with as few factors as possible; and the need to explain as much of the variance in the original data set as possible. Tabachnick and Fidell (2011) recommend that researchers adopt an exploratory approach, experimenting with different number of factors until a satisfactory solution is found. There are a number of techniques that can be used to assist in the decision concerning the number of factors to retain. Kaiser's criterion and Scree test. One of the most commonly used techniques is known as Kaiser's criterion, or the eigenvalue rule. Using this rule, only factors with an eigenvalue of 1.0 or more are retained for further investigation. The eigenvalue of a factor represents the amount of the total variance explained by that factor. Another approach that can be used is Catell's scree test. This involves plotting each of the eigenvalues of the factors and inspecting the plot to find a point at which the shape of the curve changes direction and becomes horizontal. Catell recommends retaining all factors above the elbow, or break in the plot, as these factors contribute the most to the explanation of the variance in the data set.

Table 5 Kaiser's Criterion or the Eigenvalue Result of the 2nd Version of the Developed Tool

	Total Variance Explained					
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	21.598	51.425	51.425	21.598	51.425	51.425
2	3.550	8.453	59.878	3.550	8.453	59.878
3	2.193	5.222	65.099	2.193	5.222	65.099
4	2.029	4.831	69.930	2.029	4.831	69.930
5	1.571	3.740	73.671	1.571	3.740	73.671
6	1.038	2.472	76.143	1.038	2.472	76.143
7	0.941	2.240	78.383			

The data results contained in Table 5 reveals that there are six (6) components that have eigenvalues greater than or equal to 1.00. This implies that at most six components or factors may be extracted from the 2nd version of the developed tool. When the six factors are extracted, the factors can explain 76.143% of the tool's total variance. However, to finally decide on how many factors to extract, the result of the Scree Test or Plot is needed. Figure 3 presents this concern.

Figure 1 shows that there are two points located above the inflection point of the Scree plot. This means that only two factors or components can be extracted from the developed tool. It is to be noted that in Table 6 that there are six components with eigenvalues greater than 1 indicating that six factors may be extracted. However, between the choices of two or six factors to be extracted, it is better to choose a lesser number so less number of factors will be given a name later.
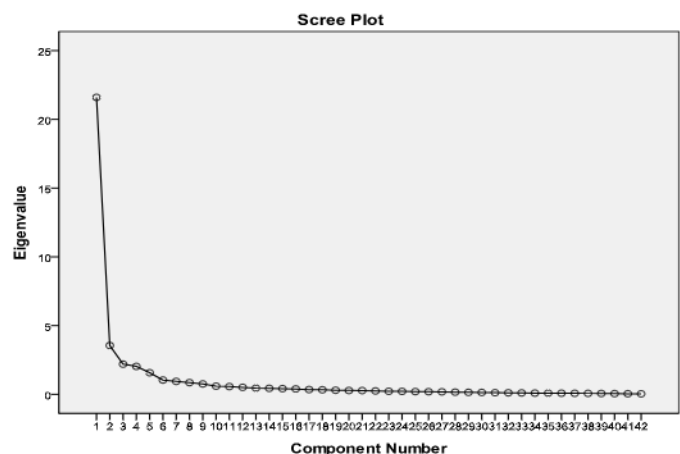
Figure 1 Scree Test or Plot of the 2nd Version of the Developed Tool

Step 4: Factor Rotation and Interpretation
Once the number of factors has been determined, the next step is to try to interpret them. To assist in this process the factors are 'rotated'. This does not change the underlying solution - rather, it presents the pattern of loadings in a manner that is easier to interpret. There are two main approaches to rotation, resulting in either orthogonal (uncorrelated) or oblique (correlated) factor solutions. According to Tabachnick and Fidell (2011), orthogonal rotation results in solutions that are easier to interpret and to report; however, they do require the researcher to assume that the underlying constructs are independent (not correlated). Oblique approaches allow the factors to be correlated, but they are more difficult to interpret, describe, and report. In practice, the two approaches (orthogonal and oblique) often result in very similar solutions, particularly when the pattern of correlations among the items is clear. Many researchers conduct both orthogonal and oblique rotations and then report the clearest and easiest to interpret. Within the two broad categories of rotational approaches there are a number of

different rotational techniques provided by SPSS (orthogonal: Varimax, Quartimax, Equamax; oblique: Direct Oblimin, Promax). The most commonly used orthogonal approach is the Varimax method, which attempts to minimize the number of variables that have high loadings on each factor.

Reliability of the Elderly Abuse Assessment Tool
The data in Table 6 shows that if all 42 items of the 2nd Version of the developed tool are retained, its reliability coefficient reported as Cronbach's Alpha coefficient is 0.974 described as having a very high degree of reliability. The tool's reliability coefficient decreases to 0.973 if item number 8 is removed or increases to 0.975 if either item number 6, 12, 13, 16 or 44 is deleted. Since the tool will not have any significant increase on its reliability coefficient, the researcher decided to retain all 42 items for the next phase of the tool development, which involved the use of factor analytic approaches.

Table 6 Cronbach's Alpha Reliability Coefficient of the 2nd Version of the Developed Tool

Any one of the following item numbers is deleted	Cronbach's Alpha if Item is Deleted
6, 12, 13, 16, 44	0.975
1, 2, 3, 4, 5, 7, 9, 10, 11, 17, 18, 19, 20, 21, 22, 23 – 43	0.974
8	0.973
-	0.974

Constructs Identified of the Developed Elderly Abuse Assessment Tool
Table 7 shows the results of the rotated factors using varimax factor rotation. The results reveal that when only two factors are extracted, the same items in the developed tool would consistently fall on the same factor. Items 1 to 18 except item number 15 fall under the 1st factor while items 19 to 43 fall on the 2nd factor. Looking at the said items, the items clustered under factor 1 would be named physico-sexual

while items falling under factor 2 can be named as psycho-financial factor.

Proposed Scoring Scheme of the Validated Tool
The validated tool having 42 items proposes the use of the scoring scheme to determine the extent of abuse among the elderly population. The researcher suggests that the following scoring scheme and interpretation based on factors.

Table 7 Factor Analysis using the Varimax Factor Rotation

Method of Factor Rotation	Factor Extracted	Items Falling Under Each Factor	No of items	Name of Factor
Varimax Factor Rotation	1	1,2,3,4,5,6,7,8, 9,10,11,12,13,14,16,17,18	17	Physico-sexual factor
	2	19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43	25	Psycho-financial factor

The table 8 shows the proposed scoring scheme to be used to interpret abuse incidence utilizing the tool. The elderly may experience one of the many-types of maltreatment in the light of the tool, therefore be

treated appropriately. The greater the score means the severely the patient is abused, thus tailored-fit intervention is demanded.

Table 8 Proposed Scoring Scheme of the Validated Elderly Abuse Assessment Tool

Physico-sexual Factor	Pyscho-financial Factor	Elderly Abuse Assessment Tool	Adjectival Rating
17-28	25-42	42-69	Prone for abuse
29-40	43-58	70-97	Moderately abused
41-51	59-75	98-126	Severely abused

Table 9 The Validated Elderly Abuse Assessment Tool (42 items with 3-Point Likert Scale)

Statements	3	2	1
1. I was forced to work against my will			
2. Objects were thrown on me			
3. I was slapped and scratched			
4. My hair was pulled			
5. I was wept with a stick or hard objects			
6. I was punched and kicked			
7. I was hurt at home			
8. My undergarments were intentionally torn			
9. I was maliciously touched without my consent			
10. I was made to do things I did not want to			
11. I was sexually harassed			
12. I was forced to perform sexual intercourse			
13. I was threatened to hurt people important to me if I refuse to have sexual activities			
14. I was forced to replicate sexual behavior from pornographic films and pictures			
15. I was maliciously accused of sexual engagement with another man/ woman			
16. I was shouted sadistically.			
17. I was threatened to get killed			
18. Someone caused me emotionally traumatized			
19. Somebody hurt my feelings that made me cry			
20. Somebody taunted me about my health status			
21. I was upset because somebody talked in a way that made me feel shamed and threatened			
22. I was excessively insulted and screamed in front of other people/ in public places or in social networking site			
23. I felt sad/ shamed/anxious/unhappy that left me upset for long time			
24. Somebody made me feel down and helpless			
25. Somebody intentionally ignored by not talking and avoiding me			
26. Somebody accused me for the things I did not do			
27. Somebody spread false rumors about me			
28. Many times I feel I was going to get crazy			
29. I was threatened to be placed in isolation			
30. I was asked by somebody to pay for their debts			
31. Somebody constantly asked money from me			
32. Somebody did not pay their debts on me			
33. I was asked to include their names in my bank account			
34. I was asked to sign documents I hardly understand			
35. I noticed that my valuables and possessions disappeared			
36. Somebody took away things without my knowledge or not asking permission			
37. I was bothered by something which lead me to sleeplessness			
38. I experienced sleeping at night without taking any meal			
39. Nobody asked me about my condition			
40. Nobody asked me if I am okay			
41. I am left all alone most of the time			
42. I am alone most of the time			

3- more than once 2- once 1- never

CONCLUSION

Elderly abuse and neglect as serious and prevalent problem are actions that can result into mistreatment. The issue of underreporting due to the "dearth" of appropriate screening instrument is now answered. The limitation of no scoring system and weak specificity, now resolved. From the findings of this study, the Elderly Abuse Assessment Tool (EAAT) is valid and has a very high degree of reliability. Physico-sexual and Psycho-financial are the two major constructs or factors that are associated in the tool. The degree or extent of abuse is determined using the scoring scheme designed for interpretation. Filipino nurses can now articulate their expression of unending caring through the utility of the validated Elderly Abuse Assessment Tool (EAAT). The instrument is intended for use among nurses and health workers and is an appropriate instrument to detect abuse cases to the vulnerable population.

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STUDY PROTOCOL

AN INTERVENTION PROGRAM TO IMPROVE NURSES' COMPETENCIES IN DISASTER RESPONSE: A MIXED-METHODS STUDY PROTOCOL

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Abstract

Introduction: Indonesia has the highest risk and vulnerability to both natural and non-natural disasters in the world. Aceh Province located on the confluence of two earth fault plates has been discovered to be exposed to a higher risk leading to significant physical, emotional, and psychological problems. Therefore, there is a need for immediate disaster response efforts to reduce the impacts, and nurses are the largest care providers with adequate competencies to ensure effectiveness.

Objective: The study aims to develop a study protocol to measure the effectiveness of the intervention program to improve nurses' competencies in disaster response.

Methods: A sequential exploratory mixed-method study design will be used. A qualitative phase is to explore nurses' competencies in disaster response according to nurses, disaster survivors, hospitalized patients, members of *the Ulama* Consultative Assembly of Aceh, and hospital policymakers using FGDs and in-depth interviews. The result of this phase is to develop intervention and instruments. Data are analyzed using a content analysis. A quantitative phase is to examine the effectiveness of the initiated intervention programs on nurses' competencies in disaster response with a randomized controlled trial study design. There will be three groups in this phase, namely Evidence-Based Intervention (EBI) group, Islamic-Based Intervention (IBI) group, and Control Group (CG). The nurses' competencies related knowledge, skill, and attitude will be measured using valid and reliable instruments. Data will be analyzed using independent t-test, and a repeated measure one-way ANOVA.

Discussion: The findings are expected to be the basis for the development of appropriate tools and better intervention in nursing practice and education in relation to evidence and Islamic-based disaster curriculum as well as a guide for future research.

Trial registration: ongoing process with request number ANZCTR 378930

KEYWORDS
nurse; competencies; disaster; response; Islamic; mixed-methods

INTRODUCTION

Indonesia is one of the countries with the highest risk and vulnerability to disaster in the world and this has damaged community livelihoods with significant impacts on the physical, emotional, and psychological conditions of the survivors (Presiden Republik Indonesia, 2007). Natural disasters such as earthquake, tsunami, volcanic eruption, landslide, flood, and storm as well as those related to human activities such as a terrorist attack, chemical explosion, nuclear failure, social conflict, and wars have been reported to have significant effects on the survivors around the world (Al Thobaity et al., 2017; Park & Kim, 2017; Yi et al., 2010). In Indonesia, 42 earthquakes were reported during 2018-2019 and these included those experienced in Lombok, Donggala-Palu, and Banten Provinces. The frequency and consequent effects of these disasters have led to the need for urgent preparedness and effective response, especially for the related health professionals

(Siswadi & Prima, 2018). This is very important considering there were 5,405 natural disaster occurrences in Indonesia since the 2018-2019, and the number increases significantly annually (Badan Nasional Penanggulangan Bencana, 2019).

Hospital is a public health service center with significant importance in disaster response and this means each personnel is required to have sufficient competencies to handle the situation. For example, nurses, as the largest population of care providers in the hospitals and communities, are expected to have adequate skills and knowledge to provide immediate medical helps for the survivors (Halstead, 2017; Warsini et al., 2015). However, several studies have reported their competencies in disaster response to be insufficient because they focus more on the physical aspects and this has led to the introduction of Islamic-based disaster response competencies for nurses in handling the psychological, psychosocial and spiritual conditions by some

researchers. This was associated with the need to prioritize disaster preparedness and response capability in areas with a high risk (Baghdady, 2005). Moreover, the experience from the 2004 tsunami and earthquake which led to several problems and death of thousands of people is another reason to improve the capabilities of health care providers such as nurses (Husna et al., 2011).

Previous studies have reported a low competencies for nurses on disaster preparedness and response and 88% of the respondents were found not to be satisfied with the performance of the nurses and physicians in providing care for the survivors (Zarea et al., 2014). Similar results were also discovered in Banda Aceh where the nurses were scarcely skillful in providing the physical, mental, and psychosocial treatments for the tsunami-affected patients in 2004 (Husna et al., 2011). In Sulawesi, they were also reported to exhibit low competencies (Sangkala & Gerdtz, 2018). This, therefore, led to the provision of a framework for disaster nursing by the International Council of Nurses (ICN) and this was divided into three phases including pre-disaster, disaster, and post-disaster. In the pre-disaster phase, the focus is on the adequacy of knowledge, skills, and risk identification abilities, response planning, and several forms of preparedness. During the disaster phase, nurses are required to respond by providing physical, psychological, and holistic care for individuals, families, and communities with priority for vulnerable groups such as pregnant women, children, and the elderly. Meanwhile, the post-disaster phase focuses on the recovery and reconstruction activities of the victims to maintain their survival (International Council of Nurses & World Health Organization, 2009).

Geographically, Aceh, located at the western end of the Sumatra Island, is at the confluence of two earth fault plates, and this makes the province vulnerable and at a high risk of earthquake and tsunami (Badan Nasional Penanggulangan Bencana Aceh, 2015). It is one of the few provinces in Indonesia with special autonomy with the ability to manage and regulate its government, especially in terms of governance, education, and religion (Presiden Republik Indonesia, 2006). For example, Indonesian Law No. 11 of 2006 states that Aceh has the right to implement Islamic *sharia* (law) based on a strong association between the community and Islam as observed in the domination of the province by the Muslim population which was recorded to be 98.2%. Therefore, public services and community activities are conducted based on Islamic principles and the grand design of Islamic *Sharia* in 2017-2021 and this is evident in all of its programs and departments including the hospital (Djalil, 2017).

There is a need to improve the competencies of the nurses in Aceh on disaster response based on Islamic principles and based on the need assessment conducted on five groups including the nurses, patients hospitalized, disaster survivors, members of *Ulama Consultative Assembly* in Aceh, and hospital policymakers, mandatory training was organized to implement and increase the Islamic-based disaster response at the hospital in Banda Aceh in order to support and improve *sharia*-based initiatives in public service.

OBJECTIVES

The objectives of this study are to develop the study protocol to develop an intervention to improve nurses' competencies in disaster response as well as to examine the effectiveness of the intervention programs.

METHODS

Study Design
This research will be conducted using a sequential exploratory mixed-method study design, including the use of phenomenology design for qualitative phase, followed by a randomized controlled trial (RCT) for quantitative phase.

Settings
Qualitative phase
The qualitative phase in this study has been conducted in hospital and community settings on February 12, 2019 - March 23, 2019.

Quantitative phase
The quantitative phase will be conducted at Meuraxa Hospital of Banda Aceh, Ibu dan Anak Hospital of Aceh Government, and Pertamedika Ummi Rosnati Hospital of Banda Aceh. The study population includes nurses who work in the hospitals specifically in the following five wards: emergency department (EDs), intensive care unit (ICU), intensive coronary care unit (ICCU), medical ward, and surgical ward. Those wards are selected based on their importance to the provision of care for patients in the effort towards responding to a disaster.

Samples
Qualitative phase
The qualitative study has been conducted involving 24 nurses from three hospitals as well as other participants including eight disaster survivors, eight hospitalized patients, eight members of *the Ulama* Consultative Assembly of Aceh, and eight hospital policymakers, with a total of 56 participants.

Quantitative phase
The quantitative study (RCT) will be conducted among 150 nurses from three hospitals, and these participants will be selected using a cluster random sampling and divided into three groups with a total of 50 participants for each group. A medium effect size with a power of 0.08, confidence level at 95% and an alpha of 0.05 with a value of d = 0.60 was used in the determination of sample size. The inclusion criteria for the sample will include (a) working at EDs, ICU, ICCU, medical, and surgical wards, (b) working experience for ≥ 2 years, (c) holding at least a diploma degree, and (d) having no annual/study assignment leaves during the study.

Study Procedures
Qualitative phase
The qualitative phase has been completed. The qualitative study was conducted using phenomenology design to understand the experiences of an individual concerning a phenomenon (Creswell, 2009). The study involved the use of FGDs and in-depth interviews. The findings were used for training intervention material (modules) and questionnaire development.

Quantitative phase
The feasibility, acceptability, and effectiveness of the interventions program will be assessed using the quantitative approach. In this regard, a randomized controlled trial (RCT) will be used and the results will be assessed by independent sample t-test with pre-test - post-test control group design to compare the mean of the three groups. Further, a repeated measure one-way ANOVA will be used to determine the

effectiveness of the intervention (Polit & Beck, 2010) on pre-test and post-test (follow up I and II) within 2-6 weeks after the completion of the program (Jannah et al., 2016). The description of study design and process are described in **Figure 1** and **2**.

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┌─────────────────────────┐   ┌────────────────────────────────────────┐
│ Phase I: Qualitative    │   │ - Literature review                    │
│ study: Need assessment  │──▶│ - Develop guide discussion (5 questions)│
│                         │   │ - FGDs activities (n=32 participants)  │
└─────────────────────────┘   │ - In-depth interview (n= 24 participants)│
                              └────────────────────────────────────────┘

┌─────────────────────────┐   ┌────────────────────────────────────────┐
│ Phase II: Quantitative  │   │ - Develop two training modules (EBI, IBI)│
│ study: Intervention     │──▶│ - Develop three questionnaires,        │
│ design using RCT        │   │   evaluation sheet per session         │
│                         │   │ - Develop learning media: power points,│
│                         │   │   cases scenario, role plays, and videos│
└─────────────────────────┘   └────────────────────────────────────────┘
                                              │
                                              ▼
                              ┌────────────────────────────────────────┐
                              │ - 150 nurses in three groups at three  │
                              │   hospitals fulfill inclusion criteria │
                              │ - Training program: six sessions in six│
                              │   weeks at 90 minutes per session      │
                              │ - Follow up I-II within 2-6 weeks after│
                              │   the completion of the program        │
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                              ┌────────────────────────────────────────┐
                              │ - Analysis using SPSS version 21       │
                              │ - Pre-post-test control group design   │
                              │   and repeated measure one-way ANOVA   │
                              └────────────────────────────────────────┘
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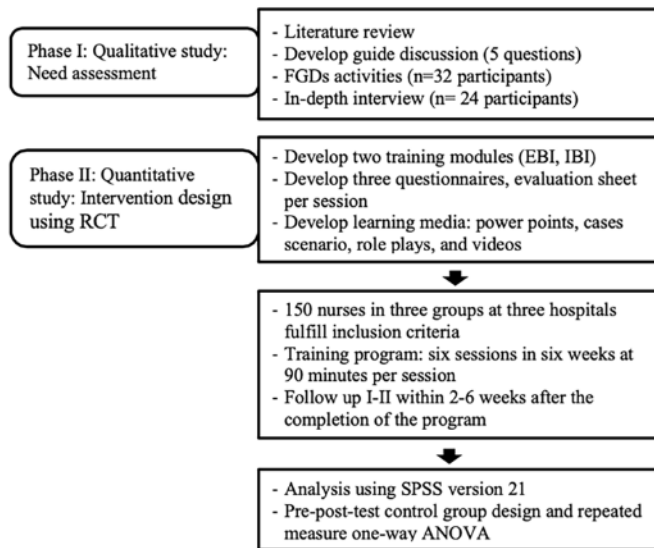
Figure 1 Study design

Intervention Programs for Quantitative Phase

Based on the qualitative findings, three intervention programs have been developed, namely the Evidence-Based Intervention (EBI), Islamic-Based Intervention (IBI), and Control Group (CG), have been developed and will be tested in this study.

1) The Evidence-Based Intervention (EBI)

The EBI group will focus on nurses' competencies on managing psychological, psychosocial, and spiritual aspects (Bisson & Tavakoly, 2008; Hughes et al., 2017; International Council of Nurses & World Health Organization, 2009). The intervention will be conducted for six sessions over a six-week period, with each session is approximately for 90 minutes. The program consists of session I - introduction and building a relationship of trust with respondents, session II - concept of disaster (definition, type, impact, the law on disasters in Indonesia, and the role of nurses in disasters, session III - nurses' disaster response competencies in managing psychological problems, session IV - nurses' disaster response competencies in managing psychosocial problems, session V - nurses' disaster response competencies in managing spiritual problems, and session VI - review, conclusions, and follow-up plans. Program providers will include three nurses' health educators and one psychologist. Various interactive methods will be used in the implementation of program intervention including lecture, discussion, videos, case scenario, demonstration, and storytelling.

2) The Islamic-Based Intervention (IBI)

The IBI group will focus on managing psychological, psychosocial, and spiritual aspects (Bisson & Tavakoly, 2008; Hughes et al., 2017; International Council of Nurses & World Health Organization, 2009) and was developed based on *Standar dan Instrumen Sertifikasi Rumah Sakit Syariah* (Dewan Syariah Nasional Majelis Ulama Indonesia (Dsn- Mui) & Majelis Upaya Kesehatan Seluruh Indonesia (Mukisi), 2017) and also the results of the needs assessment. This is also conducted for six sessions over a six-week period with each session being approximately 90 minutes. The program consists of session I -

introduction and build a relationship of trust with respondents, session II - the concept of disaster in Islamic perspective, session III - nurses' Islamic-based disaster response competencies in managing psychological problems, session IV - nurses' Islamic-based disaster response competencies in managing psychosocial problems, session V - nurses' Islamic-based disaster response competencies in managing spiritual problems, and session VI - review, conclusions, and follow-up plans. The IBI will provided by nurses' educators and an Islamic psychologist using lecture, discussion, videos, demonstration, cases scenario, and story-telling.

(3) The Control Group (CG)

The control group will be conducted as routine day care according to the competencies gained in the hospital without any specific intervention.

Training for Program Providers for Quantitative Phase

One day training will be provided to all program providers (three nurses' health educators and one psychologist/Islamic psychologist) to ensure that they can administer the intervention program as expected. The program will be trained in Banda Aceh by the researchers one week before conducting the study.

Retention of Participants

To maintain and improve the fidelity of the participants, we will provide door prizes for each session, attractive training material, snacks box, transportation cost for every training session, souvenir, and a 3 credit points training certificate from the Indonesian National Nurses Association (INNA).

Measurements for Quantitative Phase

In the RCT study, respondents will be asked to fill the demographic data including age (years), gender, latest level of education, religion, length of work (in years), working unit/ward, experience in disaster/emergency training, as well as the type of training attended and year. The nurses' competencies are measured based on knowledge, skills, and attitude in managing psychological, psychosocial, and spiritual problems in disaster response. The knowledge will be measured using the questionnaire named "Nurses' Knowledge in Disaster Response Questionnaire (NKDRQ)" consisting of 28 questions with multiple choices and each correct answer scored 1 while the incorrect one was scored 0 and this means the highest obtainable score is 28 while the lowest is 0. The attitude will be measured using the "Nurses' Attitude in Disaster Response Questionnaire (NADRQ)" and consisted of 30 statements with a Likert scale (1-5) indicated by "strongly agree = 5", "agree = 4", "doubt = 3 ", "disagree = 2", "strongly disagree = 1" and this means the highest possible score is 150 and the lowest is 30. Furthermore, the skills will be measured using the "Nurses' Skill in Disaster Response Questionnaire (NSDRQ)" consisting of 28 items using "true and false" dichotomous scales with the "true" scored 1 and the "false" 0 and this means the highest obtainable score is 28 and the lowest is 0. At the end of each session, program evaluation will be conducted using three essay questions and an observation sheet consisting of 12 statements with a checklist of "yes" and "no".

The three self-report questionnaires were developed based on an extensive literature review. The validity will be conducted with three experts including a disaster nurse, a mental health nurse, and an Islamic

psychologist. The content validity index (CVI) score of 0.9 will be used as the excellent standard (Polit & Beck, 2010). Interrater reliability will be assessed with randomly selected 25% sample of baseline (*N*= 38) (Ford et al., 2011). This will involve a test-retest to measure the correlation between the same person's score as well as the application of internal consistency to evaluate the interrelatedness among items or sets of items in the scale (Polit & Hungler, 1991). The results satisfied the criteria for reliability as observed with the score ≥ 0.7 (Polit & Beck, 2010).

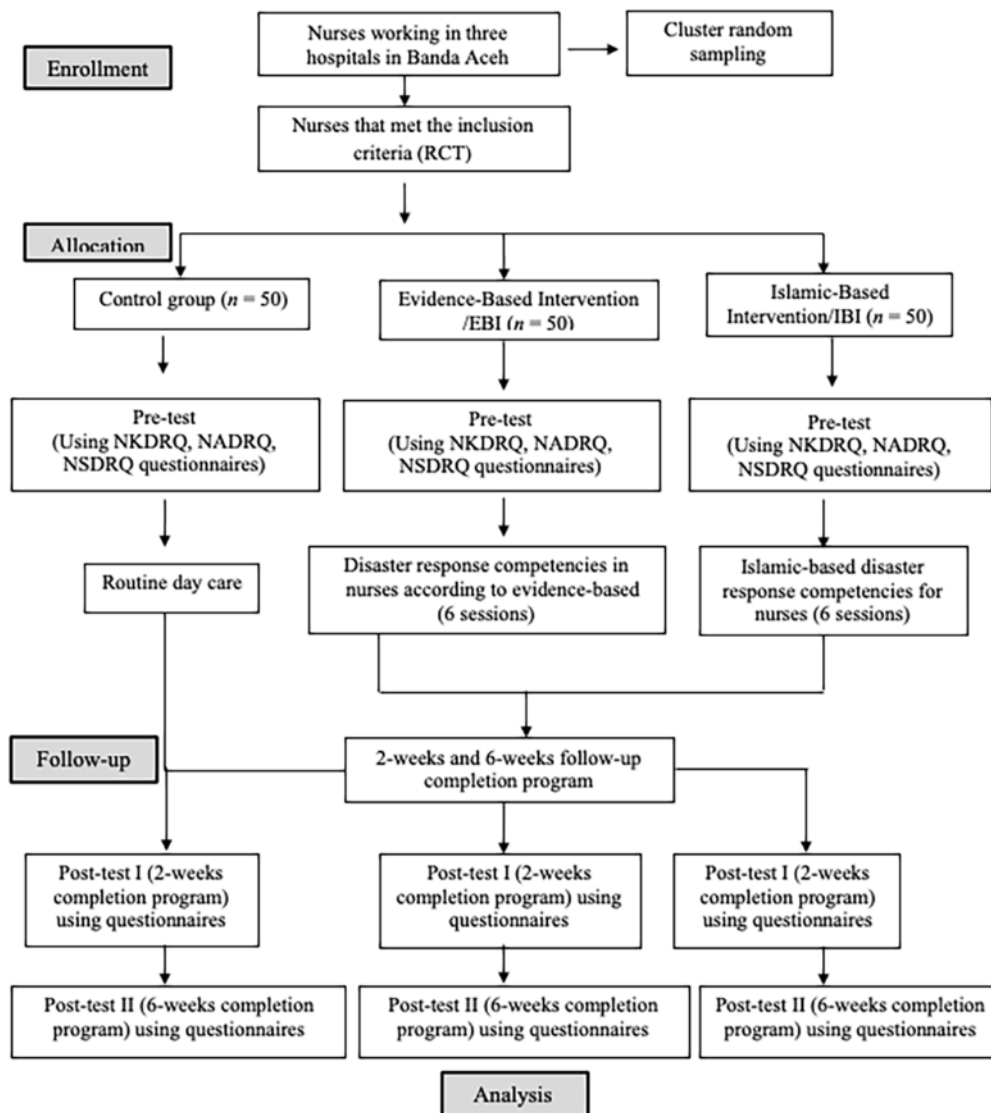**Figure 2** Flow diagram for the respondents recruited and enrolled in the intervention program

Data Analysis
Qualitative phase
The qualitative analysis was conducted manually using conventional inductive content analysis (Graneheim & Lundman, 2004), and eight subthemes and four themes were created and these were used to support the module developed to improve the Islamic-based disaster response competencies for nurses in Banda Aceh hospitals.

Quantitative phase
The quantitative data will be analyzed using SPPS version 21 for window. Descriptive statistics will be used to explain the percentage, mean, standard deviation, and median of the population studied. Meanwhile, the data for each variable will be assessed using Intra-Class Correlations (ICCs) after the Cronbach's Alpha test is provided values of ≥0.7 for the variables (Polit & Beck, 2014). The disaster response competencies between groups will be analyzed using inferential statistics independent t-test with pre-test-post-test-control group design (Polit & Hungler, 1991) to compare the mean scores of knowledge, skills, and attitudes before and after the intervention in the three groups. Moreover, a repeated measure one-way analysis of variance (ANOVA) will be also applied to compare the scores of pre-tests on follow-up I and II in the three groups while the Between-Subject Effect will be used to evaluate the difference of scores between the intervention and control groups. However, the variations within the same group will be evaluated using Within-Subject Effects while those observed within each measurement time will be assessed using the Interaction Effect (Polit & Hungler, 1991). Multivariate linear regression will be applied in special cases to compare the competencies between three groups, EBI, IBI, and CG. For example, to determine nurses working in intensive care/EDs and those that do not, those with experience in disaster response and those without, etc. Finally, both the qualitative and quantitative data integrated into a unified phenomenon.

Ethical Consideration

This study was approved by the Ethics Committee of the Provincial Hospital of dr. Zainoel Abidin Banda Aceh with number 1171012P on January 25, 2019. An appropriate informed consent has been signed by each participant in the qualitative phase. We will ask the participants in the quantitative phase to sign the same consent if they agree to participate in this study.

DISCUSSION

The high vulnerability and risk of disasters in Indonesia, particularly in the Aceh Province, within the last fifteen years require the full preparation of the entire society, especially the nurses as the main responder and workforce in disaster response, both in hospitals and communities. Literature review have reported the lack of nurses' competencies in disaster preparedness and response both in Indonesia and other countries of the world. However, Aceh is one of the provinces that have implemented Islamic *sharia* since 2001 to regulate the life of the community including public services such as hospitals and this was supported by the government, *sharia*-based policies, and majority of its Muslim population, Islamic culture, customs, and Islamic-principles adopted by the societies. There is an urgent need for this study in compliance with government regulations, regional policies, and the people of Aceh to realize *sharia*-based services and due to the fact limited studies have been conducted on Islamic-based disaster response competencies of nurses.

The aim of this study is to develop the study protocol to examine the effectiveness of the interventions evidence-based and Islamic-based programs on nurses' competencies in disaster response in Banda Aceh hospitals. The qualitative phase in this study has been analyzed and used to develop modules for training intervention and instrument development. The interventions that have been developed are based on evidence and Islamic perspectives.

This study is expected to provide an intervention program with local wisdom approaches such as religion, beliefs, culture, and customs to provide care and support for disaster survivors. As nurses are the main responders to disasters, this study is very important. The findings are also expected to be significantly useful for nursing practice and education, particularly for the development and adoption of an Islamic-based disaster nursing curriculum throughout the world.

Declaration of Conflicting Interests
No conflicts of interest are reported in this study.

Authorship Contributions
CH drafted and conceptualized all the manuscript while HK, MY, and TT made revisions and criticisms. All authors agreed with the final version of the manuscript for publication.

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BNJ BELITUNG NURSING JOURNAL

STUDY PROTOCOL

THE EFFECTIVENESS OF LOCAL WISDOM-BASED COUNSELING TO PREVENT IRON DEFICIENCY ANEMIA AMONG PREGNANT WOMEN: A PROTOCOL OF A RANDOMIZED CONTROLLED TRIAL

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Abstract

Background: Anemia during pregnancy is a health problem that often occurs in developing countries. Local wisdom-based counseling is considered a new approach in preventing iron deficiency anemia among pregnant women by integrating cultural beliefs into antenatal counseling.

Objective: The study aims to measure the effectiveness of local wisdom-based counseling model among pregnant women to prevent iron deficiency anemia.

Methods: This paper outlines the protocol of a randomized controlled trial method. Two intervention programs will be developed, the local wisdom-based program and health-based counseling intervention program, and will be tested among 150 pregnant women from nine public health centers in one district of Aceh Province. Sample selection will be completed through a simple random selection process. The effectiveness of the interventions will be assessed using a self-report questionnaire and a hemoglobin test. Data will be analyzed using descriptive and inferential statistics.

Discussion: The expected outcome in this study is a significant difference in hemoglobin levels between both intervention groups. It is also expected that there will be an increase in knowledge, attitude, and behavior in the group who will receive local wisdom-based counseling intervention than the other group who will receive health-based counseling intervention. A local wisdom-based counseling approach is expected to give an effective model to reduce the prevalence of iron deficiency anemia among pregnant women. The effectiveness of this model may suggest the further application in the other regions.

Registration trial number: ACTRN12620000299909

KEYWORDS
anemia; iron-deficiency; hemoglobin; counseling; local wisdom; pregnancy

BACKGROUND

Pregnancy with anemia is a health problem that often occurs in developing countries, causing many negative effects (Stephen et al., 2018). Anemia in pregnant women is indicated by hemoglobin (Hb) level less than 11 gr/dl (Silverberg, 2012; World Health Organization, 2001) and frequently caused by nutritional deficiencies, especially iron (Achebe & Gafter-Gvili, 2017). It is estimated that 42 percent of pregnant women worldwide suffer from anemia, where 50% of them are caused by iron deficiency (Ayano & Amentie, 2018; Srour, Aqel, Srour, Younis, & Samarah, 2018). In 2018, about 48.9% of pregnant women in Indonesia were classified as anemia and more than 50% of them are caused by a deficiency in iron, folic acid, and vitamin B12 (Ministry of Health, 2018; Zahrulianingdyah, 2016). The data

published by Department of Health of Aceh Besar (2017) showed that the prevalence of anemia was 37.1% in Aceh Besar Regency.

The nutritional status of a pregnant woman is indirectly affected by the number of Antenatal Care (ANC) attendances, counseling from health workers, and the support from the husband (Vir, 2011; Wiradnyani, Khusun, Achadi, Ocviyanti, & Shankar, 2016). Health workers have a very important role to provide a proper antenatal care for pregnant women (Septiani, 2017). The observed cultural narrative has also been acknowledged significant for the pregnant woman's nutritional health (Vir, 2011; Wiradnyani et al., 2016).

In Indonesia, antenatal care service consists of communication, information and education, which are used as the counseling steps to

monitor and ensure nutritional adequacy of pregnant women, including the iron intake (Ministry of Health, 2010). The counseling is expected to encourage pregnant women to consume iron tablets to tackle the iron deficiency. Unfortunately, the availability of antenatal care in Indonesia only provides a pregnancy-related counseling. Further, the counseling relies on the mere limited information from the book published by the Indonesian Ministry of Health (Heru, Hasanbasri, & Hakimi, 2012; Septiani, 2017). To overcome the limitation of Indonesian antenatal care service, the locally observed cultural narratives can be integrated into antenatal counseling. Local culture is found to be a tool of social control, where it can be used to combat deeply-rooted bad behavior of insufficient iron intake during pregnancy (Kasnodihardjo & Kristiana, 2013).

Cultural value plays an important role in regulating life in various phases, especially during pregnancy where people consider pregnancy as a special event, where many rituals must be performed (Juariah, 2018). It is very important to integrate counseling with the local culture especially for people in Aceh because the majority of Acehnese pregnant women get information about pregnancy from cultural or religious sources (Iradukunda, 2020).

Acehnese is one of the ethnic groups in Indonesia that still adheres to cultural beliefs, located in the Sumatera. This region is known as the Porch of Mecca (the Holy City of Islam) and has the Islamic values that deeply attached to its people's daily lives, reflected on the people's mentality, behavior, and social order (Setyantoro, 2012; Usman, 2009). One of the Islamic values that is very influential on the continuity of pregnancy and trusted by the Acehnese people is the prayers and Qur'an recitation every night so that God will look after their womb. They also must listen and obey their husband following the words of **Rasulullah SAW** and that became one of the husband's support for his wife. Further, Acehnese people believe that all symptoms related to anemia are common during pregnancy so they should not worry about it. They have certain dietary restrictions that should not be consumed during pregnancy because it will affect the continuity of the pregnancy, such as the prohibition to consume crabs, shrimp and other seafoods, and to eat rambutan, pineapple, durian and papaya. There is also a belief to not consume crabs during pregnancy because the born baby will become naughty, and they may not consume satay (Batubara, 2015). These beliefs will cause pregnant women to be deficient in nutrients needed, causing anemia.

On the other hand, Acehnese culture also has a habit that supports pregnancy, where there is a custom of bringing nutritious food and fruits to pregnant women in the seventh month of pregnancy. They also believe that consuming *janeng* fruit (one of the tubers that are widely found in the Aceh Besar region) is beneficial for pregnancy because it contains iron. This attitude and behavior has a big effect on the pregnancy itself (Batubara, 2015). In Acehnese culture, the value of life is conveyed through poetry or called *narit/hadis maja* (Hoesin, 2018). There is a lot of *narit maja* in Acehnese culture that influences pregnant women's attitude and behavior, one of them is that Acehnese culture believe that headache is a sign of symptoms from lack of blood (anemia). It can happen because pregnant women do not consume foods rich in nutrients.

The aforementioned data above clearly indicated the importance to integrate the counseling with the Acehnese culture. Thus, this paper outlines a study protocol to develop an antenatal counseling model to tackle iron deficiency anemia during pregnancy by adopting the cultural approach. The intervention with the cultural reinforcement that is conducted in this research is expected to give a positive effect to the pregnant women. This study will assess the effectiveness of counseling interventions combined with local culture in preventing iron-deficiency anemia during the pregnancy, which the increase of hemoglobin will be taken as an indicator of the short-term success.

METHODS

Study Design
The study will employ a randomized controlled trial (RCT) with pre- and post-test control group design in order to identify the effectiveness of counseling intervention programs in preventing iron-deficiency anemia during pregnancy. The comparison will be conducted on an individual basis in both intervention and control groups' participants.

Participants
Study participants will be recruited from nine Public Health Centers (PHCs) in Aceh Besar Regency, Aceh Province, Indonesia. Initially, the nine PHCs will be randomly selected for the study and assigned into one of the two intervention programs (the Local Wisdom-based Counseling Intervention Group [LWCI Group] or the Health-based Counseling Intervention Group [HCI Group]) or as a control group. Then, a total of 150 participants (50 pregnant women for each group) will be recruited for the study from the selected PHCs. The PHCs recruitment process and assignment will be carried out using a simple random sampling technique (a lottery). Sample size was estimated using Cohen (2017) formula, with medium effect size and a power of 0.08, and confidence level at 95%. Sample criteria will include pregnant women with the following criteria: (1) in the second trimester of pregnancy; (2) having no complications; (3) willing to participate in this study; (4) Acehnese, and; (5) domiciled in the Aceh Besar Regency. Pregnant women with complications will be referred to public services or doctors and not included in this study.

Instruments
A self-developed questionnaire will be used to measure program effects on participants' knowledge, attitude, and behavior. The questions are specifically prepared for the use in this study based on the program intervention materials and in line with the seven factors proposed in the Leininger Concept. The content validity test of the questionnaire has been conducted involving three experts from relevant area. Comments from the experts had been used to improve the validity of the questionnaire. The reliability test with the critical value of .361 involving 30 pregnant women will be conducted before the intervention programs started. Overall, the questionnaire is divided into several sections as follows.
1) Participants' characteristics; this section will assess participants' characteristics (such as age, religion, job, parity, obstetric status, family income, last education) and data about their current pregnancy (gestational age, birth spacing, weight, upper arm circumference).
2) Knowledge about iron deficiency anemia during pregnancy; section 2 will measure the knowledge of pregnant women about iron-deficiency anemia during pregnancy. This section will consist of 20 multiple-choice questions related to knowledge about the causes, signs, symptoms, and effects of the iron deficiency anemia, as well as the food

sources and foods that support or inhibit the absorption of iron in the body. The total score for this variable ranges from 0 to 20 (1 point for the correct answer and 0 point for the wrong answer), with high scores reflect the individual has good knowledge in preventing iron-deficiency anemia in pregnancy.

3) Attitude toward iron deficiency anemia during pregnancy; section 3 will measure the pregnant women's attitude toward iron deficiency anemia during pregnancy. This section will comprise 20 statements and will be measured by a five-point of Likert scale, ranging from 5 (strongly agree) to 1 (strongly disagree). The total score for this variable ranges from 20 to 100, with high scores reflect the individual good attitudes in preventing iron-deficiency anemia.

4) Behavior about iron deficiency anemia during pregnancy; the last section comprises questions to measure the participants' behavior about iron-deficiency anemia during pregnancy. This section will consist of 17 statements related to the daily activities of pregnant women that induce iron-deficiency anemia, routine antenatal care attendance, and husband's support during pregnancy. The variable will be measured by multiple-choice questions with four possible answer choices (+4 point for the best choice and +1 point for the worst choice). The total score for this variable ranges from 17 to 68, with high scores reflect the individual good behavior in preventing iron-deficiency anemia during pregnancy.

The questionnaire formulation, development process, content, and program trials are presented in Figure 1 as follows.
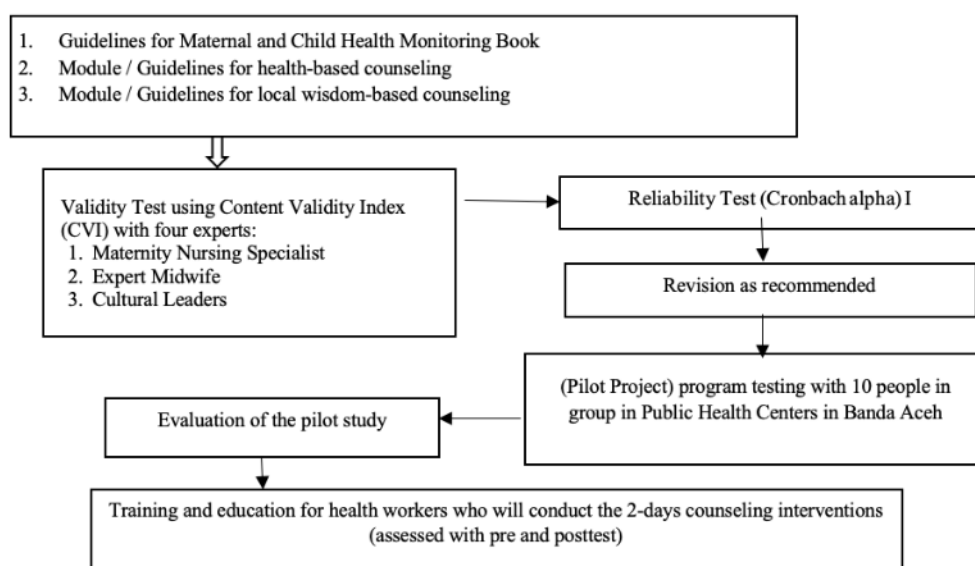

Figure 1 The intervention formulation, content, and program trials

5) Haemoglobinometer; haemoglobinometer will be used to measure the participants' hemoglobin levels. This measurement will be completed by Easy Touch GCHb, which is a digital health device produced by Nesco Multicheck. The Haemoglobinometer used in this study (Hb Meter) have shown high validity and reliability scores at .91 and .80, respectively (Ahmad et al., 2015; Pawlowski et al., 2015).

Program Intervention
Several activities, including an extensive review of relevant literatures, focus group discussions, observations, and consultation with experts in the field, had been completed in the development process of the intervention programs. Detail information about the implementation process of the intervention programs and how the results will be achieved are presented in Figure 2.
The Local Wisdom-based Counseling Intervention Group (LWCI Group) will provide participants' information about iron deficiency anemia prevention efforts appropriate to pregnant women in Aceh. This includes program introduction and research explanations (Session 1); Mutual trust building and pregnancy overview (Session 2); Counseling on iron deficiency anemia and explanation about Hb examination with the cultural approach (Session 3); Counseling on the iron tablets intake with the cultural approach (Session 4); Counseling on husband's

supporting role for the iron tablets intake control with the cultural approach (Session 5); Review, follow up, and Hb examination (Session 6) (Sehhatie, Mirghafourvand, & Havizari, 2019). The program delivery method will include group counseling, with each group will consist of 7-9 participants. The intervention will be given to the participants for over 1 month (6 sessions) with 1-week intervals between sessions. The duration for each session will be 45-75 minutes.

The Health-based Counseling Intervention Group (HCI Group) was designed by combining WHO and GATHER counseling concepts (Philipines Department of Health, 2006; World Health Organization, 2009). Several information, including program introduction and research explanations (Session 1), mutual trust building and pregnancy overview (Session 2), counseling on iron deficiency anemia and explanation about Hb examination (Session 3), counseling on the iron tablets intake (Session 4), counseling on husband's supporting role for the iron tablets intake control (Session 5), and review, follow up, and Hb examination (Session 6) will be provided to participants. Program delivery method will include group counseling, with each group consists of 7-9 participants. The intervention program will last over 1 month (6 sessions) with 1-week intervals between sessions (Sehhatie et al., 2019). The duration for each session will be 45-75 minutes.

Participants in the control group will receive a standard antenatal counseling, based on information in the Maternal and Child Health Books published by the Indonesian Health Ministry. The duration, session number, and interval are the same as used for the LCWI and HCI above.

The program providers (counselors) in this research will be nurse-midwives who work at the selected PHCs. The providers will be recruited through a purposive sampling method. The inclusion criteria will include a diploma degree in midwifery/nursing and have working experience in a maternal and child health room as the nurse-midwife and in the antenatal services. One-day training will be given to providers, to ensure that they will be able to implement the interventions appropriately. Also, program modules will be provided to all providers.

Data Collection

A pre-test, post-test, and follow-ups measurements will be conducted. Pre-test will be administered before the first session of the intervention program started. Then, participants will receive the same test at the last session of the intervention (session 6). The follow-up will be conducted at 15 days and one month after the intervention program completion. The participants will also receive a hemoglobin measurement during the tests. All the tests will be carried out by the researchers, research assistants, and program providers in the selected Public Health Centers.

Data Analysis

IBM SPSS Statistics 23 will be used to analyze the data. Descriptive and inferential statistics will be completed to assess the intervention programs effects on participants' knowledge, attitude, behavior, and hemoglobin levels. Descriptive statistics will include frequency, percentage, mean and standard deviation, as appropriate. While the inferential statistic will include t-test and one-way ANOVA.
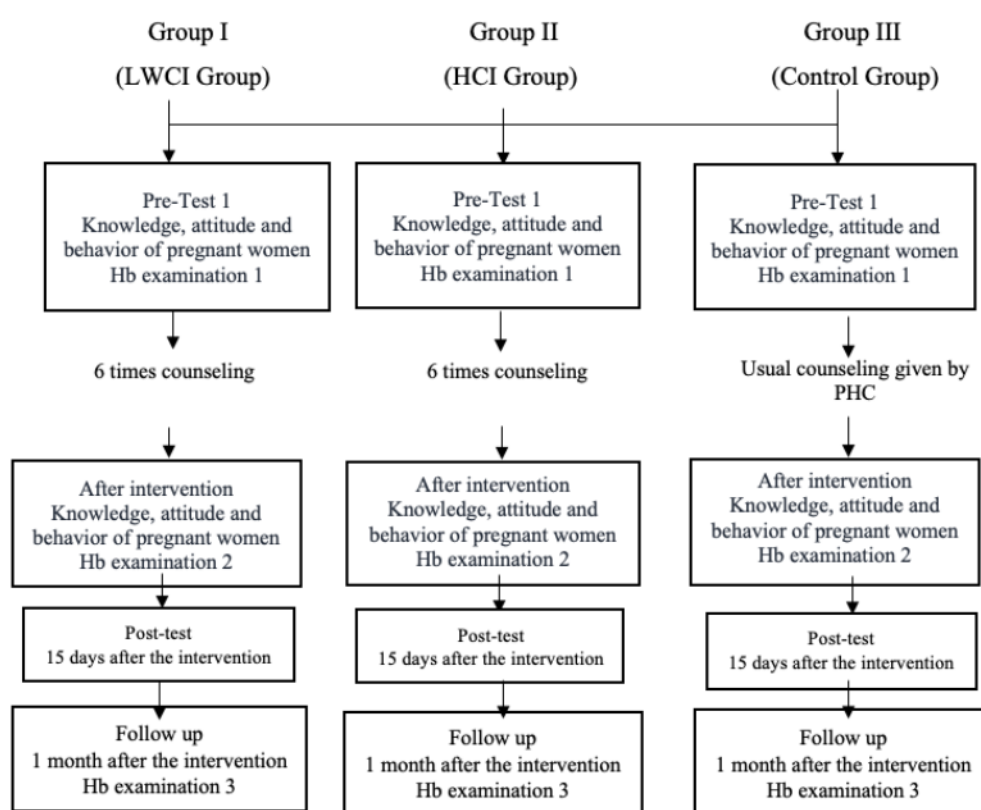

Figure 2 Development of the RCT interventions

Ethical Consideration

The study protocol was approved by the Nursing Ethics Committee of Nursing Faculty, Universitas Syiah Kuala (Approval ID: 113004111218). All participants will aware of the purpose of this study, supported by a signed informed consent document.

DISCUSSION

The incidence of iron deficiency anemia among pregnant women in Aceh especially Aceh Besar Regency requires serious attention and concrete action from the nurse-midwives who interact directly with the pregnant women through antenatal care. The nurse-midwife plays an important role in supporting pregnant women during the antenatal period, so they can carry out the pregnancy well and avoid complications, especially anemia (Septiani, 2017). Since Acehnese people strongly believe their traditional culture, we try to develop a counseling model that is based on the local wisdom, by integrating the aspects of Acehnese cultural beliefs into the pregnancy counseling program. The counseling program specifically designed to tackle the problem of iron-deficiency anemia during pregnancy.

The purpose of this study is to evaluate the local wisdom-based counseling in preventing iron-deficiency anemia during pregnancy,

where the increase of hemoglobin level is taken as the indicator. The positive change of knowledge, attitude, and behavior of pregnant women after the intervention is completed, are also taken as the successful indicators.

This local wisdom-based counseling will be implemented by the trained nurse-midwives in Public Health Centers in Aceh Besar Regency. The counseling will be conducted at every antenatal visit. We hope this model can be an effective way to reduce the iron deficiency anemia prevalence among pregnant women, thus suppressing maternal mortality as well as morbidity. The aims of this model also match the agenda of the Sustainable Development Goals (SDGs) in 2015-2030 (IAEG-SDGs, 2016). If this model is effective in preventing iron-deficiency anemia among pregnant women, this model also can be applied in other areas by adopting different observed cultures.

CONCLUSION

Local wisdom-based counseling in pregnant women has been designed in this study. It further will become a practical solution to overcome various problems in pregnancy, especially iron deficiency anemia. This project can be applied in a series of antenatal service activities in the other regions, by adopting the locally observed cultures.

Authorship Contribution
The main author (DD) is the person who develop the theory and intervention plan, and also the person who conducts the research. NT, KH, and TT is the team that conceived the presented idea, directed the design of the study, and supervised the research conducted.

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BELITUNG NURSING JOURNAL

CASE STUDY

THE ROLE OF CHLOROQUINE AND PSYCHOSOCIAL SUPPORT IN A PATIENT WITH COVID-19: A CASE REPORT IN INDONESIA

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Abstract

Background: COVID-19 is caused by the 2019 novel coronavirus (2019nCoV) which was identified on 7 January 2020 by the Chinese Center for Disease Control and Prevention (CDC) from the throat swab sample of a patient. This novel coronavirus is phylogenetically similar to the severe acute respiratory syndrome coronavirus (SARS-CoV) that caused SARS outbreak in 2002.

Objective: To describe a case of a COVID -19 patient in a hospital in Indonesia.

Case Report: A 55-year-old male was admitted to the Emergency Department of Arifin Achmad Hospital on 31 March 2020. He was transferred from a private hospital after three days of hospitalization. Previously, he came to another hospital complaining palpitation, cough, having difficulty of breathing, and intermittent fever. He then was advised to be admitted and tested for a COVID-19 test. At first, he did not admit to having traveled recently. After three days, the pharyngeal swab test was received confirming that he was contracted with COVID-19. The patient was then transferred to our hospital and hospitalized for ten days.

Discussion: The patient was fully recovered after ten days of treatment with antiviral drug namely Oseltamivir 75 mg orally twice a day and chloroquine phosphate 500 mg twice a day orally. The combination of both drugs showed an immune-modulating activity which might increase its antiviral effects. Therefore, the use of this agent in COVID-19 patients might be worthwhile. During hospitalization, reducing patient anxiety was also one of our main goals as many studies has found that anxiety is associated with poor immune system.

Conclusion: This case report demonstrated the current situation in Indonesia where people become reluctant to fully disclose their symptoms or travel history to the health care workers, which may put many others on the risk of being transmitted with the virus. Although the proven efficacy of chloroquine is still lacking, it has become the favorable choice at this moment as indicated in our study. Reducing the patient's anxiety towards the disease may help to speed the patient's recovery. Also, we need to educate public that COVID-19 might be a life-threatening disease but it is also a treatable disease.

KEYWORDS

covid-19; chloroquine; oseltamivir; coronavirus; psychosocial support; Indonesia

BACKGROUND

The COVID-19 outbreak has caused devastated impacts on health as well as economic growth globally. As per 14 April 2020, 1.844.863 confirmed cases were reported by World Health Organization (2020) with 117.021 deaths which the highest number of the case were reported in the United States. The epidemic has been expensing to at least 201 countries including Indonesia, which has a significantly higher mortality rate about 10.9% in April 2020 (Ministry of Health of the Republic of Indonesia, 2020). Advanced age, or > 65 years old, and having comorbidities such as hypertensions, diabetes mellitus and malignancy may increase the risk of deaths in COVID-19 patients (Guan et al., 2020; Wang et al., 2020a). In Indonesia, the outbreak has been more devastating with the massive social stigma and discriminatory behaviors towards COVID-19 patients and people with

suspected corona virus infections. People become reluctant to fully disclose their symptoms or travel history even to the health care worker as they fear for rejection and discrimination. Stigmatization is common in newly identified infectious diseases or diseases associating with negative behaviors (Rahmawati & Pertami, 2019). We report a 55-year-old COVID-19 male who was fully recovered after 10 days of treatments. We aim to educate the public that COVID-19 might be a life-threatening disease but it is also a treatable disease.

CASE PRESENTATION

A 55-year-old male was admitted to the Emergency Department of Arifin Achmad Hospital on 31 March 2020. He was transferred from a private hospital after three days of hospitalization. Arifin Achmad

Hospital is the main referral hospital for COVID-19 cases in Riau province, Indonesia. Initially, he came to the private hospital complaining palpitation, cough, having difficulty of breathing, and intermittent fever. The physician then advised him to be admitted and tested for a COVID-19 test. At first, he did not admit to having traveled recently. After three days, the pharyngeal swab test was received, confirming that he was contracted with COVID-19, and then he admitted that he has just arrived form Jakarta several days earlier. Upon arrival at the referral hospital, the patient was slightly hypertensive with blood pressure 156/92 mmHg, heart rate 101 bpm, respiration rate 20 bpm, body temperature was normal 36.4°C, and oxygen saturation 96% while the patient was breathing ambient air.

INVESTIGATIONS AND TREATMENTS

At the Emergency Department, we received a chest-ray from the previous hospital (**Figure 1**) showing a bilateral diffuse shadow consistent with bronchopneumonia. A complete blood count was also received with unremarkable results except for low lymphocyte count

(17.5%), low hemoglobin level (9.8 g/dl), low hematocrit level (32.2%), and high thrombocyte level (540 10^3/µl) (**Table 1**).
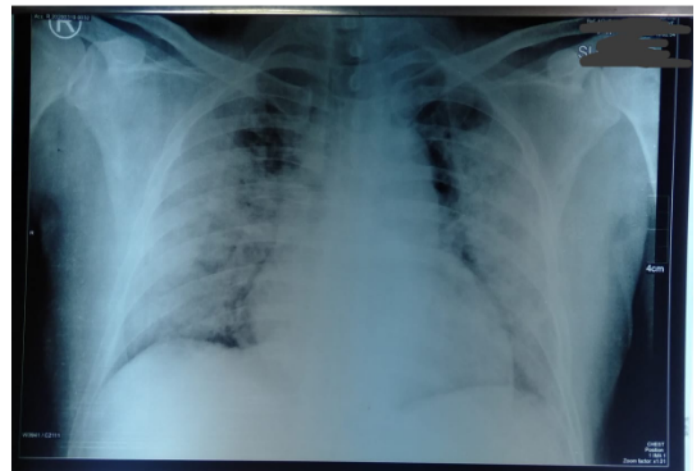
Figure 1 First X-ray Obtained Upon Arrival at the Emergency Department

Table 1 Laboratory Results

Measure	Normal Range	Hospital Day 1	Hospital Day 3	Hospital Day 9
Hemoglobin (g/dl)	13 - 17	9.8	10.6	11.6
Hematocrit (%)	45 - 52	32.2		
Thrombocyte (10^3/µl)	150 - 400	540	540	443
Leucocyte (10^3/µl)	4 - 11	9.3	8.93	
Basophil (%)	0.5 – 1%	0.4	0.4	
Eosinophil (%)	1 - 4	1.3	1.3	
Neutrophil (%)	40 - 60	69.9	69.9	
Lymphocyte (%)	20 - 40	17.5	17.5	
Monocyte (%)	2 -8	10.5	10.2	

Table 2 Results of Real-Time Reverse-Transcriptase PCR Testing for the 2019-nCoV

| PCR Testing	31 March 2020	2 April 2020	4 April 2020
Throat Swab	Positive C01.1477	Negative	Negative

The patient was given oxygen 4 liter/minute delivered via nasal cannula. The attending doctor prescribed ringer lactate 1500 ml for 24 hours, meropenem 2 x 1 g for 6 days, levofloxacin 1x750 mg for 6 days, omeprazole 2x 40mg, resfar in 100 cc of Nacl 0,9% over 2 hours. The patient was also prescribed vitamin C, oseltamivir 2 x 75 mg/PO, nitrokap 2x0,5 oral, and plavix 1x75 gr. The patient was located in a single-occupant *negative-pressure room* at the infectious disease department.

On Day 2, the patient complained of intermittent fever and dry cough. His blood pressure was still hypertensive with 149/100 mmHg. As the patient reported a decrease in dyspnea, we reduced the oxygen administration to 3 liter/minute. The highlighted treatment on day two is that the patient was started on Chloroquine phosphate 2 x 500 mg. The patient was also prescribed paracetamol 3 x 500 mg per oral, vitamin C reduced to 400 mg and IV fluid ringer lactate reduced to 1000 ml per 24 hours.

On Day 3, the hemoglobin level increased to10.6 g/dl with other laboratory results was unremarkable (**Table 1**). As the patient complained of difficulty of sleeping during the night, the doctor

prescribed alprazolam. The patient was being swab again for COVID 19, which the result came back negative on 4 April 2020 (**Table 2**).

The hemoglobin kept increasing every next day, and the patient also experienced an increasing relief from dyspnea and had a good sleep at night. We performed a chest-x-ray on the patient which showed an improvement (**Figure 2**).
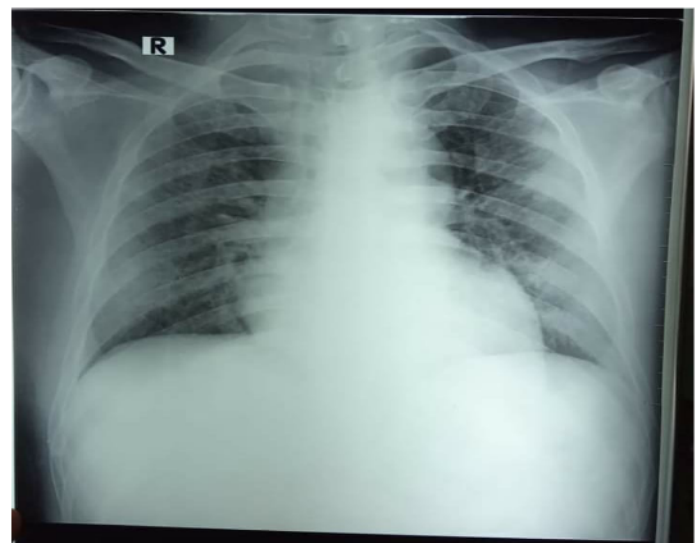
Figure 2 Supine Chest-Ray on 6 April 2020 Showing A Significant Decrease in the Lobe Infiltration

On Day 9, the patient's hemoglobin level was 11.6 g/dl, thrombocyte count was 443000 /µl, and the liver as well as renal function tests was in a normal range. The swab test that was taken on Day 5 of hospitalization indicated a negative COVID 19. We also performed chest-X-ray that can be seen in **Figure 3**. The patient was ready to be discharged.
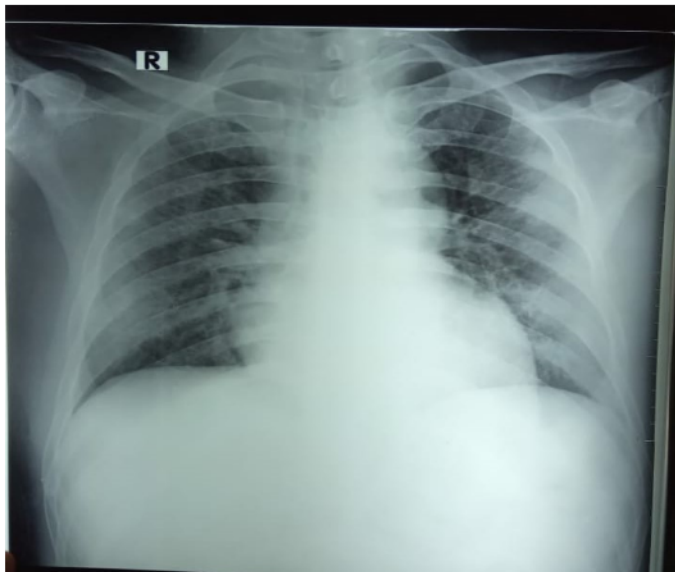
Figure 3 Supine Chest-X Ray taken on 8 April 2020 Showing A Normal Result

PSYCHOSOCIAL SUPPORT

During hospitalization, reducing patient anxiety was one of our main goals. Many studies has found that anxiety, panic and depression in hospitalized patients associate with poor immune system (Chamberlain et al., 2019; Lutgendorf et al., 2008). A full covered from head-to-toe with personal protective equipment (PPE), and fear of contamination, seemingly did not make all the nurses and the doctors hesitant to make a good and therapeutic conversation with the patient. Support system from the patient family was also intense. Each day, his family delivered his favorite food, drink, or stuffs he needed, such as books and a Holy Quran. They kept on communication by video calls. He believed that everything happened on him is by God's permission. He would rarely complain about his conditions and showing his acceptances. As a Moslem, he never skipped prayer 5 times a day and pray that ALLAH, the Almighty God, will end his suffering. All these supportive environments from doctors and nurses, from his family, as well as his positive attitude toward his disease, successfully made him passed the most critical condition in his life.

DISCUSSION

COVID-19 is caused by the 2019 novel coronavirus (2019nCoV) which was identified on January, 7th 2020 by the Chinese Center for Disease Control and Prevention (CDC) from the throat swab sample of a patient. This novel coronavirus is phylogenetically similar to the severe acute respiratory syndrome coronavirus (SARS-CoV) that caused SARS outbreak in 2002, and therefore, it has been identified as SARSCoV-2 by the International Committee on Taxonomy of Viruses (ICTV) (Ahn et al., 2020; Chen et al., 2020; Gorbalenya et al., 2020). The origin of 2019nCov remains uncertain but it has been reported that the virus might be transmitted to human by bat and pangolins (Liu et al., 2019; Zhou et al., 2020). The main routes for human-to-human transmission are respiratory droplet and contact. However, studies found that SARS COV-2 could also be detected in the urine and stool samples (Chan et al., 2020; Holshue et al., 2020; Jin et al., 2020). **Figure 4** describes pathogenesis of COVID 19.

Our patient came to the hospital complaining of intermittent fever, unproductive cough and dyspnea. The most distinctive manifestations of COVID-19 include fever, cough and shortness of breath (Chen et al., 2020; Holshue et al., 2020; Huang et al., 2020). Although some people contracted with the virus may show mild symptoms or even asymptomatic, many patients developed severe complications at the early stage of the infection. These include dyspnea, acute respiratory failure or acute respiratory distress syndrome (Chen et al., 2020; Lai et al., 2020). Other common manifestations include fatigue, myalgia, nausea and vomiting and shore throat. Interestingly, the SARS COV-2 affects male more than female, with approximately 60% of the COVID-19 patients are male. The highest risk for developing severe aggravation is Chronic Obstructive Pulmonary Disease (COPD). The risk of deaths also increase in patients with hypertension, diabetes mellitus, malignancy and chronic kidney disease, cerebrovascular diseases and cardiovascular disease (Chen et al., 2020; Wang et al., 2020a).

We would like to emphasize that our patient was administered antiviral drug namely oseltamivir 75 mg orally twice a day and chloroquine phosphate 500 mg twice a day orally. A literature review conducted in 2020 has found that Oseltamivir was administered empirically to a large proportion of COVID-19 patients in China. However, until now the efficacy if this agent in COVID-19 patients has not been proven (Sanders et al., 2020). Although the therapeutic efficacy and safety of many antiviral drugs are still need to be confirmed by clinical trial in COVID-19 patients, antiviral drugs have been widely administered to patients with COVID-19 and showing promising results (Ahn et al., 2020).

To date, other than supportive care, there is no specific pharmacological treatments that have already proven effective in patients with COVID-19. Chloroquine has been long used for the treatment of malaria and autoimmune diseases. But, it also has potential wide-range antiviral effect that is inhibiting endosomal acidification, a process needed for cell fusion of the virus and host (Savarino et al., 2006; Yan et al., 2013). Although a randomized control trial conducted in 2011 have found that chloroquine does not prevent influenza infection, authors from China argued that the drug has showed acceptable safety and efficacy in managing patients with COVID-19 associated pneumonia in multicenter clinical trials conducted in China (Paton et al., 2011; Rubin et al., 2020; Yazdany & Kim, 2020).

Chloroquine shows an immune-modulating activity which may increase its antiviral effects. It is distributed thought the body including the lung after administered orally. Furthermore, a long-term use of chloroquine is safe and effective against many pathogens. Therefore, the use if this agent in COVID-19 patients might be worthwhile (Cortegiani et al., 2020; Singh et al., 2020; Wang et al., 2020b).

In the midst of Coronavirus pandemic, most people are developing a sense of cautious, fear to panic (Depoux et al., 2020). These feeling can

be tapering off or be magnified by misinformation on social media, ranged from good news, hoax, severity of the disease, and mortality number (Larson, 2018)). Healthy people may experience a depressing feeling or panic, let alone the people who are diagnosed with COVID-19. Stigma and social rejection towards people suspected with COVID-19 has made this outbreak in Indonesia more devastating (Gunawan et al., 2020). We see that people are trying to increase their immune system by consuming the immune booster, vitamin, and buying personal protective equipment. However, we realize the important of building a happy feeling to increase the immune system even faster. As a virus keep evolving themselves to easily enter and destroy human, so should human. They must prepare their body with specific weapon to counter the attack with lot of ingredient, in which, sad, frustrate, negativity is not included. We do inevitably face unwanted event every day. However, it should not be long. We should adjust the situation with positivism, acceptance, resilience and humor (Bhardwaj & Agrawal, 2015). These are a good nutrient for building a strong immune. In this case, doctors, nurses, health worker and the patient seemingly hand-in-hand to make that happen.
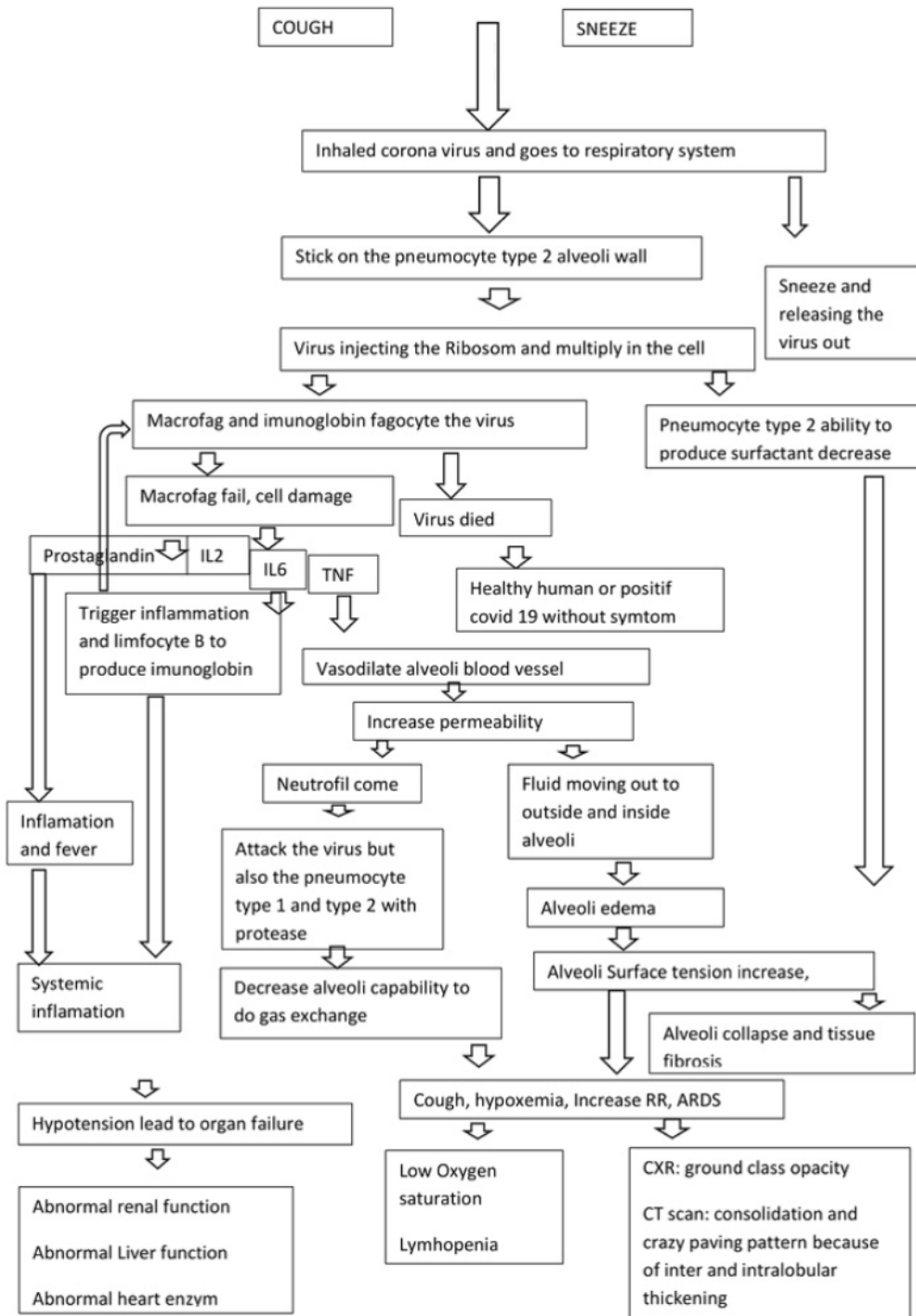
Figure 4 Pathogenesis of COVID-19 (Ahn et al., 2020; Chen et al., 2020)

CONCLUSION

The COVID-19 pandemic has brought fear and panic everywhere. People lied about their travel as they do not want to be suspected and stigmatized with the disease. The reported mortality rate from around the world, not to mention hoax in the social media, uncontrollably spread fear. People are expecting the good news related to the cure. Even though the proven efficacy of chloroquine is still lacking, it has been the favorable choice right now. Indonesia is one of the countries where chloroquine is used as one of the main treatments for patients with COVID-19. Chloroquine detrimental effect on cardiovascular were not seen in our case. The acceptance and continuing supports from all the health workers and family might help to improve the patient's condition.

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Authorship Contribution
A.D collected data, analyzed data, drafted manuscript, and administration. I.R analyzed data, drafted manuscript, reviewed the literature, designed the study, developed discussion. Both authors agreed with the final proof of the manuscript.

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