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BNJ welcomes submissions of original research, review article, concept analysis, perspectives, letter to editors, research methodology papers, study protocol, case studies, and guest editorial on various clinical and professional topics.

We also welcome "negative" results (i.e., studies which do not support a hypothesized difference or association) provided that the design was robust. Discussion papers that elaborate issues and challenges facing health care in one country are welcomed, provided the discussion is grounded in research-based evidence. The authors are addressing a global audience and a local one.

Nurses and midwives write most papers in BNJ, but there are no constraints on authorship as long as articles fit with the expressed aims and scope. BNJ's intended readership includes practicing nurses and midwives in all spheres and at all levels who are committed to advancing practice and professional development based on new knowledge and evidence; managers and senior members of the nursing and midwifery professions; nurse educators and nursing students; and researchers in other disciplines with interest in common issues and inter-disciplinary collaboration.

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**EDITORIAL**

# THE ADVENT OF ANTHROPOMORPHIC INTELLIGENT MACHINES: A BOON TO NURSING OR ITS NEMESIS?

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robotics; artificial intelligence; creativity; nursing; humans; job description; inventions

*The issue of whether there will be enough jobs in the future receives substantial attention, mainly because of the well-publicized experiences of manufacturing workers whose jobs have been displaced by the introduction of robotics. It also reflects a long-held societal anxiety that machines will replace us (Casey, 2019)*

## INTRODUCTION

Technologically-savvy individuals are needed to seamlessly merge professional qualities as skillful and astute decision-makers. With this expectation, healthcare institutions prefer workers who have excellent technical skills in addition to having transformative insights toward innovative practices and abilities to practice their profession with multiple functionalities, especially with burgeoning healthcare industry demands (Gupta, 2019). In the later part of the 20th century, an industrial revolutionary mandate swept through the human world, all dictated by the enchantment to technological innovations. In addition, there was a clamor for workers to be multitaskers approached through re-skilling and retraining programs for existing workers so that they would function more efficiently with varying tasks. In doing so, the ratio of production to the sufficiency of outcomes has been improved by the adequacy of existing worker placements.

Rather than insufficiency as a result of a pre-assigned work-focused limitation of specified jobs for each worker, multi-tasking and retraining have efficiently altered work processes with less or no new personnel. For example, at one point in the fast-food business industry, cashiers received orders and payments and prepared these orders to be served to customers. However, during downtimes with fewer customers, a modification of work detail happens; the cashier may pick-up housekeeping/janitorial work, clean tables, mop floors, etc. This type of multi-tasking is not a new work practice today; instead, it has become the standard of work practice.

## AIM

The purpose of this article is to describe the influence of technological advancements such as anthropomorphic intelligent machines on nursing as a professional practice today and in the future.

## RETRAIN AND RETAIN CLINICAL AND NONCLINICAL WORKERS

Employment in healthcare institutions is not exempted from this shift in perspective. One thing is evident; nurses are now engaged in multiple tasks and have many expected nursing practice chores. As you may have observed in your last visit to hospitals or other healthcare institutions, at some point in the nurse's practice assignment, nurses function over and above their "job descriptions." What you will tend to see is nurses executing activities that are expectations from an all-encompassing statement detail in their work descriptions, i.e., including all other activities that are deemed essential and critical towards assuring quality healthcare.

Retrained and re-skilled to perform these tasks that other healthcare personnel are expected to perform, except, of course, those of physicians, nurses can perform efficiently and effectively, such as tasks of transporters - taking patients for imaging procedures, etc. Other times, nurses are also assigned to perform housekeeping routines, especially when an institutional job description of housekeeping and janitorial workers are limited to those that can only be performed when the room is safe for them to clean, such as free from contaminated tubes

and gadgets, and portable monitors. However, nurses ought to be freed up to address the many missed nursing needs that are well documented, such as teaching, comforting, assessing beyond the chief complaint, discharge planning, etc., rather than regularly assigned custodial tasks

One of the biggest apprehensions of healthcare administrators is the integration of automation in clinical operations while at the same time decreasing the demand for more personnel. However, as Aoun (2017) has declared in his book, "Robot Proof: Higher Education in the Age of Artificial Intelligence," strategies are needed to motivate efficiency and workplace satisfaction, such as a movement to "keep learning" and engage in educational opportunities. Although such strategies were found to influence retention and satisfaction of employees, not only furthering and continuing educational opportunities should be considered, but also addressing "employee strengths" through the recognition of their creativity, entrepreneurship, and teamwork.

This, in turn, can "inspire collaboration" in particular situations, such as involving advanced technologies like robots, so that instead of denying or refusing to work with technological advancements to mitigate workload, health care workers can be informed of the benefits of robotic technologies. This kind of collaboration can enhance work productivity, and job security can be emphasized through the distinction of working with colleagues attuned to robotic technologies and the utility of assistive healthcare robots as adding value to their practice.

## UTILITY OF TECHNOLOGIES IN HEALTHCARE SITUATIONS

Intelligent technological machines or AI-enabled robots impact human living in multifarious ways, e.g., transcending human frailties (Locsin et al., in press), enhancing social transformation, and liberating persons from the drudgery of human labor. Regardless, advancing technologies continue to impact healthcare through machine learning and deep learning by facilitating the identification and treatments of diseases and imaging processes such as Computerized Tomography scans and radiological data. So, what does all this mean for the future of nursing practice? While technological advances are being used to improve diagnosis and treatment, technological advances like robots are not effectively utilized in caring practice, such as assistance with toileting, ambulation and general range of motion, feeding, social engagement, and health teachings, etc.

As reported by the Brookings Institute, the automation potential of three medical occupations within the next decade is critical, 8% for home health aides, 29% for registered nurses, and 54% for medical assistants (Muro et al., 2019).

## IMPLICATIONS FOR NURSING WORKFORCE

Nurses need to embrace automation rather than fear it. In an interview with *The Medical Futurist*, Richard Booth suggested that nurses need to embrace automation rather than fear it (Workforce Partnership Staff, 2019). Betriana et al. (2020) also claimed that it is best to view healthcare robots as significant partners rather than perceiving them as threats to nursing. Similarly, the Head of the Robotics Group at MIT, Julie Shah, agreed that robots could be effective partners-in-nursing when they can comprehend patient information and, with vigilance, inform nurses about patient care needs (Metz, 2018).

In practice, employee training and cross-training on cardiopulmonary resuscitation, nasogastric tube insertion, and other clinical procedures can be achieved through augmented reality processes. The Royal College of Nursing has asserted that by 2020, every UK nurse should be an e-nurse (Royal College of Nursing, 2018).

One of the main objectives in generating transformative nursing practice with technologies in healthcare is to enable nurses to act decisively in "real-time" with all the data available as provided by intelligent technological machines (Workforce Partnership Staff, 2019). A newer version of meaningful preceptorship activities in practice settings will need to be entertained.

## DISASTER OR PROGRESS?

Decades ago, innovations to routine activities were relegated to simple tasks such as floor vacuums with gadgets that have dependable sensors. Because of these innovations replaced workers could simply educate and re-skill themselves or be provided opportunities to do so, thereby providing the capabilities to increase their work value and outcomes. However, frequently, their retraining and re-skilling to do more tasks are demanded because of the technologized chores that decrease human work demands. Contemporary technologies threaten to replace higher-level human decision-making involving complex analytic processes and judgment-based skill-sets. Computers are becoming faster, producing more precise outcomes, thereby creating legitimate concerns for human-based work. The reality of robotics replacing many service and manufacturing positions supports the popular concern regarding the kinds of jobs, if any, that human nurses will be left to do.

Locsin and Ito (2018) in their article, "Can humanoid nurse robots replace human nurses?" have clearly articulated this concern. With a conditioned response dependent on the ontology of current and future nursing driving the answer to this question, they claimed that if nursing will be defined and described as tasks to be completed, then the obvious answer is clearly a resounding yes. Tasks can be translated to programmable instructions, uploaded to drive machine operating systems, thereby allowing more precise activities from intelligent healthcare robots in the performance of these nursing tasks. When this scenario describes the work of nurses that is defined simply as completion of tasks, then humanoid nurse robots can replace human nurses.

This is an imperative situation without obvious answers, but whether intelligent anthropomorphic machines can cause disastrous changes in nursing practice or lead it towards a highly motivated illustrious disciplinary work that can respond to human demands for quality health care remains a revolutionary question. It is believed that technological advancements in nursing will only be meaningful if nurses and persons being nursed can seize the benefits of AI technology.

One promising development is the continuing appreciation and utilization of the benefits of theory-based nursing practice. The theory of "Nursing as Caring" (Boykin et al., 2001) has grounded many more middle-range and practice theories such as "Technological Competency as Caring in Nursing" (Locsin, 2005, 2016), "Transactive

Relationship Theory of Nursing" (TRETON) (Tanioka, 2017), "Model of Robot Transactive Relationships with Human Nurses as Intermediaries" (MIRTH) (Osaka, in press). Theories such as these provide processes of nursing practice that also incentivize human caring in a highly technological world.

**Declaration of Conflicting Interest**

There is no conflict of interest to declare.

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**EDITORIAL**

# COVID-19: PRAISE IS WELCOME, BUT NURSES DESERVE A PAY RISE

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COVID-19; pandemics; humans; Indonesia; salaries and fringe benefits; nurses; burnout

World Health Organization had designated 2020 the year of the nurse long before the COVID-19 pandemic. They were not joking; nurses are in the spotlight playing a critical role today, especially in the testing, treatment, and containment of the virus (Kennedy, 2020). What nurses perform today will influence how our health care system looks in the next ten years.

Unfortunately, the COVID-19 cases In Indonesia continue to rise. As of 2 October 2020, 295,499 people confirmed positive with COVID-19, 221,340 recovered, and 10,972 died (Ministry of Health of Indonesia, 2020). It is sad news that we see every day. Conspiration theory, economic crisis, inconsistent lockdown rules, confusing and expensive rapid and swab test, and other factors have become the hot topics in the community during the pandemic. The pros and cons related to these issues are less likely to reach the end. The majority of Indonesian people today do not care if the virus may infect them; even some people gently quoted a phrase of Charles Darwin, *'survival of the fittest,'* to describe today's condition as a natural selection (George et al., 2019). *'If you are strong and able to adapt, you survive. But, if you are weak, you will just be disappeared. There will be no more lockdown; feeding family is the only matter'* (Hardiyanto et al., 2020; Sari, 2020).

Consequently, Indonesia's healthcare system's capacity, especially hospitals, has reached a limit to accommodate the patients. Although supplies of personal protective equipment (PPE) may have improved, healthcare workers cannot avoid unnecessary risks. Burnout, stress, and depression lead to a low immune system that makes them more vulnerable to the virus. As of 29 September 2020, 92 nurses, 181 medical doctors, and nine dentists passed away in the battle of COVID-19 in Indonesia (Bernie, 2020). We do not know how many healthcare workers will die if this situation is not under control.

In response to the deaths of healthcare workers in Indonesia, the community recognizes and labels them as heroes. It may be well-meaning, but they do not want plaudits; clapping for them during the pandemic will not pay their bills (Munn, 2020). Nurses deserve a pay rise considering the COVID-19 cases do not seem to end quickly. However, giving more salary is one form of appreciation of nurses' works (Gunawan, 2019). Considering the risks of losing their own life and family at home, arguments and explanations about why nurses deserve and need a pay rise are not necessary, not now (Munn, 2020). The government should pay more attention and acknowledge the nurses' value. We do not want to see more nurses and other healthcare workers in Indonesia died in the battle due to fatigue caring for patients while thinking of another side job to get more money for their family members.

*'How much salary that nurses get per month in Indonesia?'* That is the next question. Compared to the other healthcare workers, the nurses' salary is much lower. The salary among Indonesian nurses is classified based on employee status, namely government and non-government employees. For nurses who are government employees, their salary meets minimum wage in each region in Indonesia, around 200 USD – 400 USD per month. The salary increases based on their functional classification, from low (I/A-D) to high classification (IV/A-D) (Gunawan, 2019). While those who are not government employees, their salary is less than the standard, approximately 100 USD – 165 USD per month without any incentives (Hardiyanto et al., 2020; Sari, 2020). Until 2 October 2020, there is no additional salary nor incentives given to the nurses during the COVID-19 pandemic. The hospitals have announced the financial bonus plan, but do not even know when the money is disbursed until today (Hardiyanto et al., 2020; Sari, 2020). However, if seen from the nursing roles, there is no significant difference in nursing roles between government and non-government employees. Thus, the salary should be the same, or at least not much different.

But the next question is, *'will the salary improve nurses' works and competencies?'* Until today, there is no firm conclusion in the correlation between salary and nurses' performance and competency. However, the latest work from Gunawan et al. (2020) revealed that salary is the most crucial factor with the largest effect size on nurses' competence. The pay is a factor protecting against dissatisfaction. The greater the salary nurses

receive, the better their competence and performance (Gunawan et al., 2020).

In conclusion, the strong emphasis in this editorial is on the appreciation for nurses. As frontline workers, nurses are not afraid to give their lives for the sake of people's health. Florence Nightingale said that we done very little under the spirit of fear. We attribute our success to this, we never gave or took any excuse, and what nursing has to do in either case, is to put the patient in the best condition for nature to act upon him (Nightingale, 2018). So, why we need to take an excuse to appreciate nurses? A decent pay rise is one of the recognitions they deserve today.

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REVIEW ARTICLE

# THE MENTAL HEALTH CARE MODEL TO SUPPORT THE COMMUNITY DURING THE COVID-19 PANDEMIC IN THAILAND

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**Abstract**
The COVID-19 pandemic has caused people worldwide, such as in Thailand, to be frightened of being infected from the coronavirus. Exposure to media - including unreliable news sources - trigger people's stress and anxiety. This leads to increased mental health problems and psychiatric disorders in the population, resulting in higher suicide rates. Furthermore, this also affects medical and public health care staff working until emotional exhaustion and physical health deterioration. The ongoing fight against the outbreak of the COVID-19 virus increases the likelihood of pressure, stress, and anxiety. Therefore, a mental health care model for the people of Thailand is necessary. With the appropriate format for people to receive correct information, people will be more likely to accept changes, think logically and positively, not be discouraged, and be ready to improve themselves and their mental health.

KEYWORDS
mental health care model; COVID-19; mental health; Thailand

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## INTRODUCTION

In the ongoing COVID-19 pandemic in Thailand, analysis shows that the types of virus spread can be divided into four waves based on the Health Footprint of COVID-19 (Upwell Health Collective, 2020). Firstly, 1st Wave (Immediate Mortality and Morbidity of COVID-19) is the virus spread wave that causes people to be infected rapidly and causes several deaths. Secondly, 2nd Wave (Impact of Resources Restriction on Urgent non-COVID-19 Conditions) is the wave that spreads more widely and causes problems for those who are not infected. This also results in issues of urgent resource management to be ready for virus protection and curing patients. Thirdly, 3rd Wave (Impact of Interrupted Care of Chronic Conditions) is a massive spread, leading to increased chronic patients. These patients cannot meet doctors as scheduled or have to take care of themselves at home for a long time until they have recovered to a nearly normal health condition. Lastly, 4th Wave (Psychic Trauma, Mental Illness, Economic Injury, Burnout) is the last wave that triggers a longer virus spread time impacting the economy, followed by stress, anxiety, and mental health problems of those who are not infected. The number of patients who encounter mental health illness from psychiatric disorders rises, compared to the normal situation, impacting various staff categories, such as public health care staff, medical staff, nurses, and other related staff. It can be stated that mental health problems can also occur to those who take care of the patients. Furthermore, other people suffer emotional exhaustion from the COVID-19 situation, resulting in mental health problems and illness from psychiatric disorders (Burroughs, 2020; Gunawan, Juthamanee, et al., 2020).

Currently, the COVID-19 situation in Thailand is under control thanks to various lockdown measures in the society, the unity of the people, public health staff, and other related team monitoring the situation and curing the patients effectively. However, there are effects from the pandemic and the COVID-19 control measures, which cause pressure, stress, and anxiety among many of those who fight this long-lasting pandemic. It can be seen that mental health problems and illnesses from psychiatric disorders tend to increase, according to the "Stress" research from the Department of Mental Health (2020b). It is found that 8 out of 10 public health employees and 4 out of 10 Thai people suffer stress and pressure from their work. As a result, the public health staff tends to become emotionally exhausted, lose motivation and mental spirit, and suffer from burnout. The public sector encounters increasing stress causing illness from psychiatric disorders such as depression. Furthermore, there is a significant increase in the suicide rate since the start of the COVID-19 pandemic from January to March 2020. Comparing data between 2020 and 2019 reveals a rise in the number of suicides by more than 20 % (Department of Mental Health, 2020b).

This situation calls for countermeasures distinctly and urgently from all healthcare system sectors to be ready for the 4th wave under "Combat 4th Wave of COVID-19: C4". The objective of these countermeasures should be to protect people, their families, and their

communities from the effects of mental health problems and create mental strength during the COVID-19 pandemic, to appropriately and successfully adapt people's lives to a "New Normal" situation (Gunawan, Aungsuroch, et al., 2020).

The authors perceive that the mental health problems of the Thai people must be recognized and solved urgently in terms of the mental health care model, to support the fight against the COVID-19 pandemic and its long-term impact. Therefore, strict and secured countermeasures are required, including encouraging the public sector's mental support and prevention participation. This is the key to creating happiness among Thai people during the New Normal situation that will follow. The authors are interested in studying "a mental health care model for the people in the current COVID-19 situation in Thailand" to create guidelines for implementing a mental health care model for the people under the framework of adequately recovering and maintaining mental health in the current COVID-19 situation.

## MENTAL HEALTH PROBLEMS OF THE PEOPLE DURING THE COVID-19 CRISIS

The Department of Mental Health needs to closely follow the people's mental condition in the ongoing COVID-19 crisis. People suffer from anxiety, stress, fear, and depression due to the COVID-19 situation, especially older adults with higher anxiety levels. People show various symptoms such as bad feelings, frustration, anger, losing concentration, not being able to eat and sleep, and becoming sick, leading to depression. Therefore, close mental support is required to successfully recover people's physical and psychological health and decrease long-term effects (Department of Mental Health, 2020b).

However, the level of people's stress currently tends to decrease, and the pressure on people's mental condition gets some relief from the effects of the COVID-19 situation, compared to the start of the epidemic in the 1st wave. This is probably the result of lifting some lockdown measures and increased offensive countermeasures of the Department of Mental Health in different areas. Those who suffer the effects of mental illness can be divided into four categories, according to the Mental Health Department of Thailand: the infected and the quarantined; those who are at risk of having a mental illness; healthcare staff; and the people. The most urgent category in need of mental health countermeasures is the healthcare staff working closely with COVID-19 patients, chronic NCD patients, alcoholics, and drug users.

The countermeasures to help them recover require three different levels of "Mental Vaccine"; individual, family, and community levels. More precisely, the Mental Vaccine on the individual level needs to focus on three powers; 1) Positivity, to look through this challenging situation positively to cope with any possible problems; 2) Flexibility, to create adaptation and replacement to cope with changes; and, most importantly, 3) Unity, to form reconciliation for going through this crisis together. Moreover, the Mental Vaccine on the community level is needed for people to feel safe, hope, peace, understand and see opportunities in the community, and develop support, communication, care, and information sharing in the society (Department of Mental Health, 2020a).

## EFFECTS ON THE MENTAL HEALTH OF THE PEOPLE DURING THE COVID-19 CRISIS

In the current COVID-19 situation, the effects impact people's mental health under the four categories specified by the Mental Health Department of Thailand: the infected and the quarantined; those who are at risk of having a mental illness; healthcare staff; and the people. Most effects relate to the economy and society (Department of Mental Health, 2020b). Similar effects on mental health such as anxiety, stress, depression, insomnia, anger, and fear, which eventually created waves of anxiety, are experienced by different countries worldwide. Finally, this, too, triggers a substantial impact on the economy and society (Torales et al., 2020).

These mental health effects are not only experienced in Thailand. This, rather, is a global phenomenon. Because of the COVID-19 situation, people search for information related to this situation. Communication channels from the government do inform about the COVID-19 situation. However, these channels are not enough and are lacking continuity. As a result, people select to consume information from unofficial sources, leading to misunderstandings and an unexpected increase in stress because different sources give conflicting information about the situation. This increases the fear of becoming infected by the coronavirus and causes a higher level of anxiety in the population, even among people with good health (Purgato et al., 2018).

Furthermore, it has been found that the mental health problems of the people are triggered by the unpredictability of COVID-19 infection and improper and ineffective countermeasures. Most people fear that they may bring the virus to their family members, especially to the elderly and kids, to infected people, to their colleagues, to those involved with their community, and healthcare staff. Since the virus can easily be spread in the air from coughing and sneezing, those who are not infected can be infected without noticing it through breathing contaminated air. Hence, anyone may be at risk of becoming infected by those who do not show any symptoms or who typically cough because they may not know they are infected (Huang et al., 2020).

## A MENTAL HEALTH CARE MODEL FOR THE PEOPLE IN THE CURRENT COVID-19 SITUATION

The authors suggest an integration based on current strategies for a mental health care model for the people in the current COVID-19 situation, as further outlined below (Department of Mental Health, 2020b).

1. Integrate extensive support and protection of mental health, and control the factors causing mental health problems during the COVID-19 pandemic. It can be stated that the Thai people tend to have rising mental health problems. This requires integrated support of mental health care needs, improvement of the communication system, mental health knowledge, and cooperation from all sectors, including the government and the public sector. This should directly focus on integrating support and protection of mental health problems such as stress, depression, game addiction, and suicide. The integration of extensive protection of mental health should support and focus on preventing mental health problems, covering all four dimensions: support dimension, protection dimension, treating dimension, and

curing dimension to properly control factors causing mental health problems during the COVID-19 pandemic. The people should receive correct and easy-to-understand information from the Department of Mental Health, through public and reliable media. Furthermore, it is necessary to control both official and unofficial press in releasing COVID-19 news to ensure quality and standard at the same time (Department of Mental Health, 2020b).

2. Improve the quality of mental health services and psychiatry during the COVID-19 pandemic. This improvement must be implemented to serve psychiatric patients in different locations continuously, and it must be relevant to the local context of the COVID-19 situation. Improving the quality of mental health services and psychiatry during the COVID-19 pandemic requires the following: 1) Personnel plan; 2) Location plan; 3) Medical instrument/supplies plan; 4) Limitation of service system plan; and 5) Academic plan in all fields correctly, and adequately adapted to the context and the situation, aiming at a higher level of improvement in the overall quality of mental health services and psychiatry. Furthermore, the service needs to be improved in terms of connecting, communicating, and cooperating between mental health services and psychiatry, in response to the demand of all healthcare areas for the people to have a service with such quality and standard (Pfefferbaum & North, 2020).

3. Improve the communication system regarding the risks for mental disorders and educate people about mental health. The educator must be an expert or is someone coming directly from responsible departments or institutions, such as the director of a community hospital, the director of the public health district, the director of the sub-district health promotion hospital, sub-district headman, village headman, and village health volunteer. It is necessary to improve and update the quality of communication in the mental health service system as follows: 1) Diagnosis and treatment system needs to be improved for users to be able to access services conveniently and cover all issues of psychiatric diagnosis for all kinds of diseases, including frequently found psychiatric disorders. The educators must be able to provide advice and promote mental health with quality; 2) The social and mental treatment system needs to educate the people to understand social factors affecting illness and should be able to provide advice for people to solve their problems on their own; 3) The medical system needs to support the patients in terms of providing psychiatric treatment with effective, safe, affordable and reasonable medicines. This includes follow-up and evaluation of medicine usage and guidelines to monitor usage systematically; 4) The follow-up system needs to cooperate with the department of health and public health services to create a continuous follow-up, including recovering social and mental conditions the community (Druss, 2020). The information for educating the people should have a sharing and networking system without disturbance through current technology.

4. Develop staff to increase work efficiency during the COVID-19 pandemic. Staff includes medical and psychiatric staff and requires integrating operation networks for each category of community representatives such as sub-district head, the village head, and village health volunteer. This staff must be trained together with internal medicine staff to increase work operation efficiency in terms of knowledge in mental health, psychology, nursing science, and social necessity of psychiatric operation. This means that staff must have skills to handle psychiatric interviews, physical examinations, mental examinations, and information collecting to logically analyze and decide to provide mental services to the people during the COVID-19 crisis, based on holistic care (Druss, 2020). The internal medicine training course is a course to train and increase staff's work operation efficiency in the COVID-19 pandemic. It needs to be planned and managed based on the training standards of The Royal College of Psychiatrists of Thailand. The training needs to be in cooperation with the executive committees of internal medicine training courses such as lecturers of the Psychiatry Department and representatives of internal medicine who are involved with the internal medicine training, to share opinions and improve the training course to serve the demand of mental health of the people, society and the health care service system during the COVID-19 pandemic. Furthermore, the course should be updated yearly, and the training institution should be evaluated every five years to meet the standards of The Royal College of Psychiatrists of Thailand (2020).

5. Develop a synthesis of information systems to propose a policy recommendation for mental health during the COVID-19 pandemic. Information is the key to COVID-19 crisis management since rumors and fake news can create fear and misunderstandings among the people and accusations among at-risk groups. This can cause negative results for problem management. Thus, developing a synthesis of information systems for the virus situation to have correct and appropriate information is required. The message recipients must be able to understand the message quickly. The message senders should be experts or are directly from responsible departments or staff stated in the Communicable Diseases Act, such as the director of community hospital, director of public health district, director of sub-district health promotion hospital, sub-district head, village head, and village health volunteer. This is to create a trust for the received information among the people, educate them, and decrease fear of receiving fake news in their community. Also, it helps to relieve the virus crisis in society and the stress of receiving rumors and fake news from unreliable and unidentified sources. It also helps support awareness of the community's people to communicate any information by carefully checking the information before spreading it, termed as "Sure before Share" (National Health Commission Office of Thailand, 2020).

6. Develop and provide the "Mental Vaccine" to individuals, their families, and their communities in preparation for the "New Normal" life, in which the Department of Mental Health will focus on developing it in different aspects. First, Mental vaccines to individuals will focus on supporting, protecting, curing, and recovering. Second, Mental Vaccine to their families will focus on the three powers as follows; 1) Positivity, to look through this challenging situation positively to cope with any possible problems, 2) Flexibility, to create adaptation and cooperation to cope with changes, and 3) Unity, to form reconciliation of family members together and go through this crisis together. Last, Mental vaccines to the communities will create safe, hopeful, peaceful, and understanding communities using the communities' ability to develop help and communication networks and use the communities' care to solve problems based on their relations. This is to create trust and connect shared information in society (Department of Mental Health, 2020a).

Thus, a mental health care model for the people in the current COVID-19 situation in Thailand can be concluded into a diagram, as shown in **Figure 1** below.

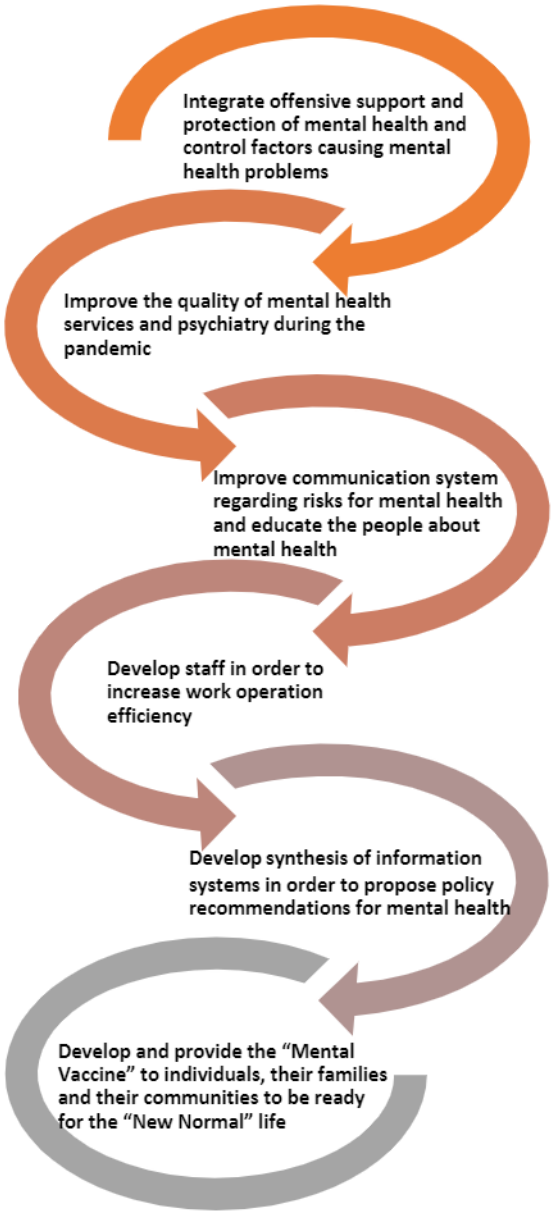


**Figure 1** Illustration of a Mental Health Care Model for the People in the Current COVID-19 Situation

## BENEFITS OF PROVIDING THE MENTAL HEALTH CARE MODEL FOR THE PEOPLE IN THE COVID-19 SITUATION

In the current COVID-19 situation, people are quite frightened and stressed (Juthamanee, 2020). Some lose their mental health because of incorrect information from unreliable and unidentified sources such as rumors and fake news. All these have a severe impact on people's mental health. Thus, providing mental health care for the people in the current COVID-19 situation should be urgently prioritized to create benefits as follows:

1. People can train and improve themselves better when facing problems. Those who have good mental health tend to look for solutions wisely and perceive problems as challenges, considering the root causes of the issues and finding solutions to solve the root causes on their own.

2. The people can accept and understand this unstable situation compared to a normal condition. Moreover, they can cope with changes more confidently by beginning from their upbeat attitude, critical and logical thinking, encouraging themselves to think positively and differently, having a sense of humor, preventing negative thoughts, and having better problem-solving skills.

3. People can develop self-emotion management skills to reduce stress and depression on their own. They can also encourage themselves to create self-motivation, create a good feeling, forgive themselves, do festive activities, and feel mentally peaceful.

4. People can develop self-understanding, acknowledge good and bad points in themselves, including self-pride, self-acceptance, and self-motivation. Additionally, they can have good feelings towards success and enjoy their tasks also under unstable changes, without becoming dispirited due to failure or obstacles from inconsistent changes. Also,

they can take failures as lessons to improve themselves and find better and new solutions.

## CONCLUSION

In the current COVID-19 pandemic, many people suffer from stress and anxiety. They are afraid of becoming infected from the coronavirus and are open to rumors and fake news from unreliable sources. Consequently, they are more likely to get mental illness and encounter other psychiatric disorders. This does not only happen to the public but also to medical and public health care staff who continuously work under the pressure of fighting the COVID-19 pandemic, some of them until they get emotionally exhausted. This also leads to tension, stress, and anxiety. All in all, this situation significantly impacts the Thai people's mental health conditions, as seen in many increasing cases of mental health problems and psychiatric disorders, according to the "Stress" survey of the Department of Mental Health. Therefore, excellent mental health service needs to help the people's mental health conditions, especially in this COVID-19 situation, to be a guideline to create a mental health care model for the people under the framework guideline of mental recovery during the COVID-19 situation. This is to help the people adapt and accept changes, develop self-emotion control skills, and reduce stress and depression independently.

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Onpicha Ketphan and Siripattra Juthamanee drafted the article and conducted a review of the literature. Sarah Jane Racal and Dussanee Bunpitaksakun contributed in design, concept, and language editing.

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CONCEPT ANALYSIS

# CONCEPT ANALYSIS OF MATERNAL-FETAL ATTACHMENT

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**Abstract**

**Background:** Knowing about prenatal attachment is crucial because it plays a significant role in pregnant women and their babies' health. Healthcare providers, particularly midwives, need to understand the concept of attachment between mother and unborn baby. However, surrogate terms to apply the concept of maternal-fetal attachment are found, and ambiguity on the definition remains.

**Objective:** To provide a more precise definition of the concept of maternal-fetal attachment

**Method:** The Walker and Avant's concept analysis approach was applied.

**Results:** The attributes of maternal-fetal attachment include (i) having a positive emotion, (ii) paying attention to the physical progress of the fetus and mothers themselves, (iii) having a reciprocal interaction with the baby, (iv) monitoring and imaging the unborn baby, and (v) having a desire to protect her unborn baby from harm and increase her health practices. Maternal-fetal attachment is the affection relationship, desire for protection, building the interaction, and the emotional tie between the mother and her unborn baby during the pregnancy. This personal connection is developed, mainly when the quickening is present during the late stage of pregnancy. Maternal-fetal attachment creates an emotional relationship with the unborn baby and leads the mother to express it with behavior.

**Conclusion:** This concept analysis provides new insight into the maternal-fetal attachment concept used for nurses and midwives in their practice.

KEYWORDS
maternal-fetal attachment; pregnancy; infant; fetal movement; emotions; attentions; mothers; midwifery; nursing

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## BACKGROUND

Maternal-fetal attachment is the crucial basis for the mother to establish her relationship with the fetus during pregnancy (Müller, 1989). Many studies provide evidence of the maternal-fetal attachment and its impact on maternal role identity and infant development (Abazari et al., 2017; Alhusen et al., 2013; Siddiqui & Hägglöf, 2000; Wada et al., 2020). This emotional tie promotes the maternal emotional wellbeing during pregnancy following after birth and decreased risk possibility to experience anxiety, fear of childbirth, depression, and postpartum blues (Abazari et al., 2017; Clout & Brown, 2016; Dubber et al., 2015; Goebel et al., 2018; Hwang, 2013; Kav et al., 2017; Yarcheski et al., 2009). A loving relationship between a mother and her unborn baby also contributes to the mother's sense of protection (Sandbrook, 2009). A previous study indicated that a robust attachment between mother and infant impacts on the mother's health practices during pregnancy, such as the absence of alcohol consumption and tobacco, increased consumption of healthy food, increased effort to seeking for antenatal care, as well as information for preparing birth (Lindgren, 2001).

The maternal-fetal attachment has been defined differently among expertise, led to different arguments and tools to measure maternal attachment during pregnancy (Condon & Corkindale, 1997; Cranley, 1981; Muller & Mercer, 1993). The term maternal-fetal attachment is frequently used to describe the emotional relationship, rather than the interaction and behavior response between mother and unborn baby. The awareness about maternal-fetal attachment is essential in the health of pregnant mothers and their unborn babies. The right information and definition not only would increase the perception of nurses, midwives, or other medical teams about the process of attachment itself, but it would also provide the possibility for planning proper interventions to improve the maternal-fetal relationship. However, appropriate clarification and explanation about maternal-fetal attachment remain unclear. Therefore, to emphasize the understanding of maternal-fetal attachment, we analyze the concept's attributes and characteristics.

Walker and Avant (2014) 's framework is used for concept analysis, which consists of (1) select a concept, (2) determine the aims or purpose, (3) identify all uses of the concept, (4) determine the defining attributes, (5) identify a model case to describe the example, (6)

identify additional cases, (7) identify antecedents and consequences, and (8) define an empirical reference. Each step is described in the following:

## SELECT A CONCEPT

Attachment is a complex phenomenon that occurs during life span (Bowlby, 1958). This theory explained the children feel severe when they live separately from their mother. The refining concept of maternal-fetal attachment in this paper can help clarify the overused or vague concept prevalent in nursing practice. Thus, everyone who subsequently uses the term will be a language of the same issue.

## AIM OF ANALYSIS

This analysis aims to provide precise meaning to the concept of maternal-fetal attachment by differentiating it from other related concepts, for instance, maternal-infant bonding. The analysis seeks to provide a more accurate definition of maternal-fetal attachment for use in operational definition creation. Ultimately, a better understanding of the concept will be gained.

## USES OF THE MATERNAL-FETAL ATTACHMENT CONCEPT

This step supports and validates the defining attributes' choices and provides evidence for our analyses by identifying as many uses of the concept as possible (Walker & Avant, 2014). According to Walker and Avant, to investigate the uses, dictionaries, thesaurus, colleagues, and available literature are accessed. A concept of maternal-fetal attachment was searched of literature by using critical electronic databases: PubMed, CINAHL with full text, MEDLINE, and Cochrane Library. A dictionary search of the word maternal-fetal was also done (See **Table 1**). Also, the scale to measure maternal-fetal attachment was searched. There are many researchers adopted the maternal-fetal attachment scale into their language and occupied the term in the medical and psychology literature (Bielawska Batorowicz & Siddiqui, 2008; Chen et al., 2011; Lingeswaran & Bindu, 2012; Siddiqui et al., 1999; Suryaningsih, 2015; Ustunsoz et al., 2010; Vedova et al., 2008). Several projects to explore the predicting factors of maternal-fetal attachment also have been found (Alhusen et al., 2012; Bielawska Batorowicz & Siddiqui, 2008; Doan & Zimerman, 2008; Maas et al., 2014). The impact of maternal-fetal attachment both on mother and infant have been highlighted in the literature, for instance, the effect on the maternal mood states (Van Den Bergh & Simons, 2009), the health practices during pregnancy (Abasi et al., 2013; Alhusen, 2008; Yarcheski et al., 2009), the mother-infant bonding (Busonera et al., 2017; Rossen et al., 2016), and the infant's outcome (Dokuhaki et al., 2017). The studies investigating other issues related to the concept of maternal-fetal attachment were also found (Alhusen, 2008; Dayton et al., 2010; Mehran et al., 2013; Sandbrook & Adamson-Macedo, 2004; Sedgmen et al., 2006). The researchers use the term 'maternal-fetal attachment' to describe the developing of affection feeling, love, and protection as the intense emotional relationship between the mother and her unborn baby during pregnancy.

**Table 1** Dictionary definitions of maternal-fetal, attachment, and bonding

| Dictionaries | Maternal | Fetal | Attachment |
|---|---|---|---|
| American Heritage Dictionaries | [Adjective]<br>Relating to or characteristic of a mother or motherhood; motherly: maternal instinct.<br>Inherited from one's mother: a maternal trait.<br>Related through one's mother: my maternal uncle. | [Adjective]<br>Of, relating to, characteristic of, or being a fetus | [Noun]<br>The act of attaching or the condition of being attached<br>Something, such as a tie, band, fastener that connects one thing to another.<br>An emotional bond, as of affection or loyalty; fond regard<br>A supplementary part; an accessory: bought a vacuum cleaner with several attachments.<br>A supplementary document that is attached to a primary document: stapled two attachments to the memorandum<br>A file that is attached to an email |
| Oxford Dictionaries | Relating to a mother, especially during pregnancy or shortly after childbirth. | Relating to a fetus. | [Noun]<br>An extra part or extension that is or may be attached to something to perform a particular function.<br>Affection, fondness, or sympathy for someone or something.<br>Temporary secondment to an organization.<br>The action of attaching something. |

## DEFINING ATTRIBUTES

Based on Walker and Avant (2014), defining attributes of a concept is the heart of concept analysis. The exact definition of maternal-fetal attachment could be directly found through studies. However, maternal-fetal attachment has been defined differently based on its dimension. There are three most commons definitions, according to the experts. First, according to Cranley (1981), maternal-fetal attachment is defined as the extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child. Second, Muller and Mercer (1993) described maternal-attachment as the unique and affectionate relationship between a woman and her fetus during pregnancy. Third, Condon (1993) defined maternal-fetal attachment is the emotional tie or bond, which generally develops between the pregnant woman and her unborn fetus. In this concept analysis, the definition was developed based on critical attributes. The key attributes are described as follow:

*1) Having a positive emotion*

This positive emotion includes having tender and loving versus feeling irritated, feeling emotionally close versus emotionally distant (Condon, 1993; Cranley, 1981; Hart & Mcmahon, 2006). The theorist (Gottlieb, 1978) explained that when women have developed positive attachment feelings, they communicate their desire to be close to their child, possess it, and need to feel proud of it. All these feelings climaxed in professed love.

*2) Paying attention to the physical progress of the fetus and mothers themselves*

When pregnant women have a good quality of maternal-fetal attachment, they will feel encouraged to attempt and guess the infant's personality based on the infant's movement (Félix Teixeira et al., 2016), as well encourage to get information about the development of the baby (Condon, 1993; Cranley, 1981; Hart & Mcmahon, 2006). The mother will also actively focus on developing fetal life inside her womb (Sandbrook, 2009). The attached mother will have high satisfaction with her body development during pregnancy or body image as the component of self-image (Muller & Mercer, 1993).

*3) Having a reciprocal interaction with the baby*

As the gestational age increases, it is natural for pregnant women to interact with her fetus and manifest to her behavior and attitudes. For instance, she is stroking the belly, talking to the baby, stimulating him, caressing him to respond to their action (Bielawska Batorowicz & Siddiqui, 2008; Rincy & Nalini, 2014; Siddiqui et al., 1999).

*4) Monitoring and imaging the unborn baby*

The mother attached to her unborn baby will notice the pattern of her baby, such as when the baby sleeps or awakes, and she is also trying to picture what the developing baby looks like (Bayrami et al., 2012; Gau & Lee, 2003; Granier-Deferre et al., 2011). This awareness, according to Vedova et al. (2008), is crucial to the development of maternal-fetal attachment.

*5) Having a desire to protect her unborn baby from harm and increase her health practices*

According to Lindgren (2001, 2003) and Brandon et al. (2009), the existence of maternal-fetal attachment during pregnancy increases participation in good health practices. For instance, the mother takes less alcohol and cigarettes when she has more attachment to her baby (Sedgmen et al., 2006; Slade et al., 2011) and illicit drugs such as cocaine or heroin (Shieh & Kravitz, 2006).

## MODEL CASE

This step is an example of the use of the concept that demonstrates all the defining attributes of the concept of maternal-fetal attachment (Walker & Avant, 2014). The model case below represents the concept of maternal-fetal attachment, including all the clinical attributes of the concept.

> L is a 29-year-old pregnant woman in her late stage of pregnancy. As an ordinary expectant mother, she and her husband come to the antenatal clinic to visit the antenatal care and yoga exercise biweekly. L takes an iron tablet regularly and eats healthily. Now she is preparing to buy some stuff for her unborn baby and choose several optional names for him. Over the past four weeks, she has found herself talking to the baby more frequently than before. L loves to share her activity and her thought and to feel to the baby in the womb. L is very excited to imagine her baby's face and always wondering how the baby's face looks.

## ADDITIONAL CASES

### Borderline case

The borderline case is the example that contains most of the defining attributes of the concept being examined but not all of them (Walker & Avant, 2014). A borderline case is presented below.

> LL is a 27-year-old pregnant woman in her second trimester of pregnancy. She has already felt the baby's movement in her tummy, and she is very excited and tries to stop drink alcohol for her baby's health. She started to imagine her baby's face and called her baby with the name. But sometimes, when she argues with her husband, LL feels so upset, hits her belly, and expresses her anger to her unborn baby. The idea of killing the baby also sometimes comes into her mind.

Based on the example, the mother feels so happy with her pregnancy and has a unique emotional tie, such as imagining the baby's face all of the time and trying to connect with the baby by calling his name. However, she fails to express her protection and affection to the unborn baby because of her emotional impairment to her husband when they have a conflict. This is the borderline case of maternal-fetal attachment, in which the affection, excitement, and health practices are present, but the desire to protect the unborn baby from harm is absent. The attachment to the fetal may still appear, but it will be challenging.

### Contrary case

While the model case provides all critical attributes of the concept of maternal-fetal attachment, the contrary case presents a contrast. There were no vital attributes shown in the maternal-fetal attachment.

> T is a 30-year-old pregnant woman during her third trimester of pregnancy. She cannot stop her lousy habit of taking cigarettes since her early pregnancy until this trimester. If T feels stress and fatigue, she blames her fetus and starts to hit her unborn baby. Imagining the baby's face is not worth it for her, and she still cannot believe if she will have a baby.

In this case, the woman has no desire to protect the fetus from harm from her careless behavior to the unborn baby. She also fails to meet the criteria from imagination nor increased the health practices during pregnancy.

### Related cases

Related cases are those that are similar to the original concept. They are connected in some ways to the related concept and help describe the network of similar concepts (Walker & Avant, 2014). The related case is presented below.

> B has one boy who just entered elementary school this year. She expresses her affection by preparing breakfast for her boy every morning and driving him to the school. One day she felt something wrong with her boy during school time, but she had no idea about her feeling. Then she decided to see her boy as soon as possible and was driving the car quickly. When she arrived at school, and she saw her boy get hurt fighting with his friends. B was so mad and talked to the teachers and made sure if the same incident will not be happening again because she wanted to protect her boy from something terrible.

## ANTECEDENTS

According to Walker and Avant (2014), antecedents must occur or must be in place before the occurrence of the concept. Based on the literature, there are seven antecedents of maternal-fetal attachment:

*1) Maternal age*

Some studies highlighted a significant relationship between maternal age and the quality of the mother's attachment to her fetus (Bloom, 1995; Kemp & Page, 1987).

*2) Income*

There are conflicting findings to the variable of income to the quality of maternal-fetal attachment. Lerum and Lobiondo-Wood (1989)

found that income was negatively correlated to the maternal-fetal attachment, while another study found it contradicted (Cranley, 1981).

*3) Depression and anxiety*

Studies highlighted the critical role of anxiety and depression-related pregnancy to the maternal-fetal attachment (Alhusen et al., 2012; Brandon et al., 2008; Mcfarland et al., 2011). Beck (1999) depressive symptom distracts mother for seeking or maintaining a social relationship across various connections; the negative outcome may significantly impact the prenatal attachment. Pregnant women with higher stress levels are difficult to fully engage in an affectionate relationship with their fetus, resulting in a low quality of maternal-fetal attachment. It is similar to the study conducted by Mcfarland et al. (2011) found that major depressive and anxiety disorder affects the quality of maternal-fetal attachment during pregnancy.

*4) Social support*

Some studies provided the consistent results that the mothers who received sufficient social supports from partner or family tend to have more level of attachment to her fetus rather than those with a lack of social supports (Alhusen et al., 2012; Barone et al., 2014; Condon & Corkindale, 1997; Koniak Griffin, 1988; Maas et al., 2014; Mercer et al., 1988).

*5) Personality*

Maternal personality is a strong predictor of maternal-fetal attachment, affecting the mother's way in pregnancy adaptation on the physic and physical process (Maas et al., 2014). The negative personality, according to some researchers, is associated with lower levels of supportiveness and less positive, responsive, and adaptive parenting (Kochanska et al., 2004; Prinzie et al., 2009; Verhoeven et al., 2007).

*6) Pregnancy-related factors*

These factors include (1) *Parity,* mothers with the first-time pregnancy tend to have higher levels of prenatal attachment than the mothers with the second or multi-time pregnancy (Wilson et al., 2000; Zimerman, 2003); (2) *Gestational age,* studies found the consistent increase of prenatal attachment for the pregnancy (Koniak Griffin, 1988; Koniak-Griffin et al., 1993; Muller & Mercer, 1993; Phipps et al., 1986; Vedova et al., 2008; Wayland & Tate, 1993). While Barone et al. (2014) also found the same result on the level of maternal-fetal attachment trough the increasing gestational age. Nishikawa and Sakakibara (2013) emphasized as the gestational age increases, the fetus and the belly grow. As the feeling of active fetal movements increases, the maternal-fetal attachment and sense of self-fulfillment of the pregnant woman also increase. Also, one study in Indonesia recorded the same result (Sukriani & Suryaningsih, 2018); (3) *Planned pregnancy,* Bielawska Batorowicz and Siddiqui (2008) found there is a significant level of maternal-fetal attachment between the mothers who planned and unplanned their pregnancy. They compared the mean scores of prenatal attachments among Swedish and Polish pregnant women. They found that the unplanned mother had a lower pregnancy level than the planned pregnancy between those two ethnicities. Zimerman (2003) also found that there is a high level of attachment among non-pregnant women who wanted to become pregnant; (4) *Ultrasound,* studies found that there is an effect of ultrasound on mother's attachment during pregnancy (Boukydis et al., 2006; Heidrich & Cranley, 1989; Pavlova et al., 2015; Pretorius et al., 2006; Righetti et al., 2005; Sedgmen et al., 2006). The effect of ultrasound is seen from the duration of the ultrasound performance, the sufficient information from the physician regarding the image, and the use of 2D or 3D; (5) *Fetal movement*, Cunen et al. (2017) observed that when mothers have fetal awareness intervention during pregnancy, such as abdominal palpation and fetal counting, then the mother's attachment to her fetus was increased. It is in line with the other studies found that the maternal-fetal attachment has increased among pregnant women who have more fetal movement (Malm et al., 2016; Rincy & Nalini, 2014).

*7) Previous attachment and childhood history*

Priel and Besser (2000) explained a significant correlation between a woman's previous attachment style and her attachment with the fetus during pregnancy. Similarly, another study reported that the women with a secure attachment style, more emotional warmth from their mothers, and rejection from their fathers are better in establishing the quality of emotional ties with their unborn baby (Siddiqui & Hägglöf, 2000). The experience developed during childhood can influence one's ability to be attached to one's growing unborn baby. However, women with insecure maternal attachment style, particularly an avoidant attachment style, are related to significantly lower maternal-fetus attachment levels during pregnancy (Alhusen et al., 2012; Alhusen et al., 2013; Van Bussel et al., 2010). Besides, Schwerdtfeger and Goff (2008) found the correlation between the traumatic history of the mother's childhood and her attachment during pregnancy. The traumatic history includes childhood sexual or physical abuse and adult domestic violence. Similarly, Van Bussel et al. (2010) also found that the mother's own childhood experience strongly affected the quality of the mother's attachment to her fetus. Another study confirmed the same result, the better the memory of maternal care during childhood, the higher the attachment between pregnant women and fetus (Carvalho, 2011). In a recent study, Félix Teixeira et al. (2016) explained that the higher the positive memory of parental care, the higher the maternal-fetal attachment.

## CONSEQUENCES

Walker and Avant (2014) suggested that consequences are events or incidents that occur as a result of the occurrence of the concept or the outcomes of the concept. The consequences of maternal-fetal attachment are dependent on the quality of the attachment itself, which affects the fetal and mother's health and development. Mothers who have low attachment may feel more anxiety and fear that could risk the fetus (Vedova et al., 2008) (**Figure 1**).

## EMPIRICAL REFERENCE

The empirical referents are classes or categories of actual phenomena that, by their existence or presence, demonstrate the occurrence of the concept itself (Walker & Avant, 2014). The maternal-fetal attachment concept consists of physical and behavioral performance to the unborn baby, such as increasing health practices during pregnancy, including diminishing smoking, drug, drinking alcohol, or other negative behaviors. Playing an image of the baby, the emotional feeling and thought that unique, and capable of rating them on a Likert- scale. There are many tools to measure the concept of maternal-fetal attachment (Beck, 1999; Cranley, 1981; Muller & Mercer, 1993). The widely used instrument is the Prenatal Attachment Inventory (PAI) developed by Muller and Mercer (1993). However, although the PAI

is a promising and psychometrically sound instrument, further research is needed to examine its dimensions.

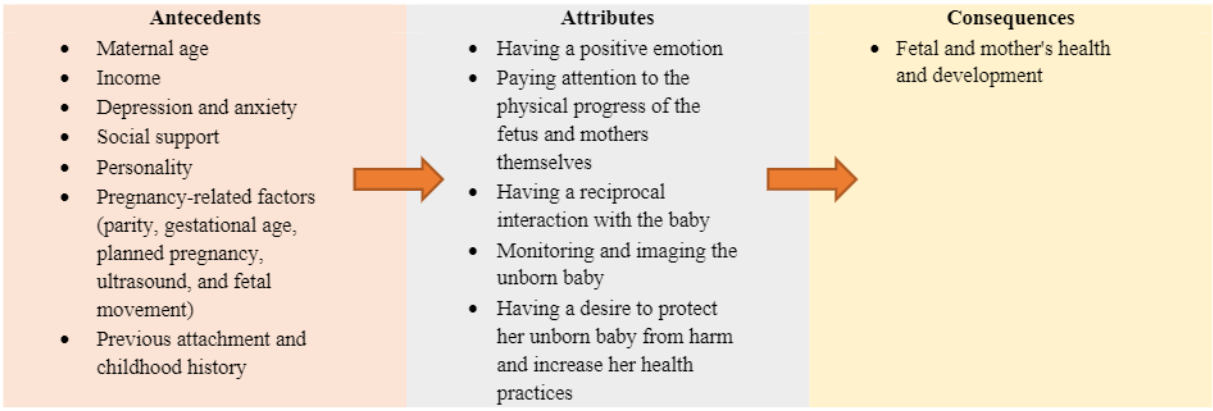


**Figure 1** Antecedents, attributes, and consequences of maternal-fetal attachment

## IMPLICATION FOR NURSING PRACTICE

This concept analysis aimed to establish a more precise definition of maternal-fetal attachment by identifying the attributes, antecedents, and consequences of the concept. Based on the analysis above, the maternal-fetal attachment can be defined as affection, desire for protection, building the interaction, and the emotional tie between the mother and her unborn baby during the pregnancy. This emotional feeling and thought more obviously the late stage or when the quickening was present. The maternal-fetal attachment creates an emotional relationship with the unborn baby and leads the mother to express with behavior. This finding, however, bridges the gap of the definition of maternal-fetal attachment between Cranley (1981), Muller and Mercer (1993), and Condon (1993).

This concept analysis has implications for nurses and midwives in the maternity unit, where part of their autonomy to provide antenatal care during the sensitive period. Since maternal-fetal attachment is essential for both mother and fetus during pregnancy and postpartum, nurses' and midwives' role cannot be ignored in alerting women during pregnancy (Dokuhaki et al., 2017). They can help mothers promoting attachment by discussing all the potential factors that may encourage them to attach with their unborn baby.

## CONCLUSION

The present analysis identified attributes, antecedents, and consequences for maternal-fetal attachment. Healthcare providers, particularly nurses and midwives, need to know and understand the concept of maternal-fetal attachment to apply and develop appropriate interventions in prenatal care practices.

**Declaration of Conflicting Interest**
The authors declare that there is no conflict of interest.

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**Authorship Contribution**
E.K.S drafted the main article. M.L.G criticized the article and provided valuable inputs. W assisted in data collection and input suggestions on the manuscript. All authors approved the final version of the manuscript.

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ORIGINAL RESEARCH

# NURSES' COMPLIANCE ON PATIENT HANDOVER PROCESS IN THE PRE-OPERATIVE ROOM OF THE HOSPITAL IN VIETNAM

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**Abstract**

**Background:** Ineffective handover is considered a major factor that endangers patient safety in hospitals. Preparing and handing over patients before surgeries directly impact the outcome of the surgery. If errors occur, they could jeopardize the patient's life.

**Objectives:** To determine the level of nurses' compliance during the pre-operative patient handover process at the anesthesia department. To examine nurses' evaluation on using a pre-operative patient handover checklist.

**Methods:** This was a descriptive observational study with a cross-sectional approach to examine 196 cases of handing over pre-operative patients performed by 53 nurses from the surgical department, maternity department, obstetrics and gynecology department, emergency department, and anesthesia department. Data were collected from November 2019 to February 2020 using "The Checklist of Assessing Nurse's Compliance on Pre-Operative Patient Handover" and "The Survey Form of Nurse's Evaluation on Using Pre-Operative Patient Handover Checklist." Descriptive statistics, including frequencies and percentages, were used for data analysis.

**Results:** Nurses' compliance on handing over pre-operative patients with a high level was 71.9%, and with an average level was 28.1%. The handover areas with low compliance rate included: the patients need to be isolated (63.3%), identifying patient information verbally (75%), identifying patient information by hospital bracelet (77%), time to use antibiotics (78.1%), and marked surgical site (79.6%). Over 90% of nurses agreed on the usefulness of the pre-operative handover checklist.

**Conclusion:** The process of handing over pre-operative patients was performed relatively well, but there were still shortcomings to overcome. Nurses positively evaluated the use of the handover checklist for preparing pre-operative patients.

KEYWORDS
handover; checklist; patient; anesthesia

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## BACKGROUND

In 2012, The Australian Commission on Safety and Quality in Health Care developed 10 National Safety and Quality Health Service Standards to reduce the risk of patient harm and improve the quality of health service provision. In these standards, the sixth standard mentioned the importance and effectiveness of clinical handover (Australian Commission on Safety and Quality in Health Care, 2012). Clinical handover is a critical process in health care services in which nurses are typically engaged several times in each working day (Gu et al., 2012). In this study, the nurses' compliance on pre-operative patient handover is considered to be the implementation of handing over all medical issues related to the surgical patient based on a checklist or a prescribed procedure. This process is performed between nurses in the pre-operative room. This compliance ensures that critical information necessary for patient care is not omitted, and it provides a consistent order in which information should be communicated (Robinson, 2016). In addition, the nurses' evaluation on using the handover checklist demonstrates their personal opinion about the effectiveness and usefulness of the checklist when they use it to hand over the pre-operative patient. Using a structured handover checklist will increase the reliability of handover (Bakon et al., 2017) and promote patient safety (Halm, 2013).

Poor clinical handovers have been identified as major contributing factors in serious adverse events and a significant cause of preventable harm to patients (Australian Commission on Safety and Quality in Health Care, 2012). A recent large scale project from the European Commission demonstrated that information handover was responsible for 25% to 40% of clinical accidents (Suzanne & Diana, 2015). In addition, wrong-site surgery is estimated to occur 40 times per week in hospitals and clinics in the United States; other surgical incidents also include wrong procedure and wrong person surgery (Tyson, 2012). Therefore, the preparation and handover of patients before surgeries directly impact the outcomes of those surgeries.

In Vietnam, along with the changes and improvements in the health care model of hospitals and medical facilities today, patient handover is becoming more and more evaluated. The Ministry of Health's Circular No. 07 of the "Guidance on Nursing Care for Patients in Hospitals and Health Facilities" stipulates that, when the nurses deliver patients to the operating department, nurses and midwives must handover patients and medical records to an assigned person at the place where the surgery will be performed (Vietnam's Ministry of Health, 2011). A previous study from Huyen (2015) which assessed the situation of preparation and handover of patients before surgery at Military 354 Hospital in 2015 also showed that the handover process still had many shortcomings: inadequate medical records; nurses received patients without re-checking patient information, accounting for 3.3%; besides, the proportion of nurses who had not signed into the handover book accounted for 48%.

Becamex International Hospital is a new hospital that has been in operation for the past few years. It provides healthcare services with the principle goal of serving the community and focusing on its patient. Becamex International Hospital also performs many intensive surgeries to serve the patients' demands. However, the hospital is yet to have any research investigating issues related to the preparation and handover of pre-operative patients. Although this handover process is performed between anesthesia nurses and nurses from four other departments: Surgical Department, Maternity Department, Obstetrics and Gynecology Department, or Emergency Department, it is always implemented in the pre-operative room of the Anesthesia Department. Therefore, we conducted this research to determine the level of nurses' compliance during the pre-operative patient handover process at the Anesthesia Department. We also examined nurses' evaluation on using a pre-operative patient handover checklist.

## METHODS

### Study Design

This study utilized a descriptive observational design with a cross-sectional approach to investigate a series of pre-operative patient handover cases.

### Participants and Sample Size Calculation

The sample size formula of a cross-sectional study was used to calculate the sample size for this study: $n = \frac{Z^2_{(1-\alpha/2)} P(1-P)}{d^2}$ (Charan & Biswas, 2013). Here, n is the sample size; in this study, it is the number of handover cases. Standard normal variate "Z" at 5% type 1 error ($P<0.05$) is 1.96 and at 1% type 1 error ($P<0.01$) is 2.58. As in a majority of studies, P values are considered significant below 0.05; hence 1.96 was used in this formula. Based on the previous study of Huyen (2015), the expected proportion in population "P" is 0.48. Finally, d is absolute error or precision, and we choose d = 0.07 to fit the actual situation at Becamex International Hospital. So, the sample size calculated by the formula above is n = 196 handover cases.

In this study, we used a convenience sampling method because it was impossible to identify future surgical cases, and it was also not feasible to make specific lists. The target population in this study was staff nurses from five different departments in Becamex International Hospital - Surgical Department, Maternity Department, Obstetrics and Gynecology Department, Emergency Department, and Anesthesia Department - who conducted the handover process at Anesthesia Department. The inclusion criteria were official nurses; and handover cases of scheduled surgeries and semi-emergency surgeries. The reason is that these two types of surgeries do not need to be performed immediately, and the nurses are not limited by time to hand over patients. By contrast, emergency surgeries must be performed without delay to ensure the patient's life. Therefore, the exclusion criteria in this study were all handover cases of emergency surgeries. Besides, nurses who were in the probationary period were also not selected for this research. Although this study's primary subjects were nurses, the sample size was 196 handover cases performed by 53 nurses. Therefore, each nurse who transferred the patient was observed with an average of 3 to 5 handover times. For anesthesia nurses who received the patients, each of them collected data from 32 to 33 handover cases. This ensured that the number of patient handover for each nurse was the most equivalent.

### Instruments

Pre-operative patient handover procedure and pre-operative patient handover checklist: They were approved and issued by Becamex International Hospital's Board of Directors on October 4th, 2017, currently in use at Becamex International Hospital (Becamex International Hospital, 2017).

"The checklist of assessing nurse's compliance on handing over pre-operative patients": it was calibrated all categories from Becamex International Hospital's pre-operative patient handover checklist (Becamex International Hospital, 2017), including 38 items with the answers "Yes" or "No" for compliance or non-compliance. The researcher calculated the results by frequency and percentage for each checklist's content, then calculated and decided the compliance level based on the rate of completing the checklist's 38 items, according to the scale: low (<60%), medium (60%-90%), high (>90%). The demographic information of nurses was also utilized for statistical description.

"The survey form of nurse's evaluation on using pre-operative patient handover checklist": the questionnaire was edited from Technology Acceptance Model Study (Davis, 1993) with a 5-level Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = No Idea, 4 = Agree, 5 = Strongly Agree. This survey form was reviewed again by five head nurses from the five departments in which data was collected. There was no change in the content of survey questions; they agreed that this survey form was valid, and all questions were easy to understand for nurses. The results of the survey form, including frequency and percentage, were calculated for each answer and each question.

### Data Collection

Data were collected at Becamex International Hospital from November 2019 to February 2020 by the principal investigator and two research assistants. These research assistants were nurses who had a 4-year Bachelor's Degree in Nursing and more than five years of hospital work experience. Before the actual data collection, the principal investigator conducted a training session for them on how to determine the level of nurses' compliance during the pre-operative patient handover. Then, they observed and performed a trial evaluation on the same handover case. Finally, the principal investigator compared their two results, corrected and interpreted them until the results obtained

from the research assistants were identical. During the period of data collection, the principal investigator and research assistants observed the handover processes between nurses who transferred patients and nurses who received patients at the pre-operative room; and evaluating their compliance by filling in the box "Yes" or "No" for each category in "The checklist of assessing nurse's compliance on pre-operative patient handover". After the number of samples was satisfactory, all nurses participating in the study were given "The survey form of Nurse's evaluation on using pre-operative patient handover checklist". All questions and answers in the form were explained by the principal investigator before they answered by circling from their point of view.

**Data Analysis**

The data were entered into Epidata 3.1 software. R software was used to process and analyze data. Descriptive statistics, including frequencies and percentages, were used to present the study results.

**Ethical Consideration**

This research was approved by the Medical Ethics Council of the University of Medicine and Pharmacy at Ho Chi Minh City, Vietnam, No. 642/ĐHYD-HĐĐĐ. After we clearly explained the study's objectives, the participants voluntarily signed the consent form to participate in the study. We ensured that participants were not affected by any benefits in their work.

## RESULTS

**Level of nurses' compliance on handing over pre-operative patients**

With 196 handover cases in this study, the number of semi-emergency surgeries (54.1%) was more than the number of scheduled surgeries (45.9%) (Table 1).

**Table 1** Surgical classification (*n*=196)

| Surgery | Frequency (*n*) | Percentage (%) |
|---|---|---|
| Scheduled | 90 | 45.9% |
| Semi-emergent | 106 | 54.1% |

Table 2 shows that there was a high level of nurses' compliance on performing pre-operative patient handover checklist at Becamex International Hospital accounted for 71.9%. The remaining was a medium level of 28.1%.

**Table 2** Level of nurses' compliance on pre-operative patient handover checklist (*n*=196)

| Compliance level | Frequency (*n*) | Percentage (%) |
|---|---|---|
| High (completed > 90% checklist) | 141 | 71.9% |
| Medium (completed 60-90% checklist) | 55 | 28.1% |
| Low (completed <60% checklist) | 0 | 0% |

The percentage of handover contents that nurses complied ranged from 63.3% to 99.5%. Some areas of low compliance rate were: patient needs isolation (63.3%), identifying patient information verbally (75%), identifying patient information by hospital bracelet (77%), time to use antibiotics (78.1%), and marked surgical site (79.6%) (Table 3).

**Table 3** Nurses' compliance rate according to each handover content (*n*=196)

| Handover content | Frequency (*n*) | Percentage (%) |
|---|---|---|
| **Handover information** | | |
| Patient's full name | 192 | 98.0% |
| Date of birth | 191 | 97.4% |
| Gender | 189 | 96.4% |
| ID | 181 | 92.3% |
| Last meal time | 186 | 94.9% |
| Patient needs to be isolated | 124 | 63.3% |
| Body temperature | 189 | 96.4% |
| Respiration rate | 190 | 96.9% |
| Pulse rate | 189 | 96.4% |
| Blood pressure | 188 | 95.9% |
| $SpO_2$ | 165 | 84.2% |
| Antibiotics before surgery | 159 | 81.1% |
| Time to use antibiotics | 153 | 78.1% |
| Date and time patient arriving at the Anesthesia Department | 166 | 84.7% |
| Surgeon name | 177 | 90.3% |
| **Handover content** | | |
| Identifying patient information verbally | 147 | 75.0% |
| Identifying patient information by hospital bracelet | 151 | 77.0% |
| Medical report | 183 | 93.4% |
| Consent form of performing anesthesia and surgery | 194 | 99.0% |
| Test results | 193 | 98.5% |
| Results of electrocardiogram | 194 | 99.0% |
| Results of X-ray, MRI, CT | 194 | 99.0% |
| Results of ultrasound | 195 | 99.5% |
| Blood transfusion commitment | 195 | 99.5% |
| Indications for using blood and blood products | 194 | 99.0% |
| Shaved (cut) hair and prepared skin | 170 | 86.7% |
| Marked surgical site | 156 | 79.6% |
| Patient wore anti-embolism stockings | 194 | 99.0% |
| Dentures were removed | 195 | 99.5% |
| Auxiliary devices were removed | 194 | 99.0% |
| Jewelry and hairpin were removed | 182 | 92.9% |
| Nails polished | 194 | 99.0% |
| Undressed underwear | 195 | 99.5% |
| Patient was rectally cleaned | 195 | 99.5% |
| Patient had implant materials/special equipment for surgery | 195 | 99.5% |
| Patient's jewelry is stored | 194 | 99.0% |
| Nurse transferring patient signed | 189 | 96.4% |
| Nurse receiving patient signed | 172 | 87.8% |

**Nurses' evaluation on using pre-operative patient handover checklist**

Among 53 nurses performing pre-operative patient handovers at Becamex International Hospital, the majority were female, accounting for 94.4%. Nurses who had a 4-year Bachelor degree accounted for 41.5%; 2-year College and 3-year College accounted for 30.2% and 28.3%, respectively. The majority of nurses in the study were nurses with 1 to 10 years of experience, and nurses ranged in age from 30 to 40 years old, accounting for 81.1% and 64.2%, respectively. The Maternity Department had the highest rate of nurses participating in this study, at 28.3%, and the lowest was the Anesthesia Department, at 11.3% (Table 4).

Table 5 shows that most nurses agreed and strongly agreed that the pre-operative patient checklist had been appropriately used. The answer "No idea" still varied from 1.9% to 9.4%.

**Table 4** Nursing demographic characteristics ($n$=53)

| Demographic characteristics | Frequency ($n$) | Percentage (%) |
|---|---|---|
| **Gender** | | |
| Female | 50 | 94.4% |
| Male | 3 | 5.6% |
| **Education level** | | |
| 4-year Bachelor | 22 | 41.5% |
| 3-year College | 15 | 28.3% |
| 2-year College | 16 | 30.2% |
| **Work Experience** | | |
| Over 10 years | 10 | 18.9% |
| From 1 year to 10 years | 43 | 81.1% |
| Under 1 year | 0 | 0% |
| **Department** | | |
| Surgical | 12 | 22.7% |
| Maternity | 15 | 28.3% |
| Obstetrics and Gynecology | 8 | 15.1% |
| Emergency | 12 | 22.6% |
| Anesthesia | 6 | 11.3% |
| **Age** | | |
| Under 30 years old | 19 | 35.8% |
| From 30 to 40 years old | 34 | 64.2% |
| From 40 to 50 years old | 0 | 0% |
| Over 50 years old | 0 | 0% |

**Table 5** Nurses' evaluation on using pre-operative patient handover checklist ($n$=53)

| Content | Strongly Disagree | Disagree | No Idea | Agree | Strongly Agree |
|---|---|---|---|---|---|
| Is the pre-operative patient handover checklist effective? | 0 (0%) | 0 (0%) | 1 (1.9%) | 23 (43.4%) | 29 (54.7%) |
| In your opinion, is this checklist helpful for preventing medical incidents related to surgery? | 0 (0%) | 0 (0%) | 5 (9.4%) | 23 (43.4%) | 25 (47.2%) |
| Do you want to continue using this checklist for patient handover? | 0 (0%) | 0 (0%) | 1 (1.9%) | 21 (39.6%) | 31 (58.5%) |
| Given the opportunity, would you recommend this checklist to your colleagues? | 0 (0%) | 0 (0%) | 2 (3.8%) | 25 (47.2%) | 26 (49.0%) |
| You have no difficulty when using this checklist to handover patients? | 0 (0%) | 0 (0%) | 5 (9.4%) | 25 (47.2%) | 23 (43.4%) |
| In your opinion, should this checklist be widely applied to other hospital departments? | 1 (1.9%) | 0 (0%) | 3 (5.6%) | 16 (30.2%) | 33 (62.3%) |

## DISCUSSION

**Level of nurses' compliance on pre-operative patient handover**

The overall results show that the level of nurses' compliance on handing over pre-operative patients at Becamex International Hospital's Anesthesia Department was implemented consistently, with most nurses scoring high on the survey. However, this is still not a desirable outcome because patient handover is an issue that nurses can complete and master (Sharp et al., 2019).

***About handover information***

Occasionally, patients' basic information was inaccurate. In some cases, it was completed on the handover checklist, but patients' information was confusing and different from that of the medical record. Information about the patient's last mealtime is vital for anesthesia during surgery, but it lacked 5.1% of the cases. This result is consistent with the previous research (Huyen, 2015); however, this study's outcome was somewhat improved.

"Patient needs to be isolated" was the area that nurses most ignored during the period of data collection. Thorough handover of this issue helps medical personnel be more proactive in preparing personal protective equipment, preventing infectious disease transmissions from one patient to other medical staff and other patients. In addition, there were still 3.6% of handover checklists that did not have sufficient information about the vital signs of patients, with 15.8% of them

lacking information for $SpO_2$. The purpose of a pre-surgical patient evaluation is to identify factors that significantly increase the risk of surgical complications on patients. Inadequate checking of patients' vital signs before surgery increases the chances that abnormal situations will not be detected early and threatens patients' safety during anesthesia and surgery processes.

Antibiotic use is a significant problem that directly affects post-surgery infections and wound healing. However, the rate of handing over pre-operative antibiotics and time to use them for patients accounted for only 81.1% and 78.1%. They are relatively consistent with the study at Military Hospital 354 on drug handover (Huyen, 2015). Although these two issues are closely related, the survey's results also show that the percentage of nurses who handed over antibiotics without handing over time to use them accounted for 3%. "The date and time patient arrive at the Anesthesia Department" and "The surgeon name" were still missing on the handover checklists, especially for semi-emergent surgeries' checklists. Possibly, nurses often think that this information has little effect on patients, but this is a mandatory element that must be performed when handing over patients.

***About handover content and patient preparation***

Compliance rates of nurses who identified patient information verbally and by hospital bracelet accounted for only 75% and 77%, respectively. This content also has the second-lowest level of compliance in this research. Compared to Huyen (2015), this result is significantly lower. Those information deficiencies are very common during patient handover, and information transfer will be further degraded at the next handover (Nagpal et al., 2010).

Medical records often lacked a surgical consultation report of semi-emergent surgeries or some surgeries performed by co-operating doctors. Besides, nurses also forgot to transfer patients' electronic records on hospital software when their patients came to the Anesthesia Department. The surgical consultation reports were usually supplemented and completed by the surgeons after their surgeries were completed, but this is not according to the prescribed surgical procedure. The rest of the medical records, subclinical results, and pre-operative preparation for patients were implemented fully and meticulously by nurses; these resemble Huyen (2015), which also had a high level of compliance rates.

The most common problems associated with medical incidents in surgery are skin preparation and surgical site marking. These ratios were still significantly low at Becamex International Hospital: respectively, 13.3% of patients had not shaved (cut) hair and prepared skin, and up to 20.4% of patients had not had their surgical sites marked. Several cases were considered the surgical site marked, but in fact, those patients had a wound or a bone fracture bandaged and fixed. These cases demonstrated that at that time, many surgeons and nurses had not determined the importance of skin hygiene and defining surgical area before the surgery. Moreover, 7.1% of patients who were transferred to the Anesthesia Department still wore jewelry and hairpins. These increased the risk of burn accidents for those patients when using electro-surgery units during the surgery. To ensure patients' safety, these issues need to be followed strictly before the operation.

Compared to the survey of the pre-operative patient handover process at Military Hospital 354, nurses transferring and receiving patients still forgot to sign the handover note when the handover process was completed (Huyen, 2015). Still, the rate at Becamex International Hospital had improved significantly.

**Nurses' evaluation on pre-operative patient handover checklist**

***Nursing demographic characteristics***

Of the 53 nurses participating in the research, there was a large difference in gender between male and female. Female nurses accounted for 94.4%, which was much higher than males, only 5.6%. This is consistent because the proportion of female nurses currently accounts for the majority, not only in Becamex International Hospital but also in Vietnam and the world. At present, the proportion of nurses having a bachelor's degree at Becamex International Hospital is still increasing and dominating; this shows that they are continually improving their knowledge and qualifications to increase the quality of care for patients.

***Nurses' evaluation on using pre-operative patient handover checklist***

In this research, 98.1% of the nurses agreed on the checklist's effectiveness when it was used to hand over pre-operative patients. This demonstrated nurses' high satisfaction regarding this checklist. A high level of nurses' satisfaction in the handover process will increase their responsibility to communicate and transfer information regarding the patient's condition to their colleagues, and they can continue to manage their patients effectively (Karmila et al., 2019).

There was a broad consensus that structured handover procedures were critical for safe patient care. Checklists and handover tools can create convenience, improve the reliability of the handover process, and reduce stress for nurses when they hand over their patients to their colleagues (Kalkman, 2010). That is the reason why 52/53 nurses in this study agreed to continue using this checklist for patient handover, and 96.2% of nurses also wanted to introduce this checklist to their colleagues. Effective patient handover through the handover checklist also contributes to increasing nurses' satisfaction with this process because the information provided will be more completed and structured, avoiding the loss of important information related to patient care. A study conducted by Baker (2010) also claims that the process of performing handover would contribute to increasing nurses' satisfaction in patient care, providing information about patients' condition effectively, and solidifying teamwork among medical personnel.

At Becamex International Hospital, none of the nurses reported difficulty using the checklist to hand over patients. In fact, there is a perception that nurses' satisfaction on patient handover is partly influenced by providing too much patient information from one nurse to another (Baker, 2010). It is likely that due to this, 1.9% of nurses strongly disagreed about the widespread adoption of this checklist for other departments because this checklist just revolves around handing over the issues related to patients' pre-surgical preparation. In order to apply the checklist to other departments, it is necessary to modify or use another handover frame to suit the needs of the entire hospital. Therefore, it is likely that no tool is optimal for all handover issues. Handover improvement needs to be modified based on different

demands and needs to suit the actual situations from different departments (Herawati et al., 2018; Kalkman, 2010).

**The implication of this study**

The results of this study are the basis for assessing the nursing practice in patient handover and recognizing incomplete issues. Although there are measures to improve handover worldwide, greater levels of innovation are needed, aimed at addressing the difficulties that still exist in different health care organizations and enhancing the quality of care for patients. This study is also considered one of the new references on the issue of pre-operative patient handover; it will help other researchers refer and compare data in the future.

Future studies should deploy a new handover tool that enhances nursing communication. It is also necessary to explore more creative ways of conducting patient handover. Especially, handover procedures in hospitals and medical facilities also need to be continuously updated to ensure patient safety and suit the innovation of the health system in the world.

## CONCLUSION

The process of pre-operative patient handover at Becamex International Hospital was implemented relatively consistently, with 71.9% at a high level of compliance. There was still some content that nurses need improvement, such as: "Marked surgical site", "Time to use antibiotics", "Identifying patient information verbally and by hospital bracelet", "Patient needs to be isolated." The study also received positive reviews from nurses on using the handover checklist for patients before the surgery. Over 90% of nurses agreed that this checklist was effective, helpful, and could prevent medical incidents related to surgery.

**Declaration of Conflicting Interest**

There is no conflict of interest to be declared.

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**Authors Contribution**

N. M. N. was the principal researcher; responsible for the study design, drafting, data collection, data analysis, and interpretation. H. T. N. X. was the first science instructor who gave instructions on making and editing the article and responded to reviewers' comments. K. E. was the second science instructor who revised the article.

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**Data Availability Statement**

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

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ORIGINAL RESEARCH

# THE CORRELATION BETWEEN RELIGIOSITY AND SELF-EFFICACY IN PATIENTS WITH CORONARY ARTERY DISEASE

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**Abstract**

**Background:** In managing life with coronary artery disease, having self-efficacy is considered important. Self-efficacy reduces risk factors for coronary artery disease by encouraging the self-control process. The involvement of religiosity aspects can be a motivation to increase self-efficacy in maintaining an individual's health status.

**Objective:** This study aimed to examine the correlation between religiosity and self-efficacy in patients with coronary artery disease.

**Methods:** This was a correlational study with a cross-sectional approach involving 112 respondents selected using an accidental sampling method in a hospital at Jember District, East Java, Indonesia. Data were collected from December 2019 to January 2020 using the Religiosity Scale and Cardiac Self-Efficacy (CSE). The Spearman's rank test was used to analyze data.

**Results:** The results showed that the respondents' religiosity had a median value of 3.84 (min-max: 3.00-4.00), while the median value of self-efficacy was 3.60 (min-max: 2.90-4.00). There was a significant correlation between religiosity and self-efficacy ($p = <0.001$, $r = 0.540$, $\alpha = 0.05$).

**Conclusion:** The moderate positive correlation between religiosity and self-efficacy indicated that the higher value of religiosity leads to a higher value of self-efficacy. The religious value through rituals of prayer or meditation could increase the self-efficacy of patients with coronary artery disease. Nurses are recommended to maintain the religiosity of patients at a good level to improve their self-efficacy and maintain the optimal health status.

KEYWORDS
coronary artery disease; cross-sectional study; nursing; religiosity; self-efficacy

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## BACKGROUND

Coronary artery disease (CAD) is a general term used to describe obstruction of blood flow due to plaque or a buildup of fatty material in the coronary arteries (Putra & Adam, 2015). Patients usually feel pain in the chest, such as being crushed by a heavy burden, pressured, or punctured when climbing stairs or doing heavy work (Puspita, 2018). This condition causes a decrease in physical ability, the emergence of feeling threatened because it can occur at any time, and suddenly death (Hamzah et al., 2014). Besides, this condition also causes denial, anxiety, and depression (Hamzah et al., 2014). Negative physiological and psychological responses related to CAD influence disease prognosis. If this continues, it will lead to the disease's complications, which adds to the burden of new problems on the patient's health, such as dependence on others. The powerlessness of patients to be independent will affect self-confidence in caring for themselves or low self-efficacy.

A study in the United States states that the average CAD patient has low self-efficacy associated with poor health management (Sarkar et al., 2009). The study was conducted on 1024 heart disease patients in various places in San Francisco and obtained an average self-efficacy score of 9.7 from a range of 0 to 20 (Sarkar et al., 2009). Putra and Adam (2015) conducted a study on self-efficacy and found that 47.1% of 34 patients had low self-efficacy, while Wantiyah (2010) stated that as many as 71% of the total 107 respondents had low self-efficacy in maintaining diet control behavior, and 32.7% showed a lack of individual confidence in their ability to control symptoms and maintain bodily functions. This self-efficacy is an essential factor in managing and restoring the health of CAD patients and social support and health service providers (Fors et al., 2015; Putra & Adam, 2015).

Self-efficacy plays a vital role in daily life, especially in health (Fors et al., 2015; Rustika, 2012). Self-efficacy results from one's cognitive processes to shape confidence about how far someone can estimate his ability to carry out life activities (Bandura, 1997). Someone who has functional self-efficacy will be able to use the potential within themselves optimally (Rustika, 2012; Siregar et al., 2018). Daly et al. (2002) explained that in maintaining individual behavior to reduce risk factors that cause CAD, self-efficacy is needed to drive the patient's self-control process. Self-efficacy will encourage patients' beliefs about their ability to perform self-management. Patients who have

good self-efficacy management will maintain health behavior in a good range and can set choices, goals, overcome problems, and be persistent in reducing the risk factors that cause CAD (Ghufron & Risnawira, 2010).

Bandura (1994) states that four sources can increase self-efficacy, i.e., successful experiences, others' experiences, social persuasion, and physical and emotional conditions. Ellison and Levin (1998) state that the involvement of religiosity aspects can be a motivation for increased self-worth, self-esteem, and self-efficacy in maintaining an individual's health status. Religiosity is related to methods, techniques, or particular religious practices, while spirituality is related to seeking meaning, purpose, both in religious and non-religious environments (Zinnbauer & Pergament, 2005). Religiosity will encourage positive feelings in patients through social, experience, life, and intellectual factors (Thouless, 2000). Positive perceptions of patients with high religiosity can directly influence health-related behaviors, beliefs, and attitudes (Ellison & Levin, 1998). According to the research of Tina and Utami (2016), religiosity has a significant influence on the lives of CAD patients in accepting their disease conditions and facing pressure, so they can overcome problems that arise and help maintain mental health. Patients with high religiosity can influence themselves to be more optimistic, brave, accept their conditions, able to handle life, and able to have a stoic attitude (Kartikasari, 2014). Therefore, based on those explanations, the researchers were intrigued to analyze the correlation between religiosity and self-efficacy in patients with coronary artery disease.

## METHODS

### Study Design

This research was a correlational study with a cross-sectional approach. This study aimed to examine the correlation between religiosity and self-efficacy.

### Sample and Setting

The population in this study were patients with CAD at the heart outpatient unit of a hospital at Jember District, East Java, Indonesia. The samples were 112 patients recruited using accidental sampling. Samples in this study were patients with CAD who could communicate well and be willing to be research respondents. The exclusion criteria were patients with heart attacks. The sample size was calculated using the G* Power 3.1.9.2 (https://www.download82.com/download/windows/g-power/) application developed at the Institute for Experimental Psychology in Dusseldorf, Germany, with a power analysis of 0.90.

### Instruments

This study used three questionnaires: respondents' demographic characteristics, Religiosity Scale, and Cardiac Self-Efficacy (CSE). All of the questionnaires were using Indonesian Language.

1. Respondents' demographic characteristics include age, gender, education, occupational status, income, marital status, history of illness, and heart attack history in the past month.
2. Religiosity Scale was used to measure religiosity. It was compiled by Kartikasari (2014), referring to the concept of Glock (1962). There are 19 question items with five indicators (ideological, ritualistic, experience, intellectual, and consequences). This questionnaire consists of ten favorable and nine unfavorable questions. The answers to favorable questions were rated on a four-point Likert scale (4=strongly agree, 3=agree, 2=disagree, 1=strongly disagree) and vice versa for unfavorable questions. The Religiosity Scale was valid and reliable with r values of 0.302-0.619 and alpha Cronbach $\alpha$> 0.839. The result of religiosity was analyzed using the Likert scale varies from 1 to 4; the higher score implies a higher level of religiosity.
3. Cardiac Self-Efficacy (CSE) was adopted from Sullivan et al. (1998), and it has been translated and modified to an Indonesian version by Wantiyah (2010). The CSE Questionnaire consists of 20 question items related to risk factor management and maintenance of functions. This questionnaire uses a four-point Likert scale with 20 questions and has been declared for validity and reliability with a Cronbach $\alpha$ value of 0.77 (Wantiyah, 2010). The Likert scale of self-efficacies varies from 1 to 4; the higher score implies a higher level of self-efficacy.

### Data Collection

Data sources were obtained from primary and secondary data. Primary data were obtained directly using a questionnaire, while secondary data were gained from control letters and patient medical records. Data were collected by the researchers in the heart outpatient unit of a hospital at Jember District from December 2019 to January 2020.

### Data Analysis

Univariate analysis was used to determine the frequency of each variable. For the bivariate test analysis, we used Spearman's Rank correlation test with a 95% confidence interval because the data were not normally distributed, and the scale was an interval. The data analysis used SPSS Statistics 20.

### Ethical Consideration

The study was ethically approved by the Health Research Ethics Committee, Faculty of Dentistry, University of Jember, Indonesia, with approval number No. 707 / UN25.8 / KEPK / DL / 2019. All of the respondents in this study were given formally informed consent. The respondents had the right to refuse to participate without penalty if they want to do so.

## RESULTS

Based on the result of the statistical analysis in Table 1, the majority of respondents aged 55-64 years (54.5%) and male (81.3%). Most of them had an educational background in high school (40.2%). Most respondents did not work (47.3%), and most had to earn more than Rp. 2.000.000,- (56.3%). Almost all respondents are married (92.9%). 68.8% of respondents said they had smoked, had hypertension (42.9%), and did not complain of a heart attack in the past month (72.3%).

While as shown in Table 2, the religiosity shows a median value of 3.84 with a minimum value of 3.00 and a maximum value of 4.00. Almost all indicators have a high value, such as experience, ideology, consequence, and ritual (median: 4.00), except for intellectual indicators (median: 3.63).

**Table 1** Demographic Characteristics of Respondents in the Heart Outpatient Unit (*N*= 112)

| Characteristics | Frequency (*n*) | Percentage (%) |
|---|---|---|
| Age | | |
| <45 years old | 4 | 3.6 |
| 45-54 years old | 15 | 13.4 |
| 55-64 years old | 61 | 54.5 |
| 65-74 years old | 27 | 24.1 |
| >74 years old | 5 | 4.5 |
| Gender | | |
| Male | 91 | 81.3 |
| Female | 21 | 18.8 |
| Educational background | | |
| No school | 7 | 6.3 |
| Graduated from elementary school | 17 | 15.2 |
| Graduated from middle school | 17 | 15.2 |
| Graduated from high school | 45 | 40.2 |
| College | 26 | 23.2 |
| Occupational status | | |
| Does not work | 53 | 47.3 |
| Labor | 9 | 8.0 |
| Farmers | 8 | 7.1 |
| General employees | 12 | 10.7 |
| Entrepreneur | 17 | 15.2 |
| Civil servants | 11 | 9.8 |
| Indonesian National Army/Indonesian Republic Police | 2 | 1.8 |
| Income | | |
| <2000000 IDR | 49 | 43.8 |
| ≥2000000 IDR | 63 | 56.3 |
| Marital status | | |
| Married | 104 | 92.9 |
| Widowed | 8 | 7.1 |
| Smoking history | | |
| No | 35 | 31.3 |
| Yes | 77 | 68.8 |
| History of illness | | |
| None | 48 | 42.9 |
| Hypertension | 48 | 42.9 |
| Diabetes mellitus | 14 | 12.5 |
| Others (Stroke, CKD, etc...) | 2 | 1.8 |
| History of chest pain (angina) in the past month | 81 | 72.3 |
| No | 31 | 27.7 |
| Yes | | |

**Table 2** Religiosity Value in Patients with CAD in the Heart Outpatient Unit (*N*=112)

| Religiosity | Median | Min-Max |
|---|---|---|
| Experience | 4.00 | 3.00-4.00 |
| Ideology | 4.00 | 3.00-4.00 |
| Consequence | 4.00 | 3.00-4.00 |
| Rituals | 4.00 | 3.00-4.00 |
| Intellectual | 3.63 | 2.75-4.00 |
| **Overall religiosity** | **3.84** | **3.00-4.00** |

**Table 3** Self-Efficacy Value in Patients with CAD in the Heart Outpatient Unit (*N*=112)

| Variable | Median | Min-Max |
|---|---|---|
| Self-efficacy | 3.60 | 2.90-4.00 |

Table 3 shows that the self-efficacy of the respondents had median value of 3.60 (min-max: 2.90-4.00). Table 4 shows that each subscale of religiosity had a significant correlation with self-efficacy ($p$ = 0.001), with the ritual indicator had the highest correlation value ($r$ = 0.509). Overall, there was a moderate and positive correlation between religiosity and self-efficacy in CAD patients ($p$ = 0.01, $r$ = 0.504, $\alpha$ = 0.05). The higher or better the religiosity, the higher or better the self-efficacy of the CAD patients.

**Table 4** The Correlation between Religiosity and Self-Efficacy in Patients with CAD in the Heart Outpatient Unit (*N*=112)

| Religiosity | Self-Efficacy | |
|---|---|---|
| | *p-value* | *r* |
| Experience | 0.001 | 0.350 |
| Ideology | 0.001 | 0.389 |
| Consequence | 0.001 | 0.304 |
| Ritual | 0.001 | 0.509 |
| Intellectual | 0.001 | 0.430 |
| **Overall religiosity** | **0.001** | **0.540** |

## DISCUSSION

The study aimed to determine the correlation between religiosity and self-efficacy in patients with CAD. The findings of this study revealed that there was a significant relationship between religiosity and self-efficacy in patients with CAD in the heart outpatient unit of a hospital at Jember District. This finding indicated that good religiosity has a positive effect on self-efficacy, which leads to a better condition. Schwarzer (2008) explained that self-efficacy plays a role in health behavior change models, namely, mediator, predictor, and moderator. According to the Health Beliefs Model, someone with good self-efficacy will be able to adopt positive health behaviors, such as being willing to engage in health promotion, being able to choose behaviors that can prevent disease events, and able to maintain health regularly (Shahed et al., 2019). So, patients will be fully aware without coercion anyone to reduce behaviors that can trigger risk factors for relapses such as stopping smoking, reducing consumption of salty foods, having adequate rest or regular sleep, and exercising according to doctor's recommendations.

The results of our study were in line with Kobayashi et al. (2015), which showed that people who are strong in religiosity tend to be able to stop smoking, reduce alcohol consumption, and increase exercise. These are included in the risk factor management and maintenance of health functions contained in the self- efficacy. Ellison and Levin (1998) stated that the involvement of aspects of religiosity could be a driver of increased self-esteem, self-worth, and self-efficacy in maintaining an individual's health status. American researchers also stated that there is a positive relationship between religiosity and evaluation of life, which is the evaluation itself includes experiences in life that have been experienced by individuals, both pleasant and painful experiences (Diener & Chan, 2011). Based on the concept of self-efficacy (Bandura, 1994), the experience is one source that supports an increase in self-efficacy, verbal perception, physical conditions, and emotional conditions.

The religiosity in patients with coronary artery disease in our study was also in a high value. The religiosity is very important for patients with

CAD because religiosity provides the functional components needed by humans (Tina & Utami, 2016). In patients with the acute coronary syndrome (ACS), most of them said that praying is an effort to improve health, gain strength, and get comfort (Abu et al., 2018). Another research also showed that, in stressful life conditions, such as being diagnosed with chronic illness, patients could utilize their beliefs, such as praying for their health or seeking strength from God to gain meaning, hope, and support in managing their illness (Jors et al., 2015). According to Kobayashi et al. (2015), CAD patients who are more religious are better able to regulate lifestyles so that they have fewer cardiovascular risk factors at the onset of the disease. Therefore, the relationship between religiosity and self-efficacy can have a strong value.

Although previous studies have not yet provided a definite reason why religiosity can be associated with better health behaviors, most researchers believe that religion provides a way out for stress, thereby reducing a person's desire to turn to maladaptive behavior. Another explanation is that almost all scriptures contain the obligation to respect one's own body and avoid risky behavior (Kobayashi et al., 2015). Religion can help a sick individual to accept someone's situation and disappointment by asking Allah's blessing (Cholifah, 2012). Someone who involves a belief in a higher power tends to have prosperity in his/her life, has good regulation in living arrangements, and can avoid stress (Kobayashi et al., 2015). Religiosity can make individuals more optimistic, though, accept their condition, have a handle on life, and be steadfast (Kartikasari, 2014). Thouless (2000) stated that religiosity would encourage positive feelings and improve the self-efficacy of CAD patients through social, experience, life, and intellectual factors. Individuals who have religious information will go through a verbal thought process that is influenced by intellectual factors. The thought process in the development of religious attitudes was in line with cognitive processes that can form self-efficacy attitudes. Patients with good religiosity will view that God gives trials in the form of illness as a form of affection for His servants so that adaptive coping arises in individuals (Tina & Utami, 2016). The ability to maintain this belief is related to the effective process in the formation of self-efficacy. Parents, relatives/relatives have a significant influence on the development of individual attitudes, one of them as a motivator.

Furthermore, individuals will be placed in two choices for the right decision, whether they choose to increase their health status by minimizing the risk factors that cause CAD or staying in the stage of denial to lead to maladaptive conditions. This will undoubtedly provide valuable experience in supporting the patient's self-control process, whereby accepting illness conditions and trying to change lifestyle for a better, healthy, and prosperous state. Thus, signs and symptoms of low self-efficacy, such as feelings of inferiority, anxiety, grieving, and despair, will not be experienced by these individuals (Wahyuni & Dewi, 2018).

The self-efficacy of patients is driven by the patient's religiosity itself both in physiological and psychological effects. In our study, the relationship between religiosity with self-efficacy is at a moderate level due to religiosity has a strong enough influence in increasing patients' confidence in their ability to overcome health problems, such as being able to reduce consumption of salty foods, smoking, medication adherence, and exercise by controlling the coping process through prayer and meditation in order to be free from destructive copings, such as stress which can increase the prognosis of the disease. Therefore, nurses need to plan activities to help patient's religiosity needs, such as spiritual healing, spiritual care, spiritual group therapy, relaxation, meditation, and other activities to increase self-efficacy and self-independence.

There are several limitations of this study, including 1) the implementation process, which we did not include the information about the various types of religions held by respondents and the length of time since CAD was diagnosed for the first time, 2) the questionnaire about religiosity was also general and the questions asked were self-report and sensitive that might influence the results, and 3) the respondents involved in this research tended to give the ideal answer according to religious guidance, but we have anticipated this by providing an informed consent sheet signed by the respondents. Future studies may need to address these limitations for confirmation of the findings. In addition, experimental research can also be carried out to determine the effect of religiosity done routinely on the self-efficacy of patients with CAD.

## CONCLUSION

There was a significant relationship between religiosity and self-efficacy in patients with CAD. The results indicated that the higher the religiosity of the patients, the higher the self-efficacy they have. Nurses are expected to identify patients' religiosity during patients' assessment as the basis for giving comprehensive intervention to the patient, especially in improving patients' self-efficacy to enhance patients' quality of life.

**Declaration of Conflicting Interest**
There is no conflict of interest.

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**Authorship Contribution**
**Wantiyah** contributed to study conception and design, study supervision, manuscript writing, data analysis and interpretation, and critical revisions for important intellectual content. **Firda Romadhonia** contributed to study conception and design, data collection, data analysis, data interpretation, literature review and analysis, and manuscript writing. All authors agreed with the final version of the manuscript. **Mulia Hakam** contributed to study supervision, methods, and critical revisions for important intellectual content.

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**Data Availability Statement**

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

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ORIGINAL RESEARCH:
RESEARCH METHODOLOGY PAPER

# PSYCHOMETRIC PROPERTIES OF SPIRITUAL INDEX OF WELL-BEING AMONG FILIPINO WOMEN WITH BREAST CANCER

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**Abstract**

**Background:** Breast cancer patients need to be treated not only physically and emotionally but also spiritually. Hence, the assessment of the spirituality of patients is essential to provide holistic nursing care. However, there was no culturally valid and reliable instrument that measures spirituality among Filipino women with breast cancer.

**Objective:** The study was conducted to determine the psychometric properties of the spiritual index of well-being among Filipino women with breast cancer.

**Methods**: A descriptive cross-sectional design was utilized in the study, and a sample of 170 Filipino women with breast cancer were included. The World Health Organization guidelines were used to translate the original instrument to Filipino, and content validity was computed using the Davis technique. Also, confirmatory factor analysis with maximum likelihood estimation was performed to assess the construct validity of the instrument. Cronbach's α and item-total correlations were done to assess the internal consistency of the Filipino version of the spiritual index of well-being.

**Results:** The Filipino version of the spiritual index of well-being had an item content validity index (I-CVI) ranging from 0.86 to 0.92 and a scale content validity index (S-CVI) of 0.95. The confirmatory factor analysis (CFA) showed factor loadings of 0.42 to 0.72. Also, the CFA model revealed a $\chi 2/df = 2.51$, root mean square error of approximation= 0.074, comparative fit index= 0.091, goodness of fit index=0.98, Tucker-Lewis index= 0.93, incremental fit index= 0.91, and standard root mean square residual== 0.072.

**Conclusion:** The Filipino version of the spiritual index of well-being was cross-culturally valid and reliable in measuring the spiritual index of well-being among Filipino women with breast cancer.

KEYWORDS
breast cancer; Filipino; psychometric properties; spiritual index of well-being

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## BACKGROUND

Cancer is the second leading cause of death worldwide and accounted for about 9.6 million deaths globally (World Health Organization, 2018). About 70% of this death is in low- and middle-income countries, with breast cancer being the second most commonly occurring cancer in women (World Cancer Research Fund International, 2018). In the Philippines, data from the Philippine Cancer Society (2015) revealed that one out of 13 Filipino women is expected to develop breast cancer in their lifetime with an age-standardized rate (ASR) of 47 per 100,000 women (Ferlay et al., 2015).

Breast cancer patients are faced with immense stress, such as disruptions in their lifestyle and untoward side effects from treatment (Meraviglia, 2006). This can have a significant impact on the life of the patient, especially in terms of physical functioning and psychological well-being. Thus, developing strategies to help the patient cope with the sudden change in their situation is essential. Lazarus and Folkman (1984) define coping as a dynamic process that involves cognitive and behavioral efforts to empower an individual to adjust to internal or external demands brought about by the disease. Previous studies have revealed that adherence to spirituality as a coping strategy helps patients withstand the physical and psychological stresses brought about by the diagnosis and treatment of cancer (Krok, 2008; Mccray, 1993; Meraviglia, 2004).

Spirituality has been defined as the experiences and expressions of the spirit in a unique and dynamic process reflecting faith in God or a supreme being; connectedness with oneself, others, nature, or God; and integration of the dimensions of mind, body, and spirit (Meraviglia, 1999). Recognizing the spiritual needs of cancer patients can result in a positive psychological outcome in dealing with their diagnosis

(Hatamipour et al., 2015). However, literature has revealed that the current spirituality measures contain items that do not directly measure the strength of spirituality of an individual (Baumsteiger & Chenneville, 2015; Yabut, 2018). Hence, there is a need to develop a culturally valid and reliable tool that measures spirituality among Filipino women with breast cancer. Thus, the study was conducted to determine the psychometric properties of the spiritual index of well-being (SIWB) scale among Filipino women with breast cancer.

## METHODS

### Study Design and Participants

The study utilized a descriptive cross-sectional study and employed a convenience sample of 170 Filipino women with breast cancer. The number of samples was based on the criteria that at least 10 participants are needed for each scale item in conducting a confirmatory factor analysis (Nunnally, 1978). Since the instrument contains 12 items, a sample of 120 is needed. However, a total of 200 questionnaires were distributed, and upon removing incompletely filled survey questionnaires and participants who did not return the survey forms, a total of 170 were included with a response rate of 85%.

### Instrument

**Spiritual Index of Well-Being (SIWB).** This instrument was developed by Frey et al. (2005) that was used to determine the meaningfulness of life and spiritual well-being. It described the perspective of the patients on spirituality and its relationship with subjective health and well-being. The instrument contains a total of 12 items and two domains, namely: self-efficacy and life scheme. Six items measure self-efficacy (Items 1, 2, 3, 4, 5, and 6) that determine the activities performed by a person to overcome obstacles that may threaten their functioning and reach a goal. On the other hand, six items measure the life scheme (Items 7, 8, 9, 10, 11, and 12), which assess the sense of coherence and the ability of a person to view a situation in a positive way. The items in the instrument are rated using a five-point Likert scale ranging from "strongly agree" (one point), "agree" (two points), "neither agree nor disagree" (three points), disagree (four points), and "strongly disagree (five points). The overall Cronbach's α coefficient for the tool was 0.91, while the self-efficacy scheme and life scheme sub-domains had a coefficient of 0.89 and 0.86.

### Translation of the Instrument

The forward translation and validation of the instrument were conducted following the guidelines of the World Health Organization as cited in Soriano and Calong Calong (2019b). Forward translation from English to Tagalog (local language) was done by a bilingual health professional who has a Master's Degree in Public Health and special training on instrument translation. The Filipino version was evaluated and reviewed for the consistency of each item with its corresponding item in the English version by an expert panel. The expert panel consisted of two nursing lecturers with a PhD in Nursing, two nursing lecturers with an MA degree in Nursing, one chief nurse with five years of supervisory experience, and a psychometrician. Several evaluations were conducted on the translated tool to establish semantic and content equivalence. After evaluating the Filipino version of the instrument, it was back-translated by an independent translator with a PhD degree in Linguistics and who has no knowledge of the instrument. Then, any discrepancies that were observed in the translations were resolved to develop the pre-final version of the instrument. Pre-testing and cognitive debriefing were done among participants who met the set inclusion criteria in the study. The meanings of the translation were clearly understood by the participants, and no problem was encountered during the pre-testing.

### Data Analysis

The study determined the construct validity of the spiritual index of well-being (SIWB) scale using confirmatory factor analysis CFA) with maximum likelihood estimation following the two-factor model of Frey et al. (2005). The variances of factors were fixed at 1, which provided the identification in the analysis. The following values were set in the estimation of the model fit: relative chi-square ($\chi 2/df$) $\leq 3$, (b) root mean square error approximation (RMSEA) $\leq$ 0.08, (c) comparative fit index (CFI) $\geq$ 0.90, (d) goodness of fit index (GFI) $\geq$0.95, (e) Tucker–Lewis index $\geq$ 0.90, (f) incremental fit index (IFI) $\geq$ 0.90, (g) standardized root mean square residual (SRMR) $\leq$ 0.08 (Kline, 2016). For the determination of content validity, the criteria set by Davis (1992) as cited in Soriano (2019) was followed wherein an Item-Level Content Validity Index (I-CVI) of 0.78 and a Scale-Level Content Validity Index (S-CVI) of 0.80 were considered acceptable in an expert panel consisting of six members. In determining the internal consistency reliability, Cronbach's alpha coefficient, and item-total correlation were measured. An alpha coefficient of more than 0.70 (Polit & Beck, 2014 as cited in Soriano & Calong Calong, 2019a), item-total correlation of higher than 0.30, and inter-item correlations of 0.30 to 0.70 (Ferketich, 1991) were considered satisfactory. SPSS version 21.0 and JASP version 0.13.1 were utilized in analyzing the data gathered.

### Ethical Consideration

The study is part of a larger study entitled "Spiritual Well-Being, Self-Transcendence and Spiritual Practices among Filipino Women with Breast Cancer." The ethical clearance was secured from Arellano University-Ethics Review Board (AU-ERB Chair, Dr. Remedios Fernandez; Contact Number: (+632) 8-734-7371 Local 216). The goals of the study were fully explained to the participants, and informed consent was given to them. The study complied with all the guidelines as set in the Declaration of Helsinki.

## RESULTS

### Profile of the Participants

A total of 170 participants were included in the study with a mean age of 51.85 (±7.07), while the mean year of diagnosis with breast cancer was 2.56 (±1.36). In terms of religion, all the participants are Christians, while for the civil status, 53 were single, 94 were married, and 23 were widowed.

### Content Validity

In determining the content validity of the instrument, an expert of the panel consisting of six members was formed. Then, the index was computed using the Davis technique wherein the items in the scale were rated using a four-point Likert scale, which was interpreted as 1= not relevant, 2 =somehow relevant, 3 =quite relevant, and 4= highly relevant. Based on the results, the translated tool had an I-CVI ranging from 0.86 to 0.92 and an S-CVI of 0.95.

**Construct validity**

For the construct validity, the study utilized the original two-factor model proposed by Frey et al. (2005). The CFA model output with factor loadings and standardized estimated is shown in Figure 1. The 12 items were loaded on two latent variables ranging from 0.42 to 0.72. The result of CFA revealed a $\chi 2/df = 2.51$, RMSEA = 0.074, CFI = 0.091, GFI=0.98, TLI = 0.93, IFI = 0.91, and SRMR = 0.072.

**Table 1** Model Fit Parameters for the SIWB-F (n=170)

| Model | $X^2/df$ | RMSEA | CFI | GFI | TLI | IFI | SRMR |
|---|---|---|---|---|---|---|---|
| Acceptable Values | ≤3.00 | ≤0.08 | ≥0.90 | ≥0.95 | ≥0.90 | ≥0.90 | ≤0.08 |
| Index Values | 2.51 | 0.074 | 0.91 | 0.98 | 0.93 | 0.91 | 0.072 |

**Internal consistency reliability**

After establishing the validity of the instruments, the internal consistency of the instrument was measured using Cronbach's alpha coefficient, item-total correlation, and inter-item correlation. The results revealed item-total correlation ranging from 0.489 to 0.694, inter-item correlation from 0.310 to 0.689, and an over-all Cronbach's α coefficient of 0.903. Specifically, the Cronbach's α coefficient for the self-efficacy scheme and life scheme was 0.864 and 0.889, respectively.

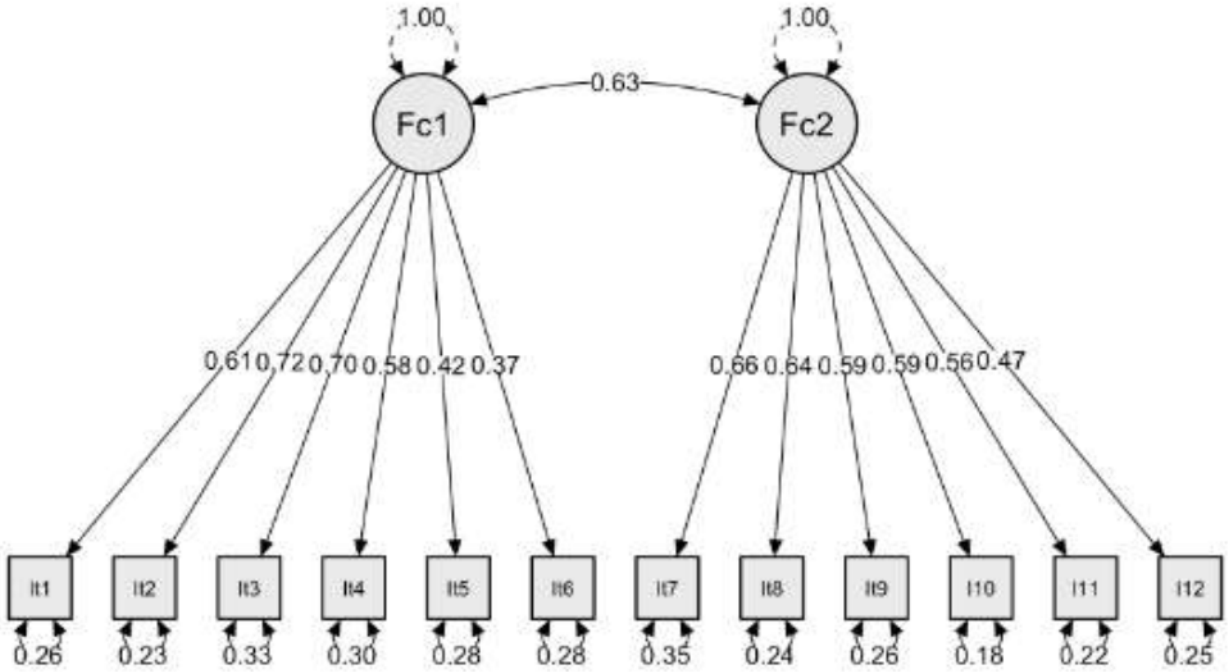


**Figure 1** Confirmatory Factor Analysis of the Filipino version of SIWB

**Table 2** Cronbach's α coefficients of the subscales of Filipino Version of SIWB

| Item | Mean (SD) | Item-total Correlation | Cronbach's α if item deleted |
|---|---|---|---|
| 1. There is not much I can do to help myself. | 4.26 (0.80) | 0.659 | 0.893 |
| 2. Often, there is no way I can complete what I have started. | 4.16 (0.87) | 0.694 | 0.892 |
| 3. I can't begin to understand my problems. | 4.27 (0.91) | 0.617 | 0.896 |
| 4. I am overwhelmed when I have personal difficulties and problems. | 4.38 (0.80) | 0.602 | 0.896 |
| 5. I don't know how to begin to solve my problems. | 4.47 (0.68) | 0.489 | 0.901 |
| 6. There is not much I can do to make a difference in my life. | 4.57 (0.64) | 0.592 | 0.897 |
| 7. I haven't found my life's purpose yet. | 4.34 (0.89) | 0.602 | 0.897 |
| 8. I don't know who I am, where I came from, or where I am going. | 4.37 (0.80) | 0.693 | 0.892 |
| 9. I have a lack of purpose in my life. | 4.45 (0.78) | 0.673 | 0.893 |
| 10. In this world, I don't know where I fit in. | 4.51 (0.72) | 0.660 | 0.894 |
| 11. I am far from understanding the meaning of life. | 4.52 (0.73) | 0.658 | 0.894 |
| 12. There is a great void in my life at this time. | 4.62 (0.69) | 0.598 | 0.897 |

**Table 3** Cronbach's α coefficients of the Filipino version of SIWB

| Domains | Item | Cronbach's α |
|---|---|---|
| Self-efficacy scheme | 6 | 0.864 |
| Life scheme | 6 | 0.889 |
| Overall score | 12 | 0.903 |

**Note:** Overall Cronbach's α for 12 items=0.903

## DISCUSSION

The objective of the study was to ascertain the validity and reliability of the Filipino version of the Spiritual Index of Well-Being (SIWB-F) scale among Filipino women with breast cancer. In order to begin the process, the guidelines of World Health Organization, as cited in Soriano and Calong Calong (2019b) in translation and adaptation of instruments were followed. According to Guillemin et al. (1993), translation and cultural adaptation are necessary if an instrument will be administered to a new population in another country with a different language. This process will ensure semantic equivalence and will avoid selection bias among participants who will not be able to take part in the study due to language barriers (Beaton et al., 2000). Upon the pre-testing and cognitive debriefing, no issues or problems were encountered related to the final Filipino version of the instrument.

The result of the confirmatory factor analysis revealed that the internal structure of the SIWB-F is valid and has a good model fit. This is consistent with the original English version (Frey et al., 2005), the English version among community-dwelling elderly individuals (Daaleman et al., 2002), and the English version among individuals with psychiatric disabilities (Fukui et al., 2012), and Chinese version (Wu et al., 2017) of the SIWB. In addition, the same items were loaded on the two factors, that is items 1 to 6 in factor 1 and items 7 to 12 in factor 2. However, the other Chinese version conducted by Lee and Salman (2016) involving 150 Taiwanese elders, items number 7 were omitted, and items 1 to 6 were loaded on factor 1 and items 8 to 12 on factor 2. The difference in the results can be attributed to the number of samples employed in the study.

In determining the content validity of the SIWB-F, the translated tool had an I-CVI ranging from 0.86 to 0.92 and an S-CVI of 0.95. The values obtained met the recommended value for I-CVI (0.78) and S-CVI (0.80) in an expert panel consisting of six members (Davis, 1992 as cited in Soriano, 2019). The finding suggests that the items in the SIWB-F are acceptable and content valid.

For the internal consistency reliability, Cronbach's α coefficient, item-total correlation, and inter-item correlation were computed. The Cronbach's α coefficient for 12 items was 0.903, which is similar to the original English version of the tool with a Cronbach's α coefficient of 0.91(Frey et al., 2005), the English version among community-dwelling elderly individuals (α=0.87) (Daaleman et al., 2002), the English version among individuals with psychiatric disabilities (α=0.88) (Fukui et al., 2012) and the Chinese version with α coefficient of 0.94 (Wu et al., 2017). On the other hand, the α coefficient for self-efficacy scheme and life scheme was 0.864 and 0.889, which is consistent with the original English version (self-efficacy scheme, α=0.89 and life scheme, α=0.86), the English version among community-dwelling elderly individuals (self-efficacy scheme, α=0.83 and life scheme, α=0.80) (Daaleman et al., 2002), the English version among individuals with psychiatric disabilities (self-efficacy scheme, α=0.92 and life scheme, α=0.91) (Fukui et al., 2012) and Chinese version (self-efficacy scheme, α=0.86 and life scheme, α=0.93). The results indicate higher consistency reliability as the values obtained were higher than the recommended alpha coefficient of more than 0.70 (Polit & Beck, 2014 as cited in Soriano & Calong Calong, 2019a). On the other hand, the item-total and inter-item correlations met the acceptable criteria (Ferketich, 1991).

There are a few limitations in the study that needs to be recognized. First is the homogeneity of the participants in terms of religion. The participants are entirely Christians failing to capture those who belong to other religions such as Islam. Also, the use of other validity and reliability measures such as convergent and discriminant validity and test-retest reliability were not conducted; hence, future studies involving these measures are suggested.

## CONCLUSION

The Filipino version of SIWB is cross-culturally valid and reliable in measuring spirituality among Filipino women with breast cancer. Hence, the instrument can be used to develop training to enhance the spiritual care competencies among nurses to develop holistic nursing care to breast cancer patients.

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**Data Availability Statement**
The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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BNJ BELITUNG NURSING JOURNAL

PERSPECTIVE

# IS TELENURSING A SOLUTION FOR MANAGING THE IMPACT OF COVID-19 ON THE MENTAL HEALTH OF SCHOOL-AGED CHILDREN?

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KEYWORDS
Telenursing; mental health; child; COVID-19

The outbreak of Coronavirus disease 2019 (COVID-19) began in December 2019 (World Health Organization, 2020a) and has since been declared a global pandemic (Bradbury-Jones & Isham, 2020). Regarding the control of the spread of the virus, a quarantine policy, which is physical or social distancing, has been implemented in many countries. Such a quarantine policy prohibits mass gatherings and forces the closure of businesses and schools, which can have adverse mental health effects among populations (Bradbury-Jones & Isham, 2020; Brooks et al., 2020). Most studies have discussed the impact on the mental health of adult people or health professionals; however, few studies exist on the mental health impact of COVID-19 among children. Some past pandemic events have presented similar situations; therefore, we can learn from other studies related to pandemic effects on the mental health of children.

Children are a vulnerable group, who have a lack of understanding about the pandemic situation, and they lack the ability to express their feelings (PAN American Health Organization, 2009). Throughout the COVID-19 pandemic, school-aged children have not been able to go to school due to school closures and, therefore, have to stay at home. They do not have an opportunity to play and interact with their friends or receive social support from their peers, especially in a school-based environment (PAN American Health Organization, 2009; Stevenson et al., 2009). The closure of schools and social distancing are stressful experiences for school-aged children. Their daily routines are disrupted, which leads to the occurrence of mental health issues, such as anxiety, fear, stress, and depression (Bahn, 2020; Ghosh, Dubey, Chatterjee, & Dubey, 2020). Therefore, these children who are affected need support and cooperation from their families and communities (Bahn, 2020).

Regarding facilitating the needs of school-aged children to continue with their study, most schools have provided online learning or have provided assignments for children to do at home. In turn, their parents are faced with helping their children to study at home and to adjust to this new situation. This situation is a challenging situation for parents. Parents may be busy taking care of their children, while they also have to work from home (Cluver et al., 2020; Stevenson et al., 2009). This situation impacts parenting stress levels and can result in child violence (Cluver et al., 2020). For instance, the police reports of child violence in China were increased during the COVID-19 outbreak, which is similar to the increased reports of child violence during the previous Ebola outbreak (Lee, 2020). These situations reflect that children and parents live in a stressful situation, and therefore, need psychosocial support from mental health services and health care professionals (Stevenson et al., 2009).

Nurses are one of the forefront health professionals in combating the COVID-19 situation. They contribute to screening suspected patients, preventing the spread of the infection, and giving information related to COVID-19 prevention measures (Visagie, 2020; Zhang, 2020). In general, nurses' roles are providing physical, psychological, social, and spiritual support to people who have been affected by this pandemic (Bradbury-Jones & Isham, 2020; Zhang, 2020). Due to the COVID-19 impact on the mental health of children, the major question is, *"what can nurses do to manage the mental health of school-aged children during this pandemic? is telenursing a solution for managing the COVID-19 impact on the mental health of school-aged children?"*.

Pediatric nurses and community mental health nurses should play a role in helping to prevent any mental health disorders in those children affected by COVID-19. Children are important family members, and

they cannot be separated from their families. Effective nursing care for children will be achieved by involving their families, particularly their parents (Hockenberry & Wilson, 2015). Nurses can provide health education, counseling, and psychosocial support for parents to maintain the mental health of their children. As a primary caregiver of children, parents can provide a safe and conducive environment for their children by helping them express their feelings and emotions, engage their children in activities such as playing, storytelling, and creating routine activities at home. Commonly, children in difficult situations are not only closer to their parents, but they also need their parents more. Parents should discuss with their children COVID-19 in language that is suitable for the age of their child. Parents also should maintain and manage their emotions adequately during this stressful situation due to children imitating the behaviors of adults (World Health Organization, 2020b). Under normal circumstances, nurses provide nursing care directly face-to-face with children and their families (Stevenson et al., 2009); however, with the facilitation of physical and social distancing due to COVID-19, an innovative strategy is needed.

Technology development can change nursing practice. It can help nurses deliver nursing care for patients, families, and communities (Pepito & Locsin, 2019). Telenursing can be an alternative strategy in providing nursing care related to the mental health of children. Telenursing is delivering nursing care and conducting nursing practice by using technology. The innovation of telenursing technologies is diverse, such as mobile phones, smartphones, computers, Internet, videoconference, and telemonitoring equipment (Schlachta-fairchild, Elfrink, & Deickman, 2008; Stevenson et al., 2009). Some evidence related to telenursing reported that it could be used for consultation, education, monitoring, and the evaluation of health care outcomes. Telenursing is effective in increasing the needs of public health. The use of the mobile phone via text messaging in the Philippines is effective in enhancing the knowledge and the adherence of patients on an appropriate program toward health promotion and prevention of disease (Pangan et al., 2011). Counseling through video conferencing also has been applied in Australia, and it is effective in facilitating nurses in conducting genetic counseling (Zilliacus et al., 2010). However, a comparative study in Iran reported that a face-to-face nursing intervention is more effective than telenursing in providing psychosocial care to family caregivers of cancer patients (Shohani, Mozafari, Khorshidi, & Lotfi, 2018).

The application of telenursing in nursing care related to the mental health of children has some advantages. Counseling via videoconferencing can increase the accessibility of nurses to a broader area and is less time consuming rather than visiting the children or family homes. Moreover, children or families can make a flexible appointment with nurses (Zilliacus et al., 2010). However, there are also some limitations while conducting telenursing. The implementation of telenursing requires a high level of logistics, financial support, and competencies of nurses (Chaupis, 2017). The issue of safety in telenursing is the dysfunction of equipment, which contributes to misunderstandings or misperceptions of information or suggestions from nurses (Schlachta-fairchild et al., 2008). The use of the mobile phone and smartphone also has a limitation in covering the needs of psychosocial support for children and families (Stevenson et al., 2009).

Despite the limitation of telenursing, telenursing may be the best solution in the COVID-19 situation. Nurses have limited access to meeting children and their families face-to-face. However, regarding the minimal disadvantages of telenursing, strengthening the infrastructure toward this nursing care is essential (Stevenson et al., 2009). Governments and NGOs concerned with quality health care should take a role in providing funding and adequate facilities to support the implementation of telenursing, both in health facilities and within home environments. However, families should not only have sufficient equipment to support the implementation of telenursing, but they also should be able to feel comfortable in using such technology (Benhuri, 2010).

In the implementation of telenursing, nurses as health professionals should have adequate knowledge and competencies to deliver nursing care related to the mental health of children via telenursing (Ernesäter, Holmström, & Engström, 2009). The competencies of nurses required in telenursing comprise social, personal, methodological, and professional competencies. The social competencies of nurses are soft skills that consist of affability and empathy. These soft skill competencies are important to maintain the caring perspective of nurses. Personal competencies refer to the attitude and willingness of nurses to learn. The methodological competencies of nurses are related to anamnesis and analytical, verbal, and responsiveness skills. Professional competencies refer to the knowledge and experiences of nurses in using technology as well as motivation management. Therefore, training for telenurses is needed. Training can improve the competencies of nurses in telenursing practice, which in turn enhances the quality and satisfaction of telenursing services (Carius, Zippel-Schultz, Schultz, Schultz, & Helms, 2016). It is noteworthy that technology is only a medium to deliver high-quality nursing care in the COVID-19 situation. The key of telenursing practice is communication. Therefore, the therapeutic relationship between nurses-families and children is essential (Benhuri, 2010).

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**ERRATUM**

# ERRATUM TO: IMPLEMENTATION OF INTERNET-BASED EMERGENCY MEDICAL SERVICE: A SOLUTION TO IMPROVE RESPONSE TIME IN OUT-OF-HOSPITAL CARDIAC ARREST AND ITS POTENTIAL APPLICATION IN INDONESIA

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Erratum
After the publication of the article (Fahmi & Nurachmah, 2018), it has been brought to our attention that the wrong title was used on the initial publication. The correct title of this article is "Implementation of Internet-based emergency medical service: A solution to improve response time in out-of-hospital cardiac arrest and its potential application in Indonesia." The original version of the article has been updated to reflect this.

The reference format in this article has also been updated.
The publisher apologizes for the errors.

**Reference**

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**ERRATUM**

# ERRATUM TO: KNOWLEDGE, ATTITUDE, AND PRACTICE OF COUGH ETIQUETTE IN PATIENTS WITH TUBERCULOSIS IN THE COMMUNITY HEALTH CENTERS

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Erratum

After the publication of the article (Yani et al., 2018), it has been brought to our attention that the wrong title was used on the initial publication. The correct title of this article is "Knowledge, attitude, and practice of cough etiquette in patients with tuberculosis in the community health centers." The original version of the article has been updated to reflect this.

The reference and layout formats in this article have also been updated.
The publisher apologizes for the errors.

**Reference**

Yani, D. I., Hidayat, Y. F., & Amrullah, A. A. (2018). Knowledge, attitude, and practice of cough etiquette in patients with tuberculosis in the community health centers. *Belitung Nursing Journal, 4*(5), 482-491. https://doi.org/10.33546/bnj.509