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REVIEW ARTICLE

A NURSING REHABILITATION PROGRAM TO IMPROVE THE QUALITY OF LIFE OF PATIENTS WITH MENINGIOMA: A NARRATIVE REVIEW

Amelia Ganefianty^{1*}, Sri Yona²

¹Magister Student of Faculty of Nursing,
Universitas Indonesia

²Department of Medical Surgical
Nursing, Faculty of Nursing, Universitas
Indonesia

*Corresponding author:

Amelia Ganefianty, BSN

Magister Student of Faculty of Nursing,
Universitas Indonesia, Depok, Indonesia
Phone: +6283822490888

Email: ganefianty@gmail.com/
amelia.ganefianty@ui.ac.id

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Abstract

Meningioma is the most common type of primary brain tumor, which affect several domains of life, such as physiological, psychological, and social life conditions. Although surgery has been performed on meningioma patients in Indonesia, some patients still experience sequelae such as headache, impaired mobilization, disruption of activity, and visual disturbances. This narrative review aims to describe nursing rehabilitation programs in patients with meningioma in Indonesia. As a result, the nursing rehabilitation program is considered as an integral part of multidisciplinary rehabilitation, which can be applied in the nursing rehabilitation center and in the form of telenursing. The roles of nurses include providing evidence-based direct care, psychosocial support, patient / family education, care coordination, and continuing health promotion starting from the period of patient care in the hospital to discharge. In conclusion, the nursing rehabilitation program has the potential to improve the quality of life in patients with meningioma, especially in Indonesia.

KEYWORDS

meningioma; nursing rehabilitation program; primary brain tumor; quality of life

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INTRODUCTION

Meningioma is the most common type of primary brain tumor, which is 40-42% with an incidence rate of 8.9 per 100,000 populations (Benz et al., 2018; Dos Santos et al., 2011; Najafabadi et al., 2017). In Indonesia, the mortality rate of primary brain tumor patients is 4.25 per 100,000 populations per year with an incidence rate of 7 per 100,000 populations (Komite Penanggulangan Kanker Nasional, 2015). Meningioma can cause symptoms such as seizures, visual disturbances, cognitive and psychiatric disorders, fatigue, insomnia, and psychosocial disorders (Najafabadi et al., 2017).

Meningioma can affect several domains of life quality such as physiological, psychological, and social life. The results of a study showed that the most neurological symptoms experienced by meningioma patients are headache, impaired vision, cognitive impairment, epilepsy, motor disorders, and speech disorders (Van Alkemade et al., 2012). Other studies show that

around 20-23% of patients experience anxiety and postoperative depression and persists in 6 months after surgery (Goebel & Mehdorn, 2013). In addition, the process of social interaction in patients with meningioma often experiences obstacles due to physical symptoms experienced by patients. In fact, the limited time for social interactions experienced by an individual often reduces the number of life satisfaction and quality of life (Zielinski et al., 2016).

Quality of life can be defined as individual perceptions of its position in life associated with the prevailing cultural and systemic context, goals, expectations, and standards so that it is not limited to physical but also psychosocial, economic, and environmental aspects (Giovagnoli et al., 2014). Assessment of health-related quality of life in primary brain tumor patients is very important. The pattern of quality of life of brain tumor patients can serve as an easy and cost-effective tool to

recognize the initial changes in the subjective clinical conditions of brain tumor patients, and their relationship to disease progression ([Ooi & Mazlina, 2013](#)).

Research on the quality of life of patients with brain tumors has been carried out in Bandung Indonesia in October 2015 until February 2016. The results showed that there was still a large proportion of patients experiencing disorders in various levels of quality of life of patients after 3 months of hospitalization ([McAllister et al., 2018](#)). This shows that patients with primary brain tumor, one of which is meningioma in Indonesia, requires a rehabilitation program from nurses to overcome problems that occur in their life after discharge from the hospital. Recently, there is no specific nursing rehabilitation for patients with meningioma in Indonesia. This review was to describe the nursing rehabilitation programs for patients with meningioma in Indonesia.

CONCEPT OF REHABILITATION

Rehabilitation is a problem solving education process that aims to reduce the disability experienced by a person as a result of illness or injuries ([Khan et al., 2016](#)). The rehabilitation of patients with tumor is a coordinated rehabilitation program in which various disciplines provide assessment, care, and support that focus on complex medical, psychosocial, functional, and individual quality of life directly related to the pathology and treatment of tumors ([Silver et al., 2013](#)). Rehabilitation of individuals related to tumors or treatment of tumors requires someone who is skilled in giving it, one of them is a nurse ([Reigle et al., 2017](#)).

Based on several articles, the rehabilitation of patients with tumor should involve a multidisciplinary approach to providing quality care for survivors. Competence in assessment, decision-making, coordination, and communication skills is a must-have requirement for each discipline in applying a multidisciplinary rehabilitation program. The results of a controlled clinical trial on rehabilitation carried out in primary brain tumor patients in Australia showed that with multidisciplinary rehabilitation, brain tumor patients can improve function in several domains of life for up to 6 months after surgery ([Khan et al., 2016](#)). Other research results also showed that of 27,952 patients using multidisciplinary-based rehabilitation units in the United States, 52.9% were primary brain tumor patients ([Mix et al., 2017](#)).

Recent research proves the existence of intensive rehabilitation interventions from physical therapy and safe and appropriate occupational therapy for patients with primary brain tumors (one of them meningioma) can improve functional status ([Hansen et al., 2014](#)). Research on multidisciplinary rehabilitation also shows that multidisciplinary rehabilitation can improve physical function in newly diagnosed primary brain tumor patients ([Roberts et al., 2014](#)).

ROLE OF NURSES IN THE REHABILITATION PROGRAM FOR PATIENTS WITH MENINGIOMA

Based on theory, nursing rehabilitation has to (1) be patient-centered in as much as patients preferences are key and the patients' partner must be engaged in the decision-making; (2) be evidence-based, which needs ongoing organizational efforts such as guideline development and evaluating care processes and mentoring of colleagues; (3) broaden its scope to include family in order to react to the changing social realities; and (4) rely on good leadership practices to access resources, build trustful work relationships, and reach shared vision within the interprofessional team ([Brady Germain & Cummings, 2010](#)). In neuro-rehabilitative settings, nurses have been described as pivotal to provide and ensure a supportive and safe environment to coordinate the services of the interprofessional team ([Aadal et al., 2013](#); [Karol, 2014](#)). Also, nurses contribute to functional recovery by improving functionality ([Kesselring & Beer, 2005](#)) and physical competencies ([Imhof et al., 2015](#)).

Additionally, the role of nurses in tumor rehabilitation is to provide evidence-based direct care, psychosocial support, patient / family education, care coordination, and continuous health promotion, starting from the patient care in the hospital to the discharge period ([Reigle et al., 2017](#)). A randomized controlled trial, which examines the rehabilitation program for environment-based brain tumor patients, explains one of the roles that nurses can play in implementing the rehabilitation program. It was explained that nurses could play a role in arranging the schedule according to the rehabilitation program for each brain tumor patient, observing the patient's condition during the rehabilitation program, ensuring the patient did not feel pain, facilitating the patient to have access to the surrounding equipment, and documenting the processes that occurred during rehabilitation program ([Khan et al., 2016](#)).

The role of nurses in conducting rehabilitation can also specialize in promoting tumor early screening and detection, giving specific tumor treatments such as radiotherapy, collaborative assessment and management of physical and psychosocial morbidity and related care, and supportive care of patients and their families ([Reigle et al., 2017](#)). Knowledge of the type of tumor and designated treatment and treatment-related morbidity is very important for nurses. Nurses can take steps to assess and prevent acute morbidity, chronic morbidity and anticipated long-term morbidity. In the rehabilitation process, if the nurse identifies various types of morbidity, the nurse can refer to a physiotherapist, physical therapist, occupational therapy or speech therapy ([Reigle et al., 2017](#)).

Specific competencies of nurses to rehabilitate patients vary based on care settings. For example, patients with meningioma in inpatient rehabilitation may need help with daily life activities, drug management, pain management and other disruptive symptoms, patient / family education for daily activities, transfers, locus, intestines and bladder management ([Reigle et al., 2017](#)). In carrying out nursing rehabilitation,

nurses must also be eligible to have the ability to assess the psychosocial and physical functions of individuals with tumors in the entire course of care. When rehabilitation nurses identify disorders, functional limitations, and restrictions on participation, nurses can make appropriate referrals made for services such as physical therapy or pain management ([Langbecker & Yates, 2016](#)).

NURSING REHABILITATION PROGRAMS

The results of research conducted in Bandung city Indonesia showed that when nurses conducted telephone follow-up, some patients said they still had problems in various domains of their lives from mild, moderate, to severe levels ([McCallister et al., 2018](#)). Some patients said that they came back to the outpatient hospital unit for consultation and rehabilitation, but some of the patients said that they did not come back to the hospital due to difficulties in access to transportation and considerable distances. In fact, they complain that they still have difficulty in mobilizing, feeling pain, experiencing visual impairments and have not been able to carry out activities such as before being sick ([Sutiono et al., 2018](#)). Thus, there are two programs proposed in this article, namely:

1) Telenursing as a form of nursing rehabilitation program in meningioma patients

One of the rehabilitation programs that can be performed by nurses in postoperative meningioma patients after the discharge from the hospital is home visiting or utilizing an information technology system such as nursing teleconsultation or called telenursing. Nursing teleconsultation is electronic communication that provides health consultation services in areas that are difficult to reach ([Kumar & Snooks, 2011](#)). The same is explained by Deldar et al. ([Deldar et al., 2016](#)), that nursing teleconsultation is defined as synchronous or asynchronous consultation using communication and information technology to eliminate geographical and distance problems. With the development of information technology, teleconsultation is currently widely used in the health service area because of its benefits. For patients, teleconsultation facilitates access to health services, especially for people who live in rural / remote areas or have disabilities, so that by having teleconsultation they can save time and transportation costs because they can access directly from home. For health care providers, teleconsultation can provide an opportunity to expand their care and knowledge that is not limited to the walls of the hospital ([Aggarwal et al., 2015](#)).

Research on the effectiveness of teleconsultation by telephone shows that teleconsultation focuses on symptom management in patients with brain injury, one of which is caused by a brain tumor can reduce chronic complaints in patients at 6 months post-hospital treatment ([Bell et al., 2008](#)). The results of a similar study conducted in Indonesia showed that follow-up conducted by neurosurgical nurses was competent when patients returned from hospital was very possible to do in

patients with neurosurgery disorders (one of them is a brain tumor) and patients were very accepting and appreciating it ([Sutiono et al., 2018](#)).

2) Nursing rehabilitation center

Nursing rehabilitation center is intended to prepare postoperative meningioma patients to be able to resume daily activities such as returning to work. This service has been developed at Wakari Hospital, Dunedin, New Zealand. Wakari Hospital is a rehabilitation center for patients with neurological disorders and post-neurosurgical surgery in Dunedin Hospital with a capacity of 16 bed patients. This place prepares discharge planning for neurology and neurosurgery patients including strokes, brain tumors and traumatic brain injury, multiple sclerosis or Parkinson's disease ([Perez, 2017](#)). The health team consists of medical staff with the main consultants namely nurses and other health workers (occupational therapists, clinical psychologists, social workers, language therapists, rehabilitation assistants and physiotherapists). The purpose of this rehabilitation is to help patients before returning home or work after discharge from the hospital. The nurse will assess the patient's level of independence and provide services according to the patient's needs. The design of the room is made by paying attention to the condition of the patient so as to make the patient safe despite carrying out activities independently (one of which has many handles in the patient's bathroom). In addition, the design of the room also aims to increase the level of patient independence. In some patient care rooms, there is a kitchen that patients can use to cook food for themselves independently. The facilities available at the rehabilitation center are very complete to support the healing process of patients, such as the gym, playing, reading, and occupational therapy rooms. Every patient treated at Wakari Hospital has a daily schedule prepared by nurses that aims to increase the patient's level of independence ([Perez, 2017](#)).

CONCLUSION

In conclusion, a rehabilitation program is needed for the recovery of meningioma patients, which should be arranged in an interdisciplinary manner involving several health workers such as general practitioners, neurosurgeons, rehabilitation doctors, nurses, psychologists, and therapists. The nurse, as a professional health worker, must always be responsible for the health of meningioma patients since the patient is hospitalized and after post-hospital care. The results showed that rehabilitation in the form of palliative care provided by nurses in cancer patients could improve the quality of life of patients ([Haun et al., 2017](#)). Nurses should be able to accommodate the needs of post-treatment meningioma patients and assist patients and families in overcoming the problems they face. This is one of the roles of nurses in rehabilitation in meningioma patients ([Reigle et al., 2017](#)). Nurses can also conduct teleconsultation because meningioma patients in Indonesia are spread to several regions. For example in West Java, many meningioma patients have difficulty accessing health services after surgery due to

transportation difficulties (Sutiono et al., 2018). More broadly, nursing rehabilitation centers can be developed in Indonesia to overcome the problems faced by meningioma patients. This service consists of consulting with specialist nurses, nursing education centers, and providers of therapies that can be applied to postoperative meningioma patients so as to improve the health status and quality of life of patients. By carrying out nursing rehabilitation program in meningioma patients in Indonesia, it is expected to be able to prepare patients when returning to their daily activities so that the quality of life of these patients can be optimal. Building a nursing rehabilitation center for meningioma patients is an opportunity and challenge that can be developed in Indonesia.

Declaration of Conflicting Interest

The authors declared no conflict of interest.

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Authors Contribution

Each author made substantial contributions to the conception or design of the work, the acquisition, analysis of result, and drafted the manuscript or substantively revised it.

ORCID

Amelia Ganefianty <https://orcid.org/0000-0003-3303-1519>

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CONCEPT ANALYSIS

EMANCIPATION THROUGH NURSING WITHIN THE CONTEXT OF HEALTH DISPARITIES

Rainier C. Moreno-Lacalle^{1*}, Rozzano C. Locsin²

¹Assistant Professor, School of Nursing
Saint Louis University, Baguio City,
Philippines

²Professor of Nursing, Department of
Art, Science, and Caring Institute of
Biomedical Sciences Tokushima
University Graduate School Tokushima,
Japan

*Corresponding author:

Rainier C. Moreno-Lacalle, RN, MSN
SON faculty room, 5th Floor Silang
Building, Saint Louis University,
Bonifacio Street,
Baguio City, Philippines
Email: rcmoreno-lacalle@slu.edu.ph
Phone: +63-74-422 84 66

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Abstract

Background: Health disparity can be observed using the lens of emancipation through nursing.

Objective: This paper aims to describe the concept of emancipation through nursing, situate its position within the theory of 'Emancipation through Nursing,' and illuminate the implications of caring within the context of health disparity.

Methods: The sequential process of Rodgers' Evolutionary Concept Analysis and Chinn and Kramer's Process of Theory Construction were applied. Review of the literature utilizing six major databases was conducted using the keywords 'emancipation' or 'empowerment' and 'health disparity' and 'nursing' and with year restrictions from 2000-2017.

Results: Findings revealed that the attributes of the concept of 'emancipation through nursing' are *conscientization or critical consciousness, correct and adequate health information, co-construction of a creative process for health service, and collective action*. These attributes were preceded by the following antecedents: *marginalization, hegemony, the oppressed and the emancipator, centering, and liberation*. The resulting features of enlightenment, enervation, empowerment, and evolvment served as constructs that collectively structured the theory of *Emancipation through Nursing in the Context of Health Disparities*.

Conclusion: Nurses worldwide will benefit from descriptions and illuminations of the concepts of emancipation and nursing within the theory of Emancipation through Nursing in the Context of Health Disparities.

KEYWORDS

emancipation; empowerment; health disparity; theory construction

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BACKGROUND

Health disparity is the situated gap in outcomes in health services as measured by the status of an advantaged group against the disadvantaged group (Krahn et al., 2015). The deprived, oppressed, poor, and exploited people are associated with the disadvantaged group, while the rich, technologically advanced, privileged, and the entitled belong to the advantaged group. This phenomenon is not exclusively socio-political as disparities exist in health care situations as well. With the advent of emancipation philosophy (Kagan et al., 2014), an avenue to understand and appreciate the emergence and relevance of health disparity has been created, and emancipation through nursing has now become a realized nursing phenomenon (Laperrière, 2018). This paper aims to describe the concept of emancipation through nursing, situate its position within the theory of 'Emancipation through Nursing,' and illuminate the theoretical implications within the context of health disparity.

Health disparities exist because of inequality (Pickett & Wilkinson, 2015), of gender (Smith et al., 2016), of socio-cultural influences (Havranek et al., 2015), of national finances, and the concern over entitlements and human rights (Yamin & Frisanchio, 2015). Dankwa-Mullan and Pérez-Stable (2016) urged that to reduce health disparity, nurses must look at the context where it occurs. Disparities exist as made explicit in various health outcomes. In a global disparities research, Mills et al. (2016) revealed a staggering 3% difference in hypertension between high income and low to middle income countries. The disparities are consistent in hypertension measures of awareness (8.8%) and treatment (11.1%), as all these measures point favorably to rich nations. Even in outcomes of mortality, people in rich countries tend to live longer. For example, on average, a person born in Malawi is expected to live for 47 years while a child born in Japan will reach up to a ripe old age of 83 years, implying a 36 year gap (World Health Organization, 2011). Furthermore, women giving birth in the richest one-fifth of the population are twenty

times more likely to be attended by a health professional than those of four-fifths of the global community. These data suggest a wide health disparity between the rich and the poor or between the advantaged (e.g. Japanese) and the disadvantaged (e.g. Malawians). Because of this situation, health disparity is being given increased attention in nursing research (Hunt et al., 2015).

One factor that explains this wide health disparity is the restriction caused by the economic conditions of the poor, thereby exposing the accompanying health care inequality. Other reasons attributed to the increased attention given to and the upsurge of interest in emancipatory nursing include focusing on attention-association of health disparity to mortality (O'keefe et al., 2015), to morbidity (Fontanil-Gomez et al., 2017), and to overall social justice issues (Ratts et al., 2016). This increased attention has led to a call for more intensive, holistic, and involved efforts to reduce health disparity through emancipatory nursing.

Emancipation has emerged in recent times as one of the keys that may enhance the closure of the gap between advantaged and disadvantaged persons in terms of health disparities. In other countries than Japan, health gaps of citizens are often more evident, as is the case of Malawi, where the richest 20% of the population often tend to take better care of their own health than the remaining 80%. Emancipation is usually associated with the degree of freedom and other qualified limitations in social classes (Pearson et al., 2015). To illustrate this, one should imagine a horizontal straight line. At one end are the advantaged (in this exemplar- the Japanese), while at other end are found the disadvantaged (in this instance- the Malawians) - the line in between is the "gap" illustrating the health disparity. To understand and appreciate emancipatory nursing within health disparities, one needs to look and benchmark the conceptual characteristics of emancipation.

Indicators of Emancipation through Nursing

Emancipated people have distinct and unique indicators. Velema and Cornielje (2016) believes that the richest or advantaged people personally take their body as their private responsibility implying a conscious, empowered decision. In addition, Solomon et al. (2015) added a crucial indicator, namely transformative learning where one critically examines deep-seated beliefs and issues towards favorable health action. These two broad indicators may lead to the process of liberating and unleashing creative potential (Kananen, 2014). The indicators are the reason why emancipated persons were

able to achieve health equity, i.e. the absence of health disparity. This shows that one major indicator of the Japanese (or developed world health care beneficiaries in general) is that they are the emancipated people (Boudrias et al., 2012).

Nevertheless, one of the numerous possible causes of health disparity was mentioned by Pinker (2011) in describing education as an end itself meant to free people from deadly beliefs and superstitions, thereby giving way to enlightenment. In a study involving nineteen European countries, Schaap et al. (2009) found that less educated women are more likely to smoke. This study implies that more education means more emancipation. However, emancipation can explain only 38 to 43% of the variance in lifestyle adoption (Shearer, 2004).

One of the main reasons for these inconsistent findings is the lack of clarity concerning conceptual representation. This contention is supported by Kiczková and Farkašová (1993) branding emancipation as "a concept that failed," at least in the case of women, and further criticizing it by adding that emancipation is good in the abstract but that it lacks healthcare pragmatic application and reified conceptual delineation. Therefore, this paper attempts to analyze the concept of emancipation through nursing and to implications of the theory of emancipation through nursing within the context of health disparities.

REVIEW OF THE LITERATURE

A review of databases was conducted, more particularly CINAHL, EconLit, ERIC, Medline, PsychInfo, and Political Science database within a 17-year record 2000-2017 (see Table 1). A computer search using the keywords 'emancipation' or 'empowerment' and 'health disparity' and 'nursing' was initiated. Hard copies of articles found in the journal *Advances in Nursing Science* were also consulted as this journal has published pioneering works on emancipatory knowing and has touched on multiple issues related to this topic. Copies of the journal were available at the library of the authors' affiliated institutions.

Sequential combination of concept analysis and theory construction was performed (Figure 1) with the contention that concept analysis can be used to develop a theory from the perspective of nursing, usable in nursing practice (Bonis, 2013; Chinn & Kramer, 2015; Meleis, 2012; Walker & Avant, 2011).

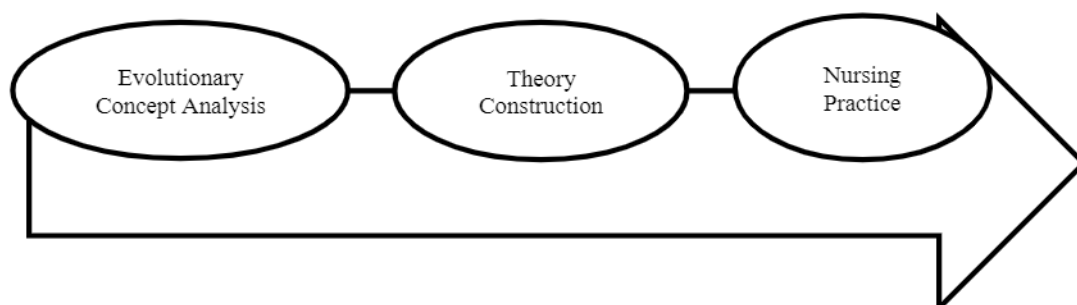


Figure 1 Process of Development from Concept Analysis to Nursing Practice

Table 1 Search Strategies Using Various Indexes

Database	Results Terms: 'emancipation,' 'health disparity,' 'empowerment' 2000-2017 (initial hits)
1. ERIC	202
2. EconLit	2,214
3. Medline	207
4. CINAHL	113
5. PsychInfo	14,049
6. Political science research database	20,274
7. Sample for this concept analysis	20%

The Concept Analysis

Over the last two decades, [Walker and Avant \(2011\)](#) noted the exponential growth of concept analysis in the nursing literature, underscoring the wide acceptance of this method. However, because of its excessive use, [Pfadenhauer et al. \(2015\)](#) criticized the method arguing that it has become overly simplistic (adding little value to nursing scholarship) hence eschewing the practical and theoretical value of concept analysis to nursing practice. These pragmatic and epistemological reasons led the authors to explore the plausibility of combining concept analysis (i.e., emancipation) and theory construction sequentially to address the issue of health disparity.

Evolutionary Concept Analysis was used as an initial process in analyzing the concept of emancipation through nursing ([Rodgers, 2000](#); [Rodgers, 1989](#)). Rodgers' approach was deemed most appropriate, even though some of the other frameworks were tenable for concept analysis ([Bonis, 2013](#); [Chinn & Kramer, 2015](#); [Morse, 1995](#); [Walker & Avant, 2011](#)). Whereas [Walker and Avant \(2011\)](#) process of theoretical structuring, on the other hand, is the most commonly used method and it offers a more prohibitive, a priori (deductive), and quantitative examination ([Rodgers, 1989](#)). Adopting the procedure of [Chinn and Kramer \(2015\)](#) concept analysis method was found to be difficult to justify. In [Bonis \(2013\)](#) concept analysis method, the emphasis is given on interdisciplinary conceptual understanding and source identification rather than on the context for which the concept is used. Corollary to this process was that of [Clavelle et al. \(2016\)](#) who suggested that a concept "evolves" because of the way it is used and because the context changes, aside from the fact that the people using the word likewise change in time. This may seem inappropriate with regard to the concept of emancipation through nursing because of the socio-cultural difference inherent in the concept; however, the universal understanding of emancipation is weak, which is to say that the primacy of contextualizing through an inductive principle is more imperative than restrictions or maturity.

Applying Rodgers' eight-step process of evolutionary concept analysis provided clarification (**Table 2**) ([Rodgers, 2000](#); [Rodgers, 1989](#)). In this procedure, the terms emancipation and empowerment were used interchangeably. However, the usage of emancipation was preferred because of its rarity, preserving its precision and purity, whereas empowerment has several possible meanings ([Somek, 2013](#)). In addition, [Weathers et al. \(2016\)](#) declared that the evolutionary concept analysis presents the phenomenon *a posteriori* (i.e., from the latter) meaning in an inductive process which allows for viewing abstraction as complex and contextual.

Emancipation as a concept is nebulous, subjective, and contextual. Therefore, developing and developed countries' understanding of emancipation might differ from each other and this difference can be determined by examining their culture and their present socio-political situation. At the same time, the application of the concept of emancipation changes overtime (true to its evolutionary meaning), apparently morphing its understanding as influenced by its significance, use, and contemporary application ([Rodgers, 1989](#)). Subsequently, contextualized concept analysis provided the impetus to the development of a theory of Emancipation through Nursing within the Context of Health Disparities (ENCoHD).

The Concept Analysis of Emancipation through Nursing

The word 'emancipation' is derived from the Latin '*emancipatus*' meaning declared free or given up. It was first used in 1625 in John Donne's *Sermons* and is believed to have been borrowed from the French verb '*émanciper*' ([Barnhart, 1988](#)). In Roman Law, emancipation is known as the action and process of setting children free from the '*patria potestas*' or power of a father ([Murray, 1993](#)), the combination of the root word emancipate + the suffix -ion resulted in the word emancipation. Dictionary definitions of the word emancipation include:

- the process of giving people social or political freedom and rights ([Cambridge University, 2008](#));
- the process of freedom from restraint, control, or the power of another, transfer of ownership ([Merriam-Webster, 2006](#)).

Table 2 Applying Rodger's Method of Concept Analysis to Emancipation

Rodger's evolutionary method	Concept analysis of emancipation
1. Identify and name the concept of interest	1. Concept: emancipation
2. Identify and select an appropriate discipline and period of time for data collection	2. Disciplines: education, economics, medicine, nursing, psychology, politics; Databases: ERIC, EconLit, Medline, CINAHL, PsychInfo, Political Science Research database; Year restriction 2000-2017
3. Collect data regarding the attributes of the concept, including surrogate terms, antecedents, consequences, and references.	3. Surrogate terms: social consciousness, independence/ Antecedents: marginalization, hegemony, oppressed & emancipator, centring, liberation Consequences: enlightenment, enervation, empowerment, evolvment/ References: healthcare practice
4. Identify related concepts	4. Related concepts: empowerment, praxis
5. Analyse data regarding above characteristics	5. Major themes: consciousness raising and collective power
6. Conduct interdisciplinary comparisons	6. Emancipation in education
7. Identify a model case of the concept, if appropriate	7. Not identified
8. Identify hypotheses and implications for further development,	8. Attributes: conscientization, correct and adequate health information, co-construction of health service, creative process, collective action

As shown in **Table 2**, the attributes of emancipation in the context of health disparities are the five Cs namely: *conscientization*, *correct and adequate* health information, *co-construction* of health service, *creative process*, and *collective action*. Conscientization is also known as the critical consciousness (Freire, 1990), which serves as the grounding of emancipating the people from the bondage that chains them. This could be done by correct and adequate information. Underscoring the importance of education as a socio-political weapon to awaken the health passiveness of an individual (Muscat et al., 2017), informed decision-making has created the person's internal power to control his or her own health. Another attribute of emancipation is the creative process, substantiated as critiquing and imagining (Chinn & Kramer, 2015), meaning speaking up against the disparity and forming mental scenarios on how to improve one's situation. The latter attribute suggests cooperation and interdependence. Finally, collective action is the last attribute of emancipation. It is the willingness and action itself to bring people together to change their situation.

The etymology, attributes, surrogate terms, and nursing-contextual understanding of emancipation are affected by the situation that happened before (antecedents) as shown in **Table 2**. Marginalization is "being side-lined" (not made the focus) by the system and is defined by the following characteristics: being used (intermediacy), being outcast (differentiation), being disempowered, keeping secrets, being fragmented, losing voice, and having a weak sense of self or liminality (Hall & Carlson, 2016; Hall et al., 1994). The marginalization creates a vertical relationship, in which one is subservient while the other is dominant. This is called hegemony, defined as the "dominance of certain ideologies, beliefs, values, or views of the world over other possible viewpoints" (Chinn & Kramer, 2015). The negative situation (i.e., marginalization & hegemony) necessitates two personas, one who is oppressed and the other who is the emancipator. In the emancipatory process, the oppressed moves to the center, while the emancipator takes the peripheral side and provides the

necessary devices to free the oppressed from chains. These devices might involve health education, evocative social awareness, and mutual development of common health goals.

The antecedents if mediated by the five Cs will result to the four Es of emancipation (consequences), namely: enlightenment, enervation, empowerment, and evolvment. Enlightenment is the experience of seeing things in a new way (Allmark, 2017). The light that enlightenment brings will generate energy causing enervation. Enervation is the state and process of having the tools one needs to believe based on one's own volition (Fielding, 1996). The act that constitutes the empowerment is galvanizing and generates a feeling of having a sense of control to create change in one's life (Vuorenmaa et al., 2016). The end product becomes the evolution from the deprived, oppressed, poor, and exploited states to a new evolvment therefore changing the persons from being subversive to being on equal footing, and asserting to improve their health condition. Subsequently, the attributes, antecedents, and consequences of emancipation in nursing will be used to develop a theory of emancipation through nursing.

An actual exemplar of the enlightenment to evolvment is provided by Kim and Kim (2017). In their study, using a randomized controlled trial they implemented a birth control empowerment program (BCEP) among immigrant Vietnamese women in South Korea for a total of ten weeks. The program included enlightenment (group instruction), enervation (group discussion), and empowerment (counseling). The trial resulted to better outcomes in contraceptive knowledge, self-efficacy, perceived control, partner communication, and sexual autonomy. These indicators can be termed as the evolvment of the patient, while the whole process shows emancipation.

Emancipation through nursing is therefore described as the process of relationship and looping between the nurse and the patient while nurturing critical consciousness, providing correct and adequate health information, co-constructing health services, uncovering of the creative process, and stimulating

collective action towards the reduction of health disparity. Looping is a relational construct best defined by [Defrino \(2016\)](#) as sharing health decisions between nurses and patients to accomplish a goal. Some premises involved in the looping process are putting adequate nursing time with patients, knowing and respecting the health team, asserting rights through advocacy, lastly accomplishing health goals by mutual trust, respect, and collaboration. This looping process between the nurse and the patient is clearly illustrated by [Orton et al. \(2016\)](#). In their systematic review, an emancipatory intervention (characterized by all the attributes in the concept analysis) called group-based microfinance scheme was implemented among poor women in Bangladesh, Ethiopia, Ghana, India, Peru, and South Africa. The group-based microfinance scheme resulted in a reduction of maternal and infant mortality, better sexual health practices, and contentiously- even lower interpersonal violence. The results of emancipation through nursing contain the features of enlightenment, enervation, empowerment, and evolvment.

Theory of Emancipation through Nursing

Adopting the definition of the word “theory” by [Chinn and Kramer \(2015\)](#) as the “creative and rigorous structuring of ideas that projects tentative, purposeful, and systematic view of phenomena” (p. 187), the following questions guide its construction: (1) What is the purpose of the theory? (2) What are the concepts of this theory? (3) How are the concepts defined within this theory? (4) What is the structure of the theory? And (5) on what assumptions does the theory build?

To clarify the first step of theory construction ([Chinn & Kramer, 2015](#)), the purpose of the theory of emancipation through nursing is *to explain the occurrence of health disparity*. With the attributes, antecedents, and consequences conceptually clarified, the theory can also predict the reduction of health disparity. So as to explain the second step in theory development, a substantial analysis of the concept of emancipation was done. **Table 2** illuminates and illustrates the results and findings of this analysis.

Assumptions of the theory

[Fawcett and Desanto Madeya \(2013\)](#) enumerated four meta-paradigms of nursing as a framework from which theories can be constituted, namely: person, health, nursing, and environment. In describing the theory, it is critical that the descriptions of the meta-paradigms of nursing are clear, precise, and inherent to the conceptualization that bears the theory. This is to say that an authentic nursing theory can be analyzed by describing its structural form using the meta-paradigms. Assumptions provide the realization of truths within which the theory holds its base. The assumptions of the theory are: (1) Persons are bio-psycho-socio-political beings capable of evolving and emancipating from one state to another; (2) Health is the state of expanding consciousness

(i.e., enlightenment & enervation, empowerment and evolvment) and full realization of physical, mental, social, and political faculty of a human being. This is the ultimate goal of the person-nursing relationship; (3) Nursing is a practice process concerned with knowledge derived from critical consciousness, health information, and collective action moving the person towards health; and (4), environment pertains to the mutable sum of cognitive, physical, and emotional devices of a person, made up of two factors: internal and external.

Description of the Theory

Figure 2 exhibits the model of the theory. The outer context consists of the overwhelming factors that fuel health disparities. These factors are marginalization and hegemony. They pose a constant threat to the infinite relationship between the person and the nurse (contained within the infinity symbol), looped together. To be truly emancipating, the process of looping must prompt the patient or nurse to expand their consciousness ([Newman, 1999](#)). The expansion of their consciousness can be triggered by the five Cs. These are conscientization or critical consciousness ([Freire, 1990](#)) and adequate health formation including the strong forces of co-construction of reality, creative process, and collective action giving way to the four E's of enlightenment, enervation, empowerment, and evolvment which are the defining features of emancipation. If all of these conceptualizations are present, there is a predictive effect of health disparity reduction.

Emancipation is both a process and a protective factor. That is why walls exist between the linear process of emancipation and the existential threat of disparity, hegemony, and marginalization. Major factors are hegemony and marginalization. In hegemony, common concepts observed are racialization and neoliberal policies. Racialization is the process of assuming that one's race cannot be separated from distinct or biological characteristics ([Bickford, 2014](#)). In an article by Caiola, Docherty, Relf, and Barroso (2014) ([Caiola et al., 2014](#)), factors like being African American, female, and living with HIV determine health outcomes. Similar outcomes can be gleaned from a study conducted among the Mi'kmaq aboriginal people in Canada. [Whitty-Rogers et al. \(2016\)](#) exposed that all other things being equal, the ethnic minority is afflicted with diabetes three to five time more than the general population.

[Mcguire \(2014\)](#) posits that one of the major contributory factors of hegemony is the existence of neoliberal policies. As an economic policy, neoliberalism promotes deregulation, privatization, and diminishing social spending of the government. One of the serious implications of this triad is that the rich get richer, while the poor get poorer, or if not, the gap between the poor and the rich gets wider, hence resulting to greater disparity.

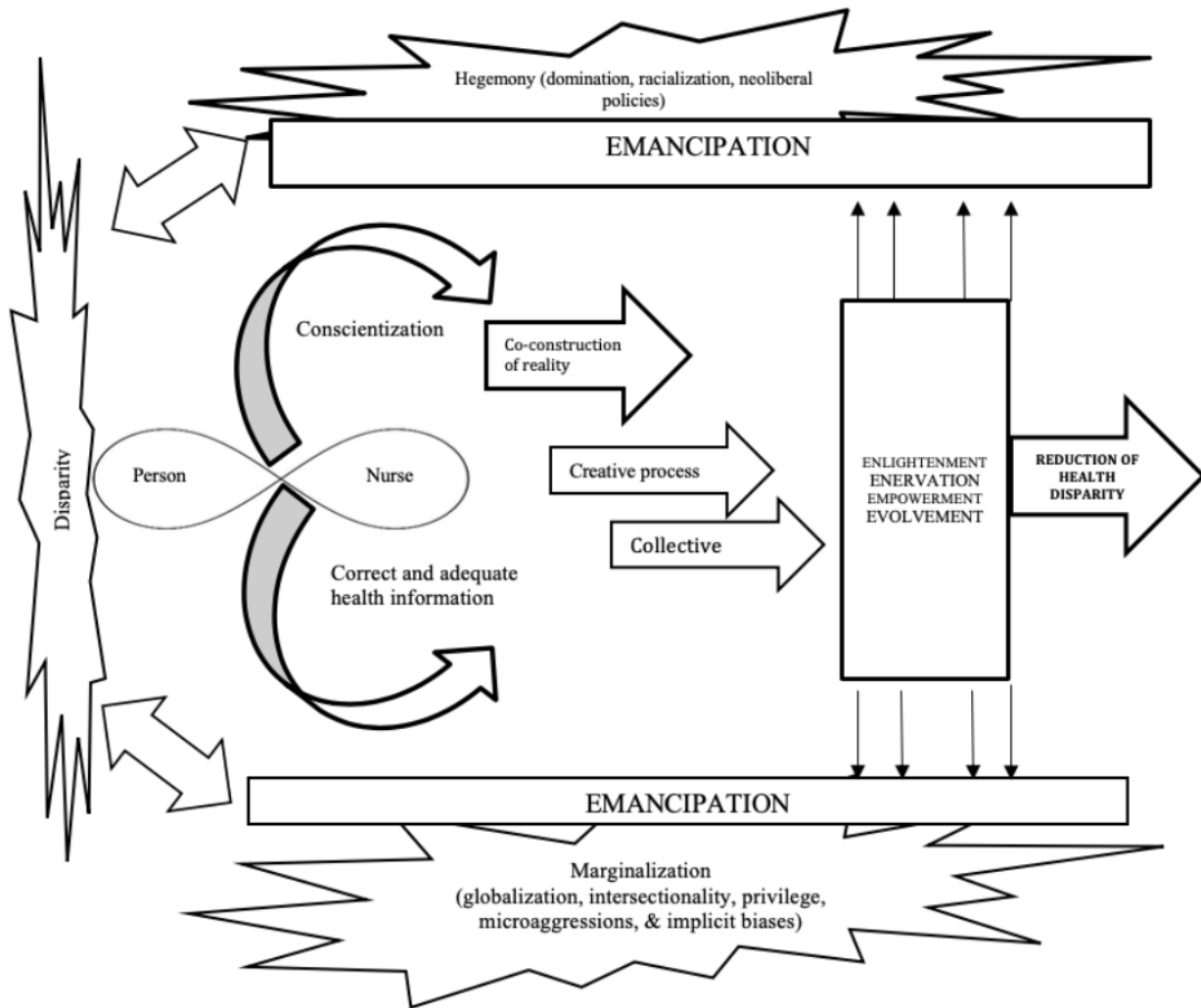


Figure 2 Emancipation through nursing within the context of health disparities

In addition, the following threats can also contribute to marginalization, namely: globalization, intersectionality, privilege, microaggressions, and implicit bias (Hall & Carlson, 2016). To illustrate these new concepts associated with marginalization, an actual exemplar is provided by Alex et al. (2013) in a study conducted among people with mental health conditions. Authoritarian or hermit-type of governments tend to suppress a smooth flow of ideas, beliefs, goods and services and may cause the reinforcement of deadly beliefs on the causes of mental health conditions including devil possession, relational deprivation, and victim blaming that may result in unjustified stigma. The peripheralizing feature of the stigma entangled with ostracism magnifies the mental health conditions. This situation is seconded by small acts of aggression against the people suffering from mental health conditions while fueling the distorted subconscious discriminatory practices of other people. This can result in greater health disparity. In another study, Pauly et al. (2015) found out that illicit drug users view the health care system as a whole as unsafe because of the implicit and explicit microaggressions and hidden biases they experienced. With this as negative experience, health disparity follows. This

entangled web of contributory signs of modern marginalization magnifies health disparity.

The theory illuminates the postmodern stance that truth might be co-constructed and buried within the linguistic reality that persons build (Alex et al., 2013), while at the same time underscoring the importance of critical consciousness in moving towards emancipation. This theory also recognizes the power that social constructions and socio-political influence bring to the fore in determining and influencing what the persons know and how they live their lives (Heale & Rieck Buckley, 2015). Collective action embeds the nurse's socio-political views to assist in reducing health disparities. The emphasis on critical consciousness and emancipating collective action is made evident in a systematic review by Macleod and Nhamo-Murire (2016). More specifically, they found out that the information provided by the nurse that is empowering may lead to an increased practice of healthy sexual behavior. Moreover, they pointed out that making references to oppressive social norms or location, nurses' strong advocacy for health equity, and including the patient in decision-making may lead to an emancipated and healthier sexual behavior. This

study suggests the importance of building critical consciousness towards reducing health disparity.

With the advent of technological advances in health care, Kagan et al. (2010) created a nursing manifesto portal (www.nursemanifest.com) through which nurses can exchange thoughts, reflect, and act on issues that affect their practice. This to their mind can serve as a starting point so that nurses can voice disparities whether in themselves or in their workplace. The process of developing authentic nursing knowledge, exchange thoughts, reflect, and act then start again are integral in this portal. As an expected result, this may free or emancipate nurses from the personal or systemic factors that hem them in. This, to the authors' mind bears the outset attributes of the theory of emancipation through nursing using technology as a means.

Theory Analysis

To analyze the theory, the authors used Walker and Avant's (2011) guidelines. Theory analysis is a process of checking the scientific merit of the theory of emancipation in the context of nursing and health disparity. The theory analysis process can be examined using these parameters: origin, meaning, logical adequacy, usefulness, generalizability, parsimony, and testability.

The theory-- at least to the authors' knowledge-- is original and is specific to the context of health disparity, suggesting the value it may add to nursing and health knowledge. Concepts were clearly explained as well as the statement and relationship between and among them. Predictions were made in the sense that authentic emancipation (meaning possession of all the attributes) would lead to a decrease of health disparity as explicated in the model. The theory can be useful and is generalizable to the hospital, public health, and education setting. The model (Figure 2) shows the elegance, mnemonics, and simplicity of the theory implying parsimony. Lastly, it can be tested using quantitative and qualitative research designs. The article is limited to the conceptual analysis of emancipation through nursing within the context of health disparities.

CONCLUSIONS

The theory of Emancipation through Nursing in the Context of Health Disparities can be used in nursing practice, education, and research. The theory is characterized by conscientization or critical consciousness, correct and adequate health information, co-construction of a health services, creative process, and collective action. These attributes were preceded by the following antecedents: marginalization, hegemony, the oppressed and the emancipator, centering, and liberation. Consequently, its application brings about the four E's of enlightenment, enervation, empowerment, and evolvement. As a theory, its importance is recognized from the position of nursing in 21st century health care, slowly valuing a postmodern and critical social theory stance. The theoretical process used in this paper is feasible and novel.

IMPLICATIONS FOR NURSING RESEARCH, PRACTICE, AND EDUCATION

This theoretical paper contributes to nursing knowledge through a rigorous process of inquiry. As such, the causal pathway demonstration of concept analysis to theory construction genuinely illustrates the development of nursing science, for use in nursing practice.

The theory of Emancipation through Nursing is important to nursing practice since it can explain and predict the often overwhelming problem as to the reason for health disparities, underscoring the role played by socio-political contexts and the power the nurse possesses towards patient emancipation. Nurses in low to middle income countries might be guided by the theory in developing responsive and relevant nursing interventions to reduce health disparities. This could spell out the creation of nursing interventions that will enhance the process of emancipation as a nursing practice engagement towards the reduction of health disparities. The theory acknowledges external factors contributory to health disparity in nursing practice. However, the actual and translatable interventions to bedside care are limited; the attributes and antecedents are conceptual in nature.

In an educational setting, the theory explicates the power of education to transform and free learners from the shackles that hold them using the available tools through the looping of the student (similar to patient) and the nurse educator (as a nurse practitioner). The theory could spell out transformative education using emancipatory knowing as an important process in education. On the basis of this article, nurse educators need to design learning experiences that are emancipatory in quality and in nature. Still, the authors recognize the need to go back to the nurse researchers, practitioners, and educators to test the scientific merit of this theory. No amount of thinking proves useful until applied and tested in the real nursing setting.

Declaration of Conflicting Interest

No conflict of interest noted for both authors.

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Study Design: RCM-L, RCL
Data Collection and Analysis: RCM-L
Manuscript Writing: RCM-L, RCL

ORCID

Rainier C. MORENO-LACALLE <https://orcid.org/0000-0002-7844-4424>
Rozanno C. LOCSIN <https://orcid.org/0000-0002-6845-213X>

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ORIGINAL RESEARCH

UTILIZATION OF A SOCIAL MEDIA PLATFORM TO DEVELOP CONTINUING EDUCATION PROGRAMMING FOR PROMOTING NURSING PRACTICE IN CAMBODIA

Karen Simon Reed*

College of Nursing, University of
Florida, United States

***Corresponding author:**

**Karen S. Reed, MSN, DHSc, RN,
CRRN, CNL**

Clinical Assistant Professor &
BSN Program Co-Director
University of Florida College of Nursing
PO Box 100197 Gainesville, FL 32610
352-273-6097 phone
352-273-6536 fax
Email: ksreed@ufl.edu

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Abstract

Background: Cambodia's nursing profession and nursing education system continue to progress 40 years after destruction by the Khmer Rouge. The author, who has a relationship with a hospital in southern Cambodia, was asked to teach physical assessment techniques to improve patient care.

Objective: This study aimed to evaluate the impact of culturally congruent physical assessment media on the knowledge-base of Cambodian nurses.

Methods: This article describes two years of an on-going project designed by the author who annually recruits US based BSN nursing students to use the ADDIE model to create and record segments on physical assessment which are posted on a private You Tube channel for the limited English- speaking Cambodian nursing staff. Optional post-tests are administered by the Cambodian hospital's nursing director.

Results: Test results reflect knowledge gained on cardiac, pulmonary, and gastrointestinal physical assessment skills with means ranging from 73.55% to 95.71%. Physical assessment skills until recently were not taught in Cambodia's nursing programs. Cambodia's nursing profession is advancing and a corresponding skill set including conducting physical assessments is necessary. As a majority of the project participants did not have prior exposure to the material, a pre-test was not provided and participation in post-testing was optional. The objective was to provide useful professional educational materials at a comfortable language level for the Cambodian nurses using examples which were culturally relevant.

Conclusion: The BSN students successfully developed culturally relevant educational products the Cambodian nurses found useful.

KEYWORDS

nursing education; Cambodian nursing; cross cultural nursing; international nursing partnerships

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BACKGROUND

In Cambodia between 1975 and 1979 nursing education was one of many victims of the Khmer Rouge. During the time of Pol Pot's regime, 1.7 million Cambodians with estimates as high as 2.5 million, or 20% of the country's population at the time, died due to forced labor, disease and starvation, and mass execution ([Rummel, 1997](#)). Documents disclose only 45 physicians survived that time period with 20 physicians leaving the country once borders were opened ([McGrew, 1990](#)); however, it is only through oral history that the number of

nurses surviving that time period is generally accepted at 20 ([Koy, June, 2012](#)). The loss of Cambodia's nurses, faculty members and its entire health care system is a legacy from which Cambodia's nursing profession continues to rebuild ([Lasater et al., 2012](#)).

The author has traveled to Cambodia on six different occasions since 2007 as a volunteer nursing faculty member. The focus of these trips has consistently been to implement a body of work

that supports the professional development of Cambodia's nursing workforce and pre-licensure nursing students. Trips have ranged in length from 2 weeks to 10 months when a US Fulbright Core Scholar Award to Cambodia allowed the author to create, expand and deepen in-country relationships. Over the years Sonja Kill Memorial Hospital (SKMH) and the Kampot Regional Training Center for Nurses and Midwives located in Kampot, Cambodia have become the primary locations for collaborative international nursing projects between the author and her Cambodian nursing colleagues.

However beneficial the in-country efforts, the author and her Cambodian colleagues have desired a sustainable project that would utilize the availability and low-cost advantages of technology and distance learning. Specifically, the nurses and midwives at Sonja Kill Memorial Hospital wanted to learn how to conduct physical assessments, a skill most did not study while in nursing school and the hospital administration was supportive of an initiative to address this need. This article presents the development, implementation and evaluation of the Nurse2Nurse Education Connection, an unfunded, on-going project utilizing BSN students nurse as co-investigators (Co-I) and the author as their faculty mentor and primary investigator.

LITERATURE REVIEW

Current State of Cambodian Nursing Education

The Kingdom of Cambodia has five nationally supported nursing/ midwifery education programs with all five offering Associate Degree in Nursing programs which requires three years to complete and one of the five programs also offers a Bachelor of Nursing Science degree (Henker et al., 2015). The content of the programs follows a national curriculum authorized by the Cambodian Ministry of Health (Cambodian Council of Nurses, 2017). Additionally, there are a small number of private nursing schools in Cambodia. Although there is a vision for a sustainable health sector, there are recognized challenges uncovered in an extensive survey of Cambodia's public nursing education system conducted by the Ministry of Health (MOH) in collaboration with the Japanese International Cooperative Association (JICA) in 2012.

First, though there is a national curriculum approved by the MoH and the Ministry of Education, Youth and Sport, the 2012 survey documented a consistent lack of lesson plans as well as a lack of lectures based upon evidence (Japanese International Cooperative Association, 2012). There remain no professionally published nursing textbooks in Khmer, the language of the Kingdom of Cambodia, and many of the nursing faculties do not read English well enough to use the textbooks acquired from international sources. However, there is promise of change as there are now 52 Cambodian nurses who have earned Bachelor of Nursing Science degrees from accredited international universities and three who have earned a Master of Nursing Science and a Cambodian nurse earned a

PhD in 2018, the first in the country (Henker et al., 2015; Koy, October, 2018).

Professional Development Needs of Cambodian Nurses

Cambodia continues to have some of the lowest health indicators among the Association of Southeast Asian Nations (ASEAN). One contributing factor is the shortage of competent health personnel in the Cambodian health service delivery system (Department of Planning & Health Information of the Kingdom of Cambodia, 2016). Nursing shortages are common in low income countries due to inadequate numbers of nursing schools, the varying quality of nursing education, and the general limited secondary school opportunities (George & Meadows-Oliver, 2013).

A major section of the JICA survey included an assessment of hospital nursing services used by the public nursing programs where students participate in clinical learning experiences. Observations of 40 different nurses at nine different hospitals revealed a significant focus on task-oriented skills with no evidence of knowledge or application of physical assessment skills aside from vital signs (Japanese International Cooperative Association, 2012). The report went on to identify problems associated with in-service training; however, this issue could be resolved by strengthening the nursing department through education and capacity development activities (Japanese International Cooperative Association, 2012).

Benefits of Capacity Development Projects

The United Nations (UN) called upon higher-education institutions to contribute to sustainable development activities and engage in capacity development efforts which required "transnational involvement" (Koehn et al., 2011). Marrone reflected on how observing nursing in an international arena impacts one's perception and appreciation for the diversity that exists within one's own nursing community (Marrone, 2002). International exchanges provide such an avenue (Leh et al., 2004). Steefel quotes Alaf Meleis, president of the International Council on Women's Health, "When nurses understand and interpret diversity experiences, they are better able to care for patients of many cultures and are better prepared for global health care" (Steefel, 2002). As not all students can participate in travel abroad programs, local cross-cultural face to face opportunities and using technology and networking for international engagement have been explored with promising results (Arbour et al., 2015; Lenz & Warner, 2011).

AIM

The purposes of the project were 1. to identify the effectiveness of the physical assessment educational material developed by BSN nursing students attending a university in the southeastern United States for use by limited English speaking indigenous Cambodian nurses and 2. to determine the Cambodian nurses' satisfaction with the educational materials developed.

THEORETICAL FRAMEWORK

ADDIE: Instructional Design Model

The ADDIE model was the instructional design model used to design the instructional materials for this project. The author chose the ADDIE model for its similarities to the nursing process which the BSN students were quite familiar with making it a user-friendly product for novice designers creating the project management plan. This project is a multi-year project with a new BSN student team recruited each year to produce videos. The ADDIE model has worked well with each BSN student research team, three to date, finding it useful to organize the team's body of work.

Florida State University first created the ADDIE model for the US Army in 1975 (Branson et al., 1975). The model consists of five phases: Analysis/ Assess, Design, Development, Implement, and Evaluate. The Analysis phase requires one to gather information about the population of learners. It is essential that the instructional content is learner-focused and culturally congruent. The Design phase is used to plan learning modules and identify appropriate strategies for the learning audience. The Development phase is when the instructional media and supporting materials are actually created. Delivery of materials is furnished during the Implementation phase and learner understanding and program satisfaction are determined during the Evaluation phase (Hsu et al., 2014).

Bandura's Social Cognitive Theory

The author knew the project teams were composed of novice BSN nursing students in multiple areas including the creation and delivery of educational materials and working with nurses who are Limited English Proficiency (LEP), and who possessed little to no understanding of the Cambodian culture and the Cambodian health care system. The author believed that in addition to an instructional design model to guide the project, it would be beneficial to utilize a social learning theory in constructing the nursing students' orientation to the project and developing support throughout the project experience. Constructs from Bandura's Social Cognitive Theory were used in providing the materials and informational and emotional support necessary to the student team members. In turn, this allowed for production of the necessary deliverables for there to be effective project outputs.

Self-efficacy, a vital concept of Bandura's Social Cognitive Theory, is the optimistic belief in one's ability to successfully accomplish a task and produce a favorable outcome (Bandura, 1995). Participating students needed to know they could succeed. The Cambodian staff at SKMH expected a quality product, and it would not be inappropriate to state that patient care was dependent upon the quality and accuracy of deliverables provided to the SKMH staff.

As Bandura's model calls for self-efficacy development through mastery experiences, vicarious experiences and social persuasion (Lee et al., 2012), this theory was useful in guiding

the relationship between the faculty mentor and the members of the student team. The goal was for student team members to feel successful and build self-confidence through each phase of the project. Factors influencing outcomes of student performance included difficulty of the task, effort expended, and amount of assistance required or received. Therefore, it required the faculty mentor to provide information, role play, problem solve, word-smith, and share stories of in-country successes and failures to support the development of the student team members.

Sample

SKMH is the primary stakeholder of this project. The sample participants in this project were the English speaking, Cambodian national nursing and midwifery SKMH staff members. The organization is a charity hospital that opened in April 2012 with the vision of improving the health conditions of Cambodians in the region. The hospital strives to assist poor families, expectant mothers, and children. It operates mainly with Cambodian staff but is supported by expatriate healthcare specialists. The hospital is managed under HOPE Worldwide, an international non-profit organization whose mission is to promote sustainable community-based health services.

Year one of the project, a total of 31 Cambodian nurses and midwives, employees at SKMH, reporting themselves as new graduates with up to four years of work experience participated in the project. During year two, a total of 22 Cambodian nurses and midwives working at SKMH and ranging in work experience from four months to four years participated in the project. No other demographic information was solicited. The sample was recruited through a convenience sampling method.

METHODS

This project is in year three of production. This article describes the process and results associated with years one and two. There is no outside funding; the instructional designer and biostatistician professionally support this project although it is outside of their assigned plan of work. This project was designed with the Director of Nursing at Sonja Kill Memorial Hospital in Kampot, Cambodia and received the administrative approval of its Chief Executive Officer prior to implementation. The project is approved through the IRB process at the author's university which requires documentation of support from SKMH.

The students who comprise the project teams as Co-I can earn academic credit through the college's Honors Program for their participation or they may participate in the project as their EMBRACE (Engaging Multiple communities of BSN students in Research and Academic Curricular Experiences) scholarly project. However, only three of the seven students who participated during this project's first two years participated in those programs. The remaining four students participated in the

project as volunteers, earning no academic credit or outside recognition.

This project is organized as a 10-month activity, as described in **Table 1**, providing BSN students with the opportunity to engage in cross-cultural research and to provide a meaningful service to an international nursing community. The project year begins in February with the faculty member recruiting up to four students from the second semester junior class for the project. Students are interviewed for their prior cross-cultural experiences, communication abilities, group dynamics, and commitment to the project. A student's grade point average is not taken into consideration. This project provides an opportunity for students who are able to effectively articulate in writing and verbally a desire to engage in an international service learning project. As noted, the ADDIE model is used as the framework for designing the project. It is an instructional design model that novice educators quickly understand.

Assess/ Analyze Phase

By mid-March, the new team meets, and the plan of action is outlined with the faculty mentor. The instructional designer creates a new project site annually using Canvas®, the university's learning management system, as the platform and files from the previous year's project team are moved forward and archived for reference as needed. The site is divided into sections including: review of literature, contact information, SKMH newsletters, Institutional Review Board 02-Behavioral/Non-Medical (IRB02) information, outputs, posters, exams and video links, project production schedule, tips for handouts, and videos from former project years. The review of literature section contains multiple sub-files including cultural dimensions of learning, global educational partnerships/capacity development, and Cambodian health/ nursing that the student teams must read and update with current material. Students attend a full day orientation on the modern history of Cambodia, its nursing education system, history of the project, the IRB02 process including training requirements and the Belmont Report, designing professional development materials for LEP nurses working in a low-resource setting, and a segment discussing their personal stage of cultural development. Students reach out to the nurses at SKMH via a private Facebook account that was created as a comfortable place for the Cambodian nurses to ask questions and for the students and the nurses to engage in conversation. Additionally, the SKMH nursing director, a German national who is trilingual and a longtime resident of Cambodia, introduces new Cambodian SKMH staff members to the project and discusses with the Cambodian staff members the topics they wish to see developed into videos.

By the first week in May when the students leave on summer break, they have completed the IRB02 training modules to become Co-I on the study, the IRB02 has been completed, submitted and approved. The students, utilizing the information from SKMH, choose which topics they will develop for videos, scripts and exams. Videos that have been produced to date

include basic anatomy and physical assessment of the gastrointestinal, respiratory, neurological and cardiac systems.

Design Phase

Over the summer, the students stay in contact with one another and the faculty mentor developing the video scripts and exams. The faculty mentor helps them with editing and provides final approval of all scripts, Power Point content and post-tests. Additionally, the students will update the review of literature and are responsible for reading all materials on the Canvas site. This is a critical step in creating and delivering the material in a culturally congruent manner.

Development Phase

At the beginning of fall semester, students work directly with the instructional designer in scheduling and recording the videos. The students must also make a final decision about which stateside conference, if any, they wish to participate in so that abstract deadlines can be identified, and poster production timelines prepared.

The SKMH Director of Nursing provided the BSN student team with suggested criteria for the evaluation tool as well as the author, based upon her prior experiences directly providing continuing education to the nurses and midwives at the hospital. The BSN student team created a simple evaluation tool for the Cambodian nurses to complete once each video is viewed. The BSN student team set an arbitrary minimum level of success at 72% with a desired rate of 80%. These figures are not based on any statistical evidence as the review of literature did not yield any materials providing insight into a logical figure when working virtually with LEP international nurses in a low-income country. This study is contributing to the body of literature on this topic.

Implementation Phase

The nurses at SKMH watch the videos on a private You Tube Channel and then take the exams when they wish to do so. The nursing director administers the consent process for the nurses and midwives who participate in the project and is responsible for the security of the exams. He scans the signed consent forms, the completed exams, and evaluations forms and emails them to the faculty mentor who retains them in a secure location. No pre-test is administered as such a step might provoke unnecessary anxiety in project participants. Any knowledge gained is considered a positive movement and a foundation for growth. Nurses and midwives are permitted access to the videos without a requirement to take the exam. The intention is to give all of the Cambodian nurses and midwives at the hospital the opportunity to utilize the instructional videos if they desire.

During this phase, students also prepare and submit abstracts for the conferences in which they wish to participate and begin designing their poster.

Evaluation Phase

The College of Nursing biostatistician develops basic statistics.
The students and the faculty mentor examine the statistics and

determine opportunities for improvement. Once the conferences are completed, the students and faculty mentor discuss feedback received on the poster presentations at the chosen conferences.

Table 1 ADDIE Project Development Plan

A - Assess/ Analyze April	<ul style="list-style-type: none"> Identify what video topics the SKMH would like to have. Solicit data from Facebook page & through SKMH director of nursing via email Students determine student video dyads and which topics the dyads will develop. Student teams develop & agree upon summer body of work.
D - Design May-June- July	<ul style="list-style-type: none"> Student dyads will develop video scripts and exams. PI works with student dyads in draft development and will approve final drafts. PI responds to any IRB02 board comments (IRB is renewed annually due to change in Co-I and new topics)
D - Develop August- mid-September	<ul style="list-style-type: none"> Student dyads will work with videographer in scheduling and recording videos. SKMH nurses oriented to project and those who wish to participate sign consents
I - Implement mid-September- mid-November	<ul style="list-style-type: none"> SKMH nurses and midwives watch videos Study participants take supervised exams. Exams and consent forms scanned and emailed to PI.
E - Evaluate	<p>November</p> <ul style="list-style-type: none"> PI collaborates with College of Nursing statistician in collecting basic stats on collected exams. <p>December</p> <ul style="list-style-type: none"> BSN student team and PI conducts statistical analysis and assesses program evaluations. Create recommendations for next team <p>February</p> <ul style="list-style-type: none"> BSN student team participates in recruitment of the next year's team by making a presentation and answering questions.

Exam and Evaluation Results**Test Results Year One: Fall 2015- Spring 2016**

A total of 31 project participants took the pulmonary anatomy and physical assessment exam and 21 study participants completed the cardiac anatomy and physical assessment exam. No records were kept as to whether a staff member took one or both exams, nor how many times a nurse or midwife viewed the videos or participated in the associated in-service programming prior to taking the exam. The project end point was providing

conveniently accessible, readily understood, professional educational material on physical assessments for the Cambodian nurses and midwives. **Tables 2** and **3** describe the test results. The mean for the 31 study participants who completed the pulmonary exam on the anatomy and physical assessment was 73.55 ± 17.23 , with a low score of 40 and a high of 100. The 21 study participants who took the cardiac exam on the basic anatomy and physical assessment that first year earned a mean of 76.25 ± 15.06 ; scores ranged from 50.00 to 100.00.

Table 2 Pulmonary Anatomy & Physiology Test Data 2015-2016

Type	N	Mean	SD	Minimum	Maximum
Midwife	3	83.33	15.28	70.00	100.00
Not Stated	4	72.50	17.08	50.00	90.00
Nurse	24	72.50	17.75	40.00	100.00
Total	31	73.55	17.23	40.00	100.00

Table 3 Cardiac Anatomy & Physical Assessment Test Data 2015-2016

Type	N	Mean	SD	Minimum	Maximum
Midwife	4	72.50	15.00	50.00	80.00
Not Stated	1	90.00	-	90.00	90.00
Nurse	16	75.63	13.15	60.00	100.00
Total	21	75.71	13.26	50.00	100.00

Test Results Year Two: Fall 2016- Spring 2017

Based upon feedback from participants on the sound quality of the videos and responses received to some of the test questions, which were mostly fill-in-the-blank, the BSN student team revised both the pulmonary and cardiac anatomy and physical assessment videos and revised some of the questions on the corresponding exams. For that reason, there can be no correlations made between test results of the cardiac exams between the first two years of the project. The second-year team also made videos on basic anatomy and physical assessment of the gastrointestinal (GI) and neurological systems at the request of the SKMH staff. However, no staff members attempted to take the neurological anatomy and physical

assessment exam and no additional pulmonary exams were received. Therefore, there is no data to report for those tests. **Tables 4** and **5** outline the results of the GI exam and the revised cardiac exam.

A total of 22 study participants took the revised cardiac exam with a mean of 88.13 ± 12.57 . Scores ranged from 50.00 to 100.00. Study participants from the previous year were welcomed to watch the new video and take the revised exam. Therefore, some improvements may be due to repeated exposure of the material. The results of the gastrointestinal exam ranged from 90 to 100 among the seven study participants who took the exam with an average score of 95.71 ± 5.35 .

Table 4 Cardiac Anatomy and Physical Assessment Test Data 2016-2017

Type	N	Mean	SD	Minimum	Maximum
Midwife	7	70.00	10.73	50.00	90.00
Nurse	15	92.66	11.65	67.00	100.00
Total	22	88.13	12.57	50.00	100.00

Table 5 GI Anatomy & Physical Assessment Test Data 2016-2017

Type	N	Mean	SD	Minimum	Maximum
Midwife	2	95.00	7.1	90.00	100.00
Nurse	5	96.00	5.5	90.00	100.00
Total	7	95.71	5.35	90.00	100.00

Feedback from Cambodian Project Participants

Nurses and midwives who viewed the videos were encouraged to provide feedback. Year one, study participants were simply asked to provide written comments. Year two of the study, a more formal tool was used, which still included the opportunity

for participants to freely comment. Table 6 reflects the feedback results from one of the videos. Overall, the US students were touched by the many positive comments. However, they were a bit surprised at comments noting they spoke too quickly as they perceived themselves to be speaking very slowly.

Table 6 Cardiac Anatomy & Physical Assessment Video Satisfaction Survey Results 2016-2017

Questions	Strongly Agree	Agree	Disagree	Strongly Disagree
The video production is very good	23.8%	71.4%	4.8%	-
The video information is helpful	9.5%	81.0%	9.5%	-
The video teacher communicated in English that I can understand	9.5%	81.0%	9.5%	-
I like the organization of the video	38.1%	57.1%	0.0%	4.8%
What did you like best about the video?	Pictures of anatomy, clear pictures, explain organ functions, excellent teachers			
What did you not like about the video?	Fast show, speak so fast, the video very fast			

DISCUSSION

While a higher mean is desired, the overall exam results are promising. As the Cambodian nurses and midwives develop greater comfort and trust with the project, it is hoped that more staff members will participate. Because limited information is presented on anatomy and physiology in Cambodian nursing curricula, the students created short, less than 15-minute videos, explaining anatomy and physiology of a system as companion

videos to the physical assessment videos. Culturally relevant graphics and pictures were incorporated into the power point slides. Great care was taken to demonstrate use of equipment available in-country and to use units of measurement and acceptable ranges of findings which one would expect in a Cambodian hospital. This was a critical role that both the faculty mentor and the SKMH Nursing Director played in vetting the materials prior to video production.

Based upon the evaluations of the year one videos, the decision was made to revise and re-record both the cardiac and pulmonary videos and redesign some of the test questions for the cardiac exam. Then, the year two student project team created physical assessment videos of the GI and neurological systems to contribute to the available list on the secure YouTube channel. To date, no staff members have taken the exam associated with assessment of the neurological system. The faculty mentor will meet with the SKMH nursing director and his nursing educator team to discuss what measures can be taken to improve both the video and corresponding handouts as well as support the confidence of the staff members in attempting the exam.

Only a small number of nurses and midwives have taken the gastrointestinal assessment exam (N=7); however, the results are quite good with all earning either 90% or 100% on the ten item multi-choice exam. The faculty mentor will use the meeting previously mentioned to discuss what measures she can take to encourage participation and how the staff member's wish her to support their professional development. It may be that a monthly visit using Skype to maintain contact with staff members and initiate relationships with new staff members between in-country visits will keep project momentum going.

A puzzlement has been the almost non-use of the Facebook page. While members of the student project team and the faculty mentor receive multiple individual Facebook friend requests from the nurses and midwives at SKMH, there is only the very rare question or discussion post on the private dedicated Facebook page. It may be that the SKMH staff members do not find it useful or necessary.

The seven students on the first two project teams have now graduated and all have shared the impact this project has made on their nursing practice. When caring for a patient or communicating with a family member where there is an issue with health literacy or LEP, they have shared how they remember the lessons learned in delivering the video materials. They find alternative words and phrases, avoid compound sentences, avoid beginning sentences with prepositional phrases, and seek verification there is understanding. One former student joined the faculty mentor in Cambodia for a month to the great delight of the SKMH staff. She and the faculty mentor worked with the Cambodian staff to practice what they had learned on the videos. Additionally, the former student collaborated with the Cambodian staff members to create and implement a number of quality improvement activities which continue today.

CONCLUSION

The purpose of this project was to evaluate the impact of culturally congruent physical assessment media on the knowledge-base of Cambodian nurses. Initial test results indicate that knowledge was gained. This experience has provided the BSN nursing student project teams with the

opportunity to enhance their teaching skills, to engage in the research process, and to foster their own cultural development while advancing the workforce development of an international nursing community.

IMPLICATIONS FOR RESEARCH AND PRACTICE

Recommendations

One recommendation for the initial Assess/Analysis phase is to arrange for a virtual meeting between the student project team and the Cambodian staff at SKMH. This would allow for greater clarity in the feedback received to date and allow creation of the most learner-centered instructional material possible. While the year one team did do so, the 12-hour time difference proves a challenge. There is also a need to identify how to best standardize the exams in a culturally congruent manner so that the effectiveness of the videos can be better measured.

Implications

Four Cambodian hospitals require their staff members to meet a set of English speaking and writing standards. These hospitals have a number of capacity development projects with nursing and medical education programs and hospitals in Middle (MIC) and High Income Countries (HIC). This project has the potential for replication at those hospitals. Nursing education programs in MIC and HIC can provide students from multiple health disciplines with opportunities to develop the cultural sensitivity, skills and knowledge necessary to work effectively with patient and family populations as well as with members of today's diverse healthcare workforce. This project can be reasonably replicated by any nursing or other health science program wishing to create a cross-cultural, capacity building experience for its students and it would be an excellent chapter service project for a professional nursing organization.

Ethical Considerations

This project was approved by the University of Florida (Gainesville, Florida, USA) IRB 02 (Behavioral/ Non-Medical) board. #2015-U-0442. The title of the study as approved was, "Creating Culturally Congruent Training Materials to Promote Physical Assessment Competencies among Cambodian Nurses".

Declaration of Conflicting Interest

The author(s) report(s) no real or perceived vested interests that relate to this article that could be construed as a conflict of interest.

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Author Contribution

The author developed all components of the article.

ORCID

Karen S. Reed <https://orcid.org/0000-0002-2083-1907>

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ORIGINAL RESEARCH

DEGREE OF SUSPICION OF PERIPHERAL ARTERY DISEASE AMONG GERIATRICS AND POLICEMEN IN ILIGAN CITY, PHILIPPINES

Jan Igor Temple Galinato*

College of Nursing, Mindanao State
University - Iligan Institute of
Technology, Philippines

***Corresponding author:**

Jan Igor Temple Galinato, JD, MAN,
RN

College of Nursing, Mindanao State
University-Iligan Institute of
Technology, A. Bonifacio Ave.,
Tibanga, Philippines
Telephone: +63 (063) 221 0744
Email: janigor.galinato@msuiit.edu.ph

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Abstract

Background: Peripheral artery disease is a type of cardiovascular disease which belongs to vascular system disease and ranked the second most common non transmissible disease that cause death in the Philippines. The ankle brachial index (ABI) constitutes simple, non-invasive, cost-effective method for the early detection of peripheral artery disease (PAD) which complements assessment of cardiovascular risk.

Objective: The study aims to determine who are at risk of peripheral artery disease among the Geriatrics and Policemen in Iligan City.

Methods: It utilized descriptive-correlational-comparative research design and purposive sampling method. The data were gathered among 40 respondents: 20 Geriatrics and 20 policemen from Camp Tomas Cabili in Iligan City with the use of modified standardize questionnaire from Southern California Health Specialist Peripheral Artery Disease Patient Questionnaire.

Results: Results showed majority (50%) of respondents were 50 years old and above; most (65%) were male. Pearson Correlational Coefficient shows that, among the demographic profile of the respondents, only age and lifestyle (diet and exercise) had a significant relationship with their degree of suspicion of having PAD. On the other hand, there was no significant relationship between gender, history of heredo-familial diseases, smoking, alcohol drinking habits, and the respondent's degree of suspicion of having PAD. The result contradicts the nursing maxim that smoking is the most important risk factor for PAD; as in this case, even if most of the respondents were non-smokers and non-alcoholics, their poor diet and exercise alone increased their risk or degree of suspicion of having PAD.

Conclusion: While age is beyond the control of the respondents, there is much that they could do to improve their lifestyle (diet and exercise) to lessen their risks for PAD. An institutional cafeteria serving nutritious food and exercise gyms could greatly benefit both the geriatrics and the policemen.

KEYWORDS

peripheral artery disease; ankle-brachial index; demographic profile; heredo-familial disease

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INTRODUCTION

Cardiovascular disease is the number one cause of death in the world ([Mendis et al., 2011](#)). Peripheral artery disease is a type of cardiovascular disease; specifically it belongs to vascular system diseases, and it has ranked the second most common non transmissible disease that cause deaths in the Philippines ([Department of Health, 2013](#)). Peripheral arterial disease is

characterized by a gradual reduction in blood flow to one or more limbs secondary to atherosclerosis. Risk factors include smoking, diabetes mellitus, hyperlipidemia, and hypertension. The most common clinical manifestation is intermittent claudication ([Hilleman, 1998](#)). Patients with peripheral arterial disease including those with intermittent claudication have a

high risk for cardiovascular and cerebrovascular morbidity and mortality ([Lamina et al., 2005](#); [Norman et al., 2004](#)). Therefore, peripheral artery disease (PAD) is an important healthcare problem and early detection and intervention is vital to minimize the chances of further complication. Individuals eventually die mostly because of cardiac and cerebrovascular diseases (e.g., myocardial infarction and stroke, respectively), unaware that the possible reason for their mortality is peripheral artery disease that wasn't earlier diagnosed and treated ([Smeltzer et al., 2010](#)). Studies by Brevetti et al. ([Brevetti et al., 2003](#)) have even confirmed that the coexistence of CAD (coronary artery disease) and PAD is associated with a greater inflammatory status and more widespread coronary atherosclerosis. Basically, this disease involves the lower extremities and as geriatrics and policemen, considering their varying lifestyle, precipitated by stress, geriatrics and policemen are at risk of such disease.

Arterial insufficiency of the extremities occurs most often in men and is a common disability. PAD is mostly silent in its early stages, but when lesion obstruction exceeds 50%, it may cause intermittent claudication with ambulation ([Garcia, 2006](#)). The legs are most frequently affected; however, the upper extremities may be involved. In PAD, obstructive lesions are predominantly confined to segments of the arterial system extending from the aorta below the renal arteries to the popliteal artery. Distal occlusive disease is frequently seen in patients with diabetes mellitus and in elderly patients ([Smeltzer et al., 2010](#)).

Managing patients with PAD requires an accurate assessment of the severity of the condition and the risk factors likely to predict disease progression. The spectrum of patient presentation ranges from asymptomatic to critical limb ischemia. Because about half of patients with PAD have coronary or cerebrovascular disease, the examination of presenting patients should be directed toward the entire cardiovascular system ([Abul-Khoudoud, 2006](#)). Pentoxifylline (Trental) and cilostazol (Pletal) are approved for the treatment of symptomatic claudication. Pentoxifylline increases erythrocyte flexibility, lowers blood fibrinogen concentrations, and has antiplatelet effects. Cilostazol, a phosphodiesterase III inhibitor, is a vasodilator that inhibits platelet aggregation ([Brener & Doyle, 2007](#)).

Males are at greater risk for peripheral artery disease because they only have minute levels of estrogen, the female sex hormone that has a dual function of developing the female secondary sex characteristics (i.e. breast and hip development) and protection against cardiovascular diseases by depositing cholesterol and lipids into adipose tissue instead of the vessel's lumen ([Smeltzer et al., 2010](#)). Also, in terms of alcohol drinking problem and cigarette smoking, males outnumber females ([Kasper et al., 2004](#)). The prevalence of PAD in the elderly is high ([Meijer et al., 1998](#); [Sesso et al., 2000](#)). People that are 50 years old and above tend to have arterial disorders like atherosclerosis (narrowing of the vessel lumen caused by the accumulation of atheroma or fat in the tunica intima) and arteriosclerosis (narrowing of the vessel lumen caused by the

degenerative hardening of the tunica media and tunica adventitia) ([Smeltzer et al., 2010](#)). More so, degenerative disorders like diabetes mellitus, hypertension, and cardiac diseases tend to manifest during old age (>50yo), making it a significant predisposing factor to PAD ([Black & Hawks, 2005](#)). In terms of history of heredo-familial disease; Diabetes Mellitus, Hypertension and Cardiac disease have a direct relationship with PAD ([Black & Hawks, 2005](#)). Diabetes Mellitus, a group of disorders characterized by hyperglycemia, increases the viscosity of the blood, causing blood stasis and arterial occlusion, both precipitating factors for PAD ([Heuther & Mccance, 2000](#)). Hypertension, the abnormally increased force of blood against the vessel wall, causes mechanical injury to the vessel wall's tunica intima and tunica media, precipitating PAD ([Kasper et al., 2004](#)). Parenthetically, cardiac diseases, characterized by decreased cardiac output to the tissues, causes faulty compensation mechanisms, like the activation of the renin-angiotensin-aldosterone system and myocardial hypertrophy, which could later decompensate and increase both blood volume and blood pressure, precipitating PAD ([Smeltzer et al., 2010](#)).

In terms of lifestyle: smoking contains nicotine, a vasoconstrictor, and free radicals which are capable of direct endothelial tissue injury, thus causing peripheral artery disease ([Lu & Creager, 2004](#)). Smoking, specifically the use of tobacco products, is the probably the most important risk factor for the development of atherosclerotic lesions ([Boyer, 2011](#); [Smeltzer et al., 2010](#)). A study ([Murabito et al., 2003](#)) involving more than three thousand respondents concluded in recommending that smoking cessation is an important goal in the aim to reduce PAD and its associated impact on quality of life, functional decline, and risk for subsequent cardiovascular disease.

Alcohol is a gastrointestinal tract irritant which could decrease the absorption of vitamin B complex and the removal of homocysteine—both conditions could predispose to PAD. Parenthetically, exercising irregularly and eating a high fat diet could increase the cholesterol, triglycerides, low density lipoprotein, and very low density lipoprotein levels in the body, increasing the risk of atherosclerosis, and consequently—peripheral artery disease ([Smeltzer et al., 2010](#)). People who are overweight (25-29.9) and obese (30 and above) are at increased risk for peripheral artery disease (PAD) as these conditions are associated with increased cholesterol deposition in the lumen of blood vessels (i.e. atherosclerosis) ([Black & Hawks, 2005](#)). Moreover, adipose tissue has relatively less vasa vasorum (small arteries distributed to the outer and middle coats of the larger blood vessels), such that in obese individuals, there is delayed healing of vessel wall injuries, leading to PAD ([Kasper et al., 2004](#)). Studies ([Diehm et al., 2004](#)) found that patients with PAD were slightly older than patients without PAD, suffered more frequently from diabetes, hypertension, lipid disorders and other coexisting atherothrombotic diseases.

For early and independent detection of PAD, a feasible and noninvasive procedure, in the form of ankle-brachial index (ABI) measurement, is used ([Papamichael et al., 2000](#); [Wild et al., 2006](#)). The ABI value is inversely associated with other

cardiovascular risk factors (Kweon et al., 2005). An ankle-brachial index (ABI) of less than 0.9 is a noninvasive measure of lower extremity arterial disease and a predictor of cardiovascular events (Kennedy et al., 2005), like peripheral artery disease, stroke, coronary disease and death (Murabito et al., 2003; Sukhija et al., 2005). ABI is even considered as a marker of atherosclerosis in patients with high cardiovascular risk (Hasimu et al., 2006; Resnick et al., 2004). ABI is calculated by dividing the ankle systolic blood pressure (SBP) by the brachial systolic blood pressure (SBP), both in mmHg (i.e. left ankle SBP/ left brachial SBP, and right ankle SBP/right brachial SBP) (Smeltzer et al., 2010). The systolic blood pressure is used in measuring ABI because with advancing age, there is a decline in DBP (diastolic blood pressure) and in the role of DBP in predicting CHD risk (Franklin et al., 1999). On the other hand, SBP (systolic blood pressure) has been proven in studies to be a determinant strongly and independently associated with PAD (Meijer et al., 1998). The ankle brachial index (ABI) constitutes a simple, non-invasive, cost-effective method for the early detection of PAD which complements the assessment of cardiovascular risk. This examination has been recommended for routine clinical use, with the aim of measuring the patency of the arterial circulation of the lower as well as the upper limbs (Fischbach, 2004).

METHODS

Study Design

This study utilized descriptive-correlational-comparative research. Descriptive research seeks to describe the current status of an identified variable; correlational research attempts to determine the extent of a relationship between two or more variables using statistical data, while comparative research compares two or more groups on one or more variable (Boswell & Cannon, 2011). This research design was used in this study to describe the demographic profile of the respondents, to correlate the respondents' demographic profile with their degree of suspicion of having peripheral artery disease (PAD) using ankle brachial index (ABI), and to compare the respondents' ankle brachial indices (ABI) when grouped according to demographic profile.

Setting

This study was conducted in Iligan City; specifically in: Bishop Bienvenido Tudtud Home for the Aged in Barangay Santiago; Barangay Bagong Silang; Barangay Tubod; and Iligan City Police Office – Camp Tomas Cabili. The study was conducted from January to March, 2018.

Sample/Participants

The researcher utilized Purposive sampling method in this study. Only the Geriatrics (above 60 years old) from the aforementioned home for the Aged; and the Policemen of Camp Tomas Cabili Police Office in Iligan City were chosen as subjects for the study. The geriatrics were chosen because old age is a predominant risk factor for Peripheral Artery Disease (PAD) (Smeltzer et al., 2010), and the researcher wanted to determine whether the activity level and the lifestyle in general

of the geriatrics in their respective homes for the aged are adequate in preventing peripheral artery disease (PAD), or whether it is putting them at risk. The policemen of Camp Tomas Cabili Police Office in Iligan City were chosen because the researcher wanted to determine whether they may have any degree of suspicion of peripheral artery disease (PAD) which may hamper their ability to pursue criminals; also, the researcher is a close acquaintance with the Chief of police in Iligan City, thus providing a readily available research respondents for purposive random sampling. The total sample size is 40: 20 Geriatrics and 20 policemen from Camp Tomas Cabili in Iligan City. The 20 geriatrics were the only respondents able and willing to participate; the rest were bedridden. The 20 policemen were the only ones present in Camp Tomas Cabili willing to participate; the rest were on patrol duty. The researcher opted for similar number of the two respondents to prevent the number of one class from influencing the statistical results. Slovin's formula was not used because this is a non-experimental research.

Instrument

The researcher used the questionnaire in collecting data used to determine the correlation between the demographic profile of geriatrics and the policemen and their degree of suspicion of their having Peripheral Artery Disease (PAD). The questionnaire included two parts. Part I, adapted or borrowed from the Southern California Health Specialist Peripheral Artery Disease Patient Questionnaire (Southern California Heart Specialists, 2010), aimed to gather information on the respondent's personal and demographic data as to his/her name (optional), age, gender, heredo-familial diseases, lifestyle. The original questionnaire was in English. Part I was filled up by the respondents. Part II, which covered the Blood Pressure (BP) in mmHg of each extremity, from which the Ankle Brachial Index (ABI) is derived, is developed from Fischbach's Ankle Brachial Index (ABI) Scale (Fischbach, 2004). Ankle Brachial Index (ABI) was calculated by dividing the ankle pressure by the brachial pressure. The normal value of ABI is >1.0 . On the other hand, an ABI < 1.0 is suspicious for disease. The lower the numeric value for this index, the more severe the disease may be. The degrees of suspicion for PAD are as follows: Mild (ABI 0.71-0.99), Moderate (ABI 0.41-0.70), or Severe (ABI 0.00-0.40) (Fischbach, 2004). Fischbach's Ankle Brachial Index (ABI) Scale was in English. Part II was filled up by the researcher after examination of the respondents. The instrument was previously checked by an adviser of the research (Prof. Vivian L. Ceballos) and it was validated by a panel of experts (i.e., one [1] with a master of arts in medical-surgical nursing (Prof. Delia V. Realista), one [1] with a Ph.D in statistics (Dr. Jofi V. Mahilum), and one [1] with a Ph.D in management (Dr. Teresita Tumapon)) who did the content relevance and validity to the research problem. In terms of reliability the research instrument has a Cronbach's alpha of 0.706.

Data Analysis

Firstly, the respondents signed an informed consent form. The test purpose, benefits, and procedures were explained. The respondent was instructed to refrain from smoking or

consuming caffeine for at least 2 hours before the study. The respondent was assured that no radiation is employed, no contrast medium is injected, and no pain is involved, although some discomfort may be experienced from lying with extremity extended or when pneumatic cuffs are inflated. The respondent was then asked to lie on a table with extremity extended. The pneumatic cuffs were then placed at each extremity in interval at 2 inches above the antecubital space for the upper extremity and the area just above the ankle for the lower extremity. The formula is: Left ankle SBP/left brachial SBP and right ankle SBP/right brachial SBP. The cuff was then inflated to suprasystolic values and then slowly deflated at 2-4mmHg/second until flow resumed. The pressure at which flow resumes was then recorded. After this, the test outcomes were interpreted. The respondent was then provided support, and counselled appropriately if an abnormality was detected (i.e., the need for possible further testing [arteriogram] and treatment [medical or surgical]). For the degree of suspicion of peripheral artery disease (PAD) using ABI (ankle-brachial index), the scoring was as follows: a) 0 for No degree of suspicion (ABI >1.00), b) 1 for Mild degree of suspicion (ABI 0.71-0.99), c) 2 for Moderate degree of suspicion (ABI 0.41-0.70), and d) 3 for Severe degree of suspicion (ABI 0.00-0.40). Frequency and percentage distribution were used to present and analyze the demographic profile of the respondents and their degree of suspicion of PAD. Pearson correlational relationship was used to determine if there is a significant relationship between the degree of suspicion of having PAD using ABI and the respondents' demographic profile. The strength of this study is the objectivity of the research instrument in assessing the degree of suspicion of PAD: Fischbach's Ankle Brachial Index (Fischbach, 2004) is capable of detecting any possible arterial occlusion in the lower extremities. The limitation of the study is that, being a nursing research, it was not able to employ more accurate and invasive means of assessing peripheral artery disease (PAD) like an arteriogram.

Ethical Consideration

The researcher ensured that ethical protocols were followed before and during the data gathering process. Data gathering started after the approval of College Research and Ethics Committee (CREC). Communication letters were given to each selected barangays and Municipal Health Office in the selected municipalities of Lanao del Norte, as well as Camp Tomas Cabili Police Office in Iligan City. This study utilized respondents that were amenable to be part of the study after voluntarily signing the informed consent form given during orientation. The respondents were assured that the data collected will be treated with full confidentiality and that it cannot be disclosed elsewhere, except for the intended study and indeed will not be used against them.

RESULTS

Problem 1: What is the demographic profile of the respondents in terms of age, gender, history of heredo-familial disease and lifestyle?

Table 1 shows the percentage distribution of the respondents in terms of age. Majority of the respondents are 50 year old-and-above and constitute 50% (20) of the total number of respondents. Meanwhile, 17 or 42.5% of the respondents belong to the 20-29 year old age bracket, 3 or 7.5% belong to the 30-39 year old age bracket, and 0 or 0% belong to the 40-49 year old age bracket. This is so because people 50 years old and above tend to have arterial disorders like atherosclerosis (narrowing of the vessel lumen caused by the accumulation of atheroma or fat in the tunica intima) and arteriosclerosis (narrowing of the vessel lumen caused by the degenerative hardening of the tunica media and tunica adventitia) (Smeltzer et al., 2010). More so, degenerative disorders like diabetes mellitus, hypertension, and cardiac diseases tend to manifest during old age (>50yo), making it a significant predisposing factor to PAD (Black & Hawks, 2005).

Table 1 Percentage distribution of the respondents according to age

Age	Frequency Distribution	Percentage Distribution
20-29 y.o.	17	42.5
30-39 y.o.	3	7.5
40-49 y.o.	0	0
50 & above	20	50.0
TOTAL	40	100

Table 2 Percentage distribution of the respondents according to gender

Gender	Frequency Distribution	Percentage Distribution
Males	26	65.0
Females	14	35.0
TOTAL	40	100

Table 2 shows the percentage distribution of the respondents according to gender. In terms of gender, majority or 65% (26) of the respondents are the at-risk group, the males. The females, constitutes only 35% (14). Males are at greater risk or have greater degree of suspicion for peripheral artery disease because

they only have minute levels of estrogen, the female sex hormone that has a dual function of developing the female secondary sex characteristics (i.e. breast and hip development) and protection against cardiovascular diseases by depositing cholesterol and lipids into adipose tissues instead of the vessel's

lumen ([Smeltzer et al., 2010](#)). However, by 50 years old and above, the female's estrogen level decreases due to the age-

related deterioration of the ovaries, making the female's risk for PAD equal to that of the male ([Kasper et al., 2004](#)).

Table 3 Percentage distribution of the respondents according to history of heredo-familial diseases

History of Heredo-Familial Diseases	Frequency Distribution		Percentage Distribution
With History of Heredo-Familial Diseases	18		45.0
	Diabetes Mellitus	5 of 40	12.5
	Hypertension	14 of 40	35.0
	Cardiac Disease	3 of 40	7.5
No History of Heredo-Familial Diseases	22		55.0
TOTAL	40		100

Table 3 shows the percentage distribution of the respondents according to history of heredo-familial diseases. In terms of history of heredo-familial diseases, only 18 or 45% of the respondents have history of heredo-familial diseases, while 22 or 55% have no history of heredo-familial diseases. 5 or 12.5% of respondents have Diabetes Mellitus, 14 or 35% have Hypertension, and 3 or 7.5% have cardiac disease. All these disorders have a direct relationship with PAD ([Black & Hawks, 2005](#)). Diabetes Mellitus, a group of disorders characterized by hyperglycemia, increases the viscosity of the blood, causing blood stasis and arterial occlusion, both precipitating factors for

PAD ([Heuther & Mccance, 2000](#)). Hypertension, the abnormally increased force of blood against the vessel wall, causes mechanical injury to the vessel wall's tunica intima and tunica media, precipitating PAD ([Kasper et al., 2004](#)). Parenthetically, cardiac diseases, characterized by decreased cardiac output to the tissues, causes faulty compensation mechanisms, like the activation of the renin-angiotensin-aldosterone system and myocardial hypertrophy, which could later decompensate and increase both blood volume and blood pressure, precipitating PAD ([Smeltzer et al., 2010](#)).

Table 4 Percentage distribution of the respondents according to lifestyle

Lifestyle	Frequency Distribution		Percentage Distribution
Unhealthy Lifestyle	27		67.5
	Smokers	9 of 40	22.5
	Alcoholics	11 of 40	27.5
	Irregular Exercise	19 of 40	47.5
	High Fat Diet	3 of 40	7.5
Healthy Lifestyle	13		32.5
TOTAL	40		100

Table 4 shows the percentage distribution of the respondents according to lifestyle. In terms of lifestyle, 27 or 67.5% of the respondents have an unhealthy lifestyle, while only 13 or 32.5% of the respondents have a healthy lifestyle. 9 or 22.5% of the respondents are cigarette smokers, 11 or 27.5% are alcohol drinkers, 19 or 47.5% exercise irregularly, and 3 or 7.5% eat a high fat diet. Smoking contains nicotine, a vasoconstrictor, and free radicals which are capable of direct endothelial tissue injury. Alcohol is a gastrointestinal tract irritant which could decrease the absorption of vitamin B complex and the removal of homocysteine—both conditions could predispose to PAD. Parenthetically, exercising irregularly and eating a high fat diet could increase the cholesterol, triglycerides, low density lipoprotein, and very low density lipoprotein levels in the body, increasing the risk of atherosclerosis, and consequently—PAD ([Smeltzer et al., 2010](#)). These unhealthy lifestyle habits are not mutually exclusive of each other; to elucidate, the nicotine of cigarette causes vasoconstriction which delays the ataxia

induced by the hypotension of alcohol ([Kasper et al., 2004](#)); and people who are smokers, alcoholics, or exercise irregularly usually eat a high fat diet ([Grodner et al., 2004](#)).

Problem 2: What is the degree of suspicion of peripheral artery disease (PAD) among the respondents using ankle brachial index (ABI)?

Table 5 shows the percentage distribution of the respondents according to left and right ankle brachial indices. In terms of degree of suspicion of having peripheral artery disease (PAD) using Left Brachial Index (ABI), 2 or 5% of the respondents have mild risk, 38 or 95% of the respondents have no risk, 0 or 0% of the respondents have moderate risk, and 0 or 0% of the respondents have severe risk. In terms of degree of suspicion of having PAD using Right Brachial Index (ABI), 5 or 12.5% of the respondents have mild risk, 35 or 87.5% of the respondents have no risk, 0 or 0% of the respondents have moderate risk, and 0 or 0% of the respondents have severe risk.

Table 5 Percentage distribution of the respondents according to Left and Right Ankle Brachial Indices

Left Ankle Brachial Index (ABI)	Frequency Distribution	Percentage Distribution
No degree of suspicion (≥ 1.00)	38	95.0
Mild degree of suspicion (0.71-0.99)	2	5.0
Moderate degree of suspicion (0.41-0.70)	0	0.0
Severe degree of suspicion (0.00-0.40)	0	0.0
TOTAL	40	100
Right Ankle Brachial Index (ABI)	Frequency Distribution	Percentage Distribution
No degree of suspicion (≥ 1.00)	35	87.5
Mild degree of suspicion (0.71-0.99)	5	12.5
Moderate degree of suspicion (0.41-0.70)	0	0.0
Severe degree of suspicion (0.00-0.40)	0	0.0
TOTAL	40	100

The left lower extremity has greater risk for peripheral artery disease (PAD) because 8 out of 10 people in the world are right hand and right leg dominant (Kozier, 2004). Activity of the quadriceps, gastrocnemius and other muscles of the thighs and legs causes vasodilation, and consequently increased blood supply, to the lower extremities by stimulating the sympathetic component of the autonomic nervous system through the peroneal nerves and other lower extremity nerves. Consequently, the lesser-used extremity would have lesser muscle activity, which means lesser blood flow—and this places the non-dominant or the lesser-used extremity at a relatively higher risk for PAD than the dominant or often-used extremity (Kasper et al., 2004).

Problem 3: Is there is significant relationship between the respondents' demographic profile and their degree of suspicion of having Peripheral Artery Disease using Ankle-Brachial Index (ABI)?

Table 6 presents the Pearson Correlational Coefficient of the variables, indicating that there is a significant relationship between the degree of suspicion of having PAD using both Left or Right ankle-brachial indices and most of the demographic profile. As to the relationship between demographic profile and degree of suspicion of having PAD, considering the left and right ankle brachial indices (ABI): age and lifestyle (diet and exercise) have a significant relationship with their degrees of suspicion of having PAD.

Table 6 The relationship between the respondents' degree of suspicion of having Peripheral Artery Disease (PAD) using Ankle-Brachial Index (ABI) and their demographic profile using Pearson Correlational Coefficient

	Pearson Correlational Coefficient	P-value (at $p < 0.05$)	Interpretation
Relationship between the respondents' degree of suspicion of having PAD using ankle-brachial index (ABI) (Right) and their Age	-0.687	< .00001 (significant)	Strong inverse relationship between Right ABI (ankle brachial index) and Age of the respondents
Relationship between the respondents' degree of suspicion of having PAD using ankle-brachial index (ABI) (Left) and their Age	-0.614	.000025 (significant)	Strong inverse relationship between Left ABI and Age of the respondents
Relationship between the respondents' degree of suspicion of having PAD using ankle-brachial index (ABI) (Right) and their Gender	0.102	.531128 (not significant)	Small Direct relationship between the Right ABI and Gender of the respondents
Relationship between the respondents' degree of suspicion of having PAD using ankle-brachial index (ABI) (Left) and their Gender	0.201	.213623 (not significant)	Small direct relationship between the left ABI and Gender of the respondents
Relationship between the respondents' degree of suspicion of having PAD using ankle-brachial index (ABI) (Right) and their history of Heredo-familial diseases.	-0.304	.056507 (not significant)	Medium inverse relationship between Right ABI and the history of heredo-familial diseases of the respondents
Relationship between the respondents' degree of suspicion of having PAD using ankle-brachial index (ABI) (Left) and their history of Heredo-familial diseases	0.026	.873471 (not significant)	Small direct relationship between Right ABI and alcohol drinking habit of the respondents

Table 6 Continued

Relationship between the respondents' degree of suspicion of having PAD using ankle-brachial index (ABI) (Right) and their Lifestyle (smoking habit)	0.208	.197769 (not significant)	Small direct relationship between Right ABI and smoking habit of the respondents
Relationship between the respondents' degree of suspicion of having PAD using ankle-brachial index (ABI) (Left) and their Lifestyle (smoking habit)	0.208	.197769 (not significant)	Small direct relationship between Right ABI and smoking habit of the respondents
Relationship between the respondents' degree of suspicion of having PAD using ankle-brachial index (ABI) (Right) and their Lifestyle (Alcohol drinking habit)	0.208	.197769 (not significant)	Small direct relationship between Right ABI and alcohol drinking habit of the respondents
Relationship between the respondents' degree of suspicion of having PAD using ankle-brachial index (ABI) (Left) and their Lifestyle (Alcohol drinking habit)	0.085	.602028 (not significant)	Small direct relationship between Left ABI and alcohol drinking habit of the respondents
Relationship between the respondents' degree of suspicion of having PAD using ankle-brachial index (ABI) (Right) and their Lifestyle (Diet and Exercise)	0.700	< .00001 (significant)	Strong direct relationship between Right ABI and healthy non-fat diet and regular exercise of the respondents
Relationship between the respondents' degree of suspicion of having PAD using ankle-brachial index (ABI) (left) and their Lifestyle (Diet and Exercise)	0.629	.000014 (significant)	Strong direct relationship between Left ABI and healthy non-fat diet and regular exercise of the respondents

DISCUSSION

In this study, as to the relationship between demographic profile and degree of suspicion of having PAD, considering the left and right ankle brachial indices (ABI), age and lifestyle (diet and exercise) have a significant relationship with their degrees of suspicion of having PAD.

It is interesting that, based on the results of this research; it is not smoking that is the most significant risk for PAD, but diet and exercise. Results show lifestyle (diet and exercise) plays the only modifiable significant factor for increasing the degree of suspicion of having PAD in both the geriatrics and the policemen despite the difference in their respective settings and presumed activity levels. This result differs from or contradicts the main stance of the medical-surgical nursing authority (Smeltzer et al., 2010), which holds that smoking is the most important risk factor for peripheral artery disease, to wit: "the use of tobacco products is the probably the most important risk factor for the development of atherosclerotic lesions" (Smeltzer et al., 2010). Thus, the results of this study proves that even without smoking, or nicotine in the smoke, as a significant risk factor, diet and exercise, or poor diet and exercise to be precise, is alone sufficient to increase the degree of suspicion of PAD. This could be because, as observed by the researcher, the policemen just eat in the nearby cafeterias, eating whatever is available; the food served, often high in sodium, sugar and cholesterol. As for the geriatrics, they have no standardized diet as well. The researcher also notes the lack of gym or exercise

facilities in both the geriatrics' home for the aged and the policemen's station. Exercising irregularly and eating a high fat diet could increase the cholesterol, triglycerides, low density lipoprotein, and very low density lipoprotein levels in the body, increasing the risk of atherosclerosis, and consequently—peripheral artery disease (Smeltzer et al., 2010).

The strength of this study is the objectivity of the research instrument in assessing the degree of suspicion of PAD. The ankle brachial index constitutes a simple, non-invasive, cost-effective method for the early detection of PAD which complements the assessment of cardiovascular risk. This examination has been recommended for routine clinical use, with the aim of measuring the patency of the arterial circulation of the lower as well as the upper limbs (Fischbach, 2004). Through ABI, this research has shown that the respondents' lifestyle (diet and exercise) have a significant relationship with their degree of suspicion of having PAD, despite the difference in their respective settings, i.e., homes for the aged, and police stations.

The limitation of the study is that, being a nursing research, it was not able to employ more accurate and invasive means of assessing PAD like an arteriogram. An experimental research taking into consideration the cholesterol and/or triglyceride levels of the respondents would no doubt produce more comprehensive results. Nevertheless, this research was able to highlight imperativeness of not underestimating the likelihood that poor diet and exercise can increase the risk or degree of

suspicion of PAD even if most of the respondents are non-smokers, or in this case, not even frequent alcohol drinkers.

CONCLUSION

In light of the findings derived from this study, it is concluded that some of the demographic profile does have a significant effect on the degree of suspicion of having PAD, to wit: age and lifestyle (diet and exercise). It is interesting that, based on the results of this research; it is not smoking that is the most significant risk for PAD, but diet and exercise. Results show lifestyle (diet and exercise) plays the only modifiable significant factor for increasing the degree of suspicion of having PAD in both the geriatrics and the policemen despite the difference in their respective settings and presumed activity levels. This result differs from or contradicts the main stance of the medical-surgical nursing authority, which holds that smoking is the most important risk factor for peripheral artery disease. Thus, the results of this study proves that even without smoking, or nicotine in the smoke, as a significant risk factor, diet and exercise, or poor diet and exercise to be precise, is alone sufficient to increase the degree of suspicion of PAD. The implication of this finding in nursing knowledge or nursing practice is the highlighting of the imperativeness of not underestimating the likelihood that poor diet and exercise can increase the risk or degree of suspicion of PAD even if most of the respondents are non-smokers, or in this case, not even frequent alcohol drinkers. A more standardized nutritious and healthy diet might benefit the policemen and geriatric respondents.

Declaration of Conflict of Interest

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Author Contribution

This study is an original work of the corresponding author.

ORCID

Jan Igor Temple Galinato <https://orcid.org/0000-0002-8258-0963>

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ORIGINAL RESEARCH

PATIENTS' AND NURSES' PERCEPTIONS OF PALLIATIVE CARE OUTCOMES: A COMPARATIVE STUDY

Dewiyuliana¹, Sri Warsini², Christantie Effendy^{3*}

¹The Nursing Academy of Kesdam Iskandar Muda, Banda Aceh, Indonesia

²Department of Mental and Community Nursing, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

³Department of Medical Surgical Nursing, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

***Corresponding author:**

Dr. Christantie Effendy, S. Kp., M. Kes
Department of Medical Surgical Nursing,
Faculty of Medicine, Public Health and
Nursing, Universitas Gadjah Mada
Ismangoen Building 2nd floor
Jl. Farmako No 1 Sekip, Yogyakarta
55281 Indonesia
Email: christantie@ugm.ac.id

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Abstract

Background: Patients with advanced cancer require treatment and the fulfillment of their needs, based on the results of assessments regarding their physical symptoms, psychological and spiritual needs. Palliative care should be delivered with a person-centered care approach. It is important to consider the patients' reports of their carings' outcomes. Comparisons between the patients' and nurses' perceptions of palliative care outcomes can be used to improve the quality of palliative care.

Objective: The purpose of this study is to compare the patients' and nurses' perceptions of palliative care outcomes during the patients' hospitalization.

Methods: This is a comparative descriptive study with a cross-sectional design. Data were collected from May to June 2018 from a total of 106 patients with advanced cancer, and 61 nurses. The versions of the Palliative care Outcome Scale (POS) for patients and nurses were used to measure the palliative care outcomes of the patients' and nurses' perceptions.

Result: The study found a significant difference between the perceptions of the patients and nurses for the palliative care outcomes, particularly in the information availability domain ($p = 0.001$), the other symptoms domain ($p = 0.029$), and the anxiety feelings domain ($p = 0.030$), while the other seven domains had no significant differences between both groups ($p > 0.05$).

Conclusion: The anxiety feelings, other symptoms and information availability domains are the aspects of palliative care which need more attention from health care providers, especially nurses, when caring for patients with advanced cancer.

KEYWORDS

palliative care outcome scale; patients; nurses; advanced cancer; Indonesia

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INTRODUCTION

The prevalence of patients with advanced stages of cancer is increasing every year. Advanced cancer requires palliative care along with cancer treatment ([American Cancer Society, 2017](#); [Ministry of Health, 2007](#)). In 2011 palliative cases reached 20.4 million cases, of which 94% are adult patient palliative cases ([World Health Organization, 2017](#)). Cancer patients with the palliative condition need assessing to fulfill their physical, socio psychological, and spiritual needs ([Thomas et al., 2010](#); [Wang et al., 2008](#)). The assessment of these needs, conducted by the patients themselves, is occasionally different from the

review results made by nurses. ([Horton, 2002](#)). Quality care studies frequently only focus on the perspective and standards of professionals. This refers to the patients' conditions or the condition effect of pain suffered by patients ([Horton, 2002](#)). Moreover, the review conducted by nurses, without involving the patients, does not reflect the real needs of the patients ([Hearn & Higginson, 1997](#)). One of the instruments that can review the patients' conditions from the perspective of both patients and nurses is the Palliative care Outcome Scale (POS). The POS may be considered as the gold standard tool in the

context of palliative care. It is a tool to measure patients' physical symptoms, psychological, emotional and spiritual, and information and support needs (Higginson et al., 2018). The purpose of the study was to compare the perceptions of patients and nurses of palliative care outcomes experienced by patients with advanced cancer during hospitalization.

METHODS

Study Design

This was a comparative study with a cross-sectional design, which involved 106 patients with advanced cancer who were selected using consecutive sampling, and 61 nurses selected using a total sampling technique. This study was conducted in the academic hospital in Yogyakarta and a public hospital in Central Java. Data were collected from May to June 2018.

Sample

The inclusion criteria for patients were: a) being patients with advanced cancer; b) >18 years old; c) the score of Eastern Cooperative Oncology Group (ECOG) > 2; d) willing to become a respondent by signing an informed consent form, and e) being hospitalized for at least 3 days. The exclusion criteria were being unconscious with Glasgow Coma Scale (GCS) scores < 13. The inclusion criteria for nurses were: a) willing to become a respondent by signing an informed consent form, b) experience in caring for palliative patients, and c) having at least one year's clinical experience.

Instruments

This study used a patient and a nurse version of palliative care outcome scale (POS). The POS version of patient was used to assess a patient's perceptions of palliative care outcome scale. The version of POS for nurses was used to assess a nurse's perceptions of palliative care outcome scale that experienced by patients.

The palliative care outcome scale consists of ten questions, and the first question examines pain. *Pain* is the first domain in a palliative care assessment (Higginson et al., 2018). Pain is an experience that is often experienced by patients with palliative conditions, caused by tumors that suppress bones, nerves or other organs, and besides that pain is also caused by the chemotherapy treatment that the patients undergo (Cancer Research United Kingdom, 2017). Pain was measured using the Visual Analogue Scale (VAS) instruments. The second question in the POS instrument is *other symptoms*. Other symptoms are complaints such as coughing, nausea, vomiting, and shortness of breath that appear in patients with palliative conditions, and affect their quality of life (Ministry of Health, 2007). The other symptoms were measured using POS. *Anxiety* is the third question in the POS instrument. Anxiety is an unpleasant subjective experience, related to perceptions of threats that are real or imaginary (Kumar & Parashar, 2015). Anxiety was measured using POS. The fourth question is *family anxiety*. Family anxiety is the anxiety felt by the family due to their fear of losing family members who have cancer (American Cancer Society, 2017). Family anxiety was measured using

POS. The *availability of information* and *family support* are the fifth and sixth question in the POS. Information is something which is necessary for patients and families who receive a service related to their illness (Page & Adler, 2008). Family support is the actions, attitudes and behavior that are shown by family members to patients with cancer (Borneman et al., 2010). Availability of information and family support were measured using POS. The seventh question in the POS instrument is the *feeling of worth*, which was measured using the POS (Higginson et al., 2018). A feeling of worth is a balanced response between an awareness and self-acceptance of uncomfortable emotions, showing calmness when faced with unpleasant experiences, and accepting the conditions that occur (Neef & Knox, 2017). The eighth question is about *feeling good or not being depressed*, measured by using POS. Feeling good or not feeling depressed can be seen and observed through the attitude shown by the patients during treatment (Religioni et al., 2015). The ninth question is about the *feeling of wasted time when undergoing treatment*, which is the patients feeling that the treatment took a long time (Higginson et al., 2018), which was measured using POS. *Other problems arising in patients with cancer* is the tenth question in POS, and includes the financial problems caused by treatment and the changing roles and income of patients and family members (Effendy et al., 2015).

The researcher tested the validity and reliability of the POS in one of the hospitals in Yogyakarta with 65 patient respondents and 65 nurse respondents. The results of the validity of the versions of POS for the patients and the nurses showed that all ten questions in the POS instrument were valid. The r_{tabel} value obtained from the number of respondents (n) is reduced by the number of item questions (k), so that the value of r_{tabel} was 0.294 (Nugroho, 2005). The reliability test for the POS version of the patients' version showed a Cronbach's alpha value of 0.782, while the nurses' version had a Cronbach's alpha value of 0.639. Therefore, both the patients' and nurses' versions of the POS instruments were declared reliable.

Ethical Consideration

This study was approved by the Ethics Commission of the Faculty of Medicine, Public Health and Nursing UGM No.KE/FK/0521/EC/2018, and by the committee ethics of RSUD Prof. Dr. Margono Soekardjo Purwokerto (420/05378a/TV/2018)

Data Analysis

Categorical data were presented in a table of frequency distribution (f) and percentage (%), while the numerical data were presented in the form of the means and standard of deviation. The results of the normality test using Kolmogorov-Smirnov ($n = 106$) showed that the data were not normally distributed ($p < 0.05$). The results of the comparison of mean, median and Standard Deviation (SD) also showed that the data were not normally distributed. Statistical tests on the comparison of the POS instruments' results between patients and nurses used the Mann Whitney statistical test, with a significance value of $p < 0.05$

RESULTS

Demographic Characteristics of Nurses

Table 1 shows the majority of the nurse respondents were female (62.3%), and 91.8% of the respondents are married.

Just over half (55.7%) of the respondents are aged between 20-40 years old. Most of them had a diploma degree (68.9%) and more than 3 years working experience (91.8%). In addition, most of the nurses had attended a palliative training seminar more than one time (82%).

Table 1 Demographic Characteristics of Nurses

Characteristics of Respondents	Frequency (f)	%	Mean±SD
Gender			
Male	23	37.7	
Female	38	62.3	
Marital status			
Single	5	8.2	
Married	56	91.8	
Nurses' education level			
Diploma	42	68.9	
Bachelor	19	31.1	
Age			
20-40 years	34	55.7	39.41±8.55
41-60 years	27	44.3	
Work experience			
≤3 year	5	8.2	
>3 year	56	91.8	
Palliative training / seminar ever attended			
1	11	18	
> 1	50	82	

Frequency (f), Percentage (%), Standard of Deviation (SD)

Table 2 shows that the majority of patients were female (65.1%), most patients were married (87.7%), and have an primary and high school education level (76.4%). Most of the respondents' income level was ≤ Rp. 1.572.200 (67%). The most commonly used insurance providers were JKN PBI and

ASKES (78.3%), and the most frequent stage of cancer was stage III (67.9%). The reproductive system cancer was the most dominant (37.7%), and chemotherapy was the most frequent treatment (55.6%).

Table 2 Demographic Characteristics of Patients

Characteristics of Respondents	Frequency (f)	%	Mean±SD
Gender			
Male	37	34.9	
Female	69	65.1	
Marital status			
Not married / widowed / widower	13	13.3	
Married	93	87.7	
Age			
20 – 40 years	27	25.5	48.33±11.69
41-60 years	65	61.3	
≥61years	14	13.2	
Level of education			
Primary and High School	81	76.4	
Undergraduate School	25	23.6	
Income level*			
≤Rp. 1.572.200	71	67	
>Rp. 1.572.200	35	33	
Health care provider			
JKN PBI/Health Insurances	83	78.3	
JKN Non PBI	23	21.7	

Table 2 continued

Cancer stage			
Stage III	72	67.9	
Stage IV	34	32.1	
Type of Cancer			
Reproductive system cancer	40	37.7	
Lung cancer	6	5.7	
Head & neck cancer	13	12.3	
Colorectal cancer	19	17.9	
Breast cancer	12	11.3	
Urinary system cancer	6	5.7	
Others (NHL, Skin, Pancreas, Leukemia & Bone)	10	9.4	
Duration of illness			
≤ 6 months	30	28.3	15.35±11.81
> 6 months	76	71.7	
Type of treatment			
Radiotherapy	10	9.4	
Chemotherapy	59	55.6	
Surgery & chemotherapy	22	20.8	
Surgery	15	14.2	

Frequency (f), Percentage (%), Standard of Deviation (SD) *minimum wage of Central Java province

The differences perceptions in palliative care outcomes between patients and nurses

The comparative analysis on the outcome of palliative care between patients and nurses can be seen in **Table 3**. From the ten domains in the POS, there were only three domains that showed differences in the palliative care outcomes between patients and nurses, which were the domains for: other

symptoms (nausea, coughing and constipation) $p=0.029$, feelings of anxiety $p=0.030$, and information availability $p=0.001$; while the other seven domains (pain, family anxiety, the existence of support, self worth (feelings of worth to oneself), feeling good or not depressed, time wasted and practical problems) showed no difference between the outcomes for patients and nurses.

Table 3 Patients' and Nurses' perception in Palliative Care Outcomes**

Item palliative care outcome	Patients Median (min- max)	Nurses Median (min- max)	p value
Pain	3(1-4)	3(1-4)	0.205
Other symptoms	3(1-4)	2(1-4)	0.029*
Feelings of anxiety	3(1-4)	3(2-4)	0.030*
Family anxiety	4(1-4)	4(1-4)	0.056
Information availability	2(1-4)	2(0-4)	0.001*
Existence of support	3(0-4)	3(0-4)	0.082
Self worth (feelings of worth to one self)	3(1-4)	3(1-4)	0.241
Feeling good or not depressed	4(2-4)	4(2-4)	0.305
Time wasted	4(0-4)	4(0-4)	0.740
Practical problems	4(2-4)	4(2-4)	0.449

Significance value * ($p < 0.05$) | **([Dewiyuliana, 2018](#))

Analysis of differences in palliative care outcome scale based on respondents' characteristics

Table 4 shows the characteristics of the respondents in the study consist of their gender, marital status, age, level of education, income level, health care provider, cancer stage, type of cancer, duration of illness and type of treatment. The difference in POS, based on the nurses' characteristics, can be seen in Table 5. The characteristics for the nurses consist of their gender, marital status, nursing education level, age, work experience and the number of times they attended palliative training or a seminar.

This study found that only the education affected the perception of POS scores for the anxiety domain. There were no other factors affecting the POS scores of patients. On the other hand, the results of the POS analysis, based on the characteristics of the nurses, were influenced by the nurses' education for the domains of other symptoms, family support and self worth. The number of palliative training/seminars followed by nurses affected the domains of pain, other symptoms, anxiety, family support, self-worth and time wasted, while the age of the nurse influenced the practical problems domain.

Table 4 Palliative care Outcomes based on the Characteristics of patients

Characteristics of Respondents	Item Palliative Care Outcomes Scale(POS)													
	Pain		Other symptoms		Feelings of anxiety		Family anxiety		Information availability		Existence of support		Self Worth	
	Median (min-max)	P	Median (min-max)	P	Median (min-max)	P	Median (min-max)	P	Median (min-max)	P	Median (min-max)	P	Median (min-max)	P
Gender														
Male	3(1-4)	0.660	3(1-4)	0.769	4(2-4)	0.103	4(2-4)	0.791	2(2-4)	0.300	3(1-4)	0.656	3(1-4)	0.860
Female	3(1-4)		3(1-4)		3(1-4)		4(1-4)		2(1-4)		3(1-4)		3(1-4)	0.649
Marital status														
(-) Not Married	3(2-4)	0.677	4(2-4)	0.841	3(1-4)	0.693	4(3-4)	0.298	2(2-4)	0.476	3(2-4)	0.915	3(2-4)	0.867
(+) Married	3(1-4)		3(1-4)		3(1-4)		4(1-4)		2(1-4)		3(1-4)		3(1-4)	
Age														
18-40years	3(1-4)		3(1-4)		4(1-4)		4(1-4)		2(1-4)		3(1-4)	0.452	3(3-4)	0.920
41-60 years	3(1-4)	0.791	3(1-4)	0.987	3(1-4)	0.402	4(2-4)	0.512	2(1-4)	0.947	3(0-4)		3(1-4)	0.390
≥61 years	3(1-4)		3.5(1-4)		3.5(2-4)		4(3-4)		2.5(1-3)		3(1-4)		3(1-4)	
Level of education														
Primary-High school	3(1-4)	0.282	3(1-4)	0.075	3.5(1-4)	0.017	4(2-4)	0.562	2(2-3)	0.492	3(0-4)	0.744	3(1-4)	0.216
Undergraduate school	2(2-4)		3(2-4)		2(2-4)		4(2-4)		3(2-3)		4(3-4)		3(1-4)	
Income level														
≤UMR	3(1-4)	0.398	4(1-4)	0.291	4(1-4)	0.118	4(2-4)	0.878	2(1-4)	0.603	3(0-4)	0.538	3(1-4)	0.797
>UMR	3(1-4)		3(1-4)		3(1-4)		4(1-4)		2(1-4)		3(1-4)		3(1-4)	
Health care provider														
JKN PBI	3(1-4)	0.498	3(1-4)	0.682	3(1-4)	0.916	4(1-4)	0.737	2(1-4)	0.182	3(0-4)	0.460	3(1-4)	0.162
JKN non PBI	3(1-4)		4(1-4)		3(1-4)		4(2-4)		2(1-4)		3(1-4)		3(2-4)	
Cancer stage														
Stage III	3(1-4)	0.825	3(1-4)	0.954	3(1-4)	0.321	4(1-4)	0.756	2(1-4)	0.465	3(0-4)	0.439	3(1-4)	0.299
Stage IV	3(1-4)		3.5(1-4)		3(1-4)		4(2-4)		2(1-4)		3(1-4)		3(1-4)	
Type of cancer														
Reproductive system cancer	3(1-4)		3(1-4)		3(1-4)		4(1-4)		2(1-4)		3(1-4)		3(2-4)	
Lung cancer	4(2-4)		4(1-4)		4(1-4)		4(2-4)		2.5(2-3)		3(1-4)		3(3-4)	
Head & neck cancer	2(1-4)	0.270	2(1-4)	0.164	4(2-4)	0.822	4(2-4)	0.287	2(2-4)	0.372	3(3-4)	0.250	3(1-4)	0.504
Colorectal cancer	3(1-4)		4(1-4)		3(2-4)		4(2-4)		2(2-4)		3(1-4)		3(1-4)	0.698
Breast cancer	3(1-4)		3(1-4)		3(2-4)		4(3-4)		2(1-4)		3(0-4)		3(2-4)	
Urinary system cancer	3(2-4)		4(3-4)		3.5(2-4)		4(3-4)		3(2-4)		3(3-4)		3(3-4)	
Others cancer	3(2-4)		3.5(2-4)		3(1-4)		4(2-4)		2(2-4)		3(2-4)		3(1-4)	
Duration of illness														
≤6 months	3(1-4)	0.624	3(1-4)	0.949	3(1-4)	0.223	3(1-4)	0.508	4(1-4)	0.389	2(1-4)	0.595	3(1-4)	0.198
>6months	3(1-4)		3(1-4)		3(1-4)		3(1-4)		4(2-4)		2(1-4)		3(1-4)	0.379
Type of treatment														
Radiotherapy	4(2-4)		2.5(1-4)		3.5(1-4)		4(2-4)		3(1-4)		3.5(1-4)		3(3-4)	
Chemotherapy	3(1-4)		4(1-4)		3(1-4)		4(1-4)		2(1-4)		3(1-4)		3(1-4)	
Surgery & chemotherapy	3.5(1-4)	0.120	3(1-4)	0.738	3(2-4)	0.596	4(2-4)	0.665	2(1-4)	0.556	3(1-4)	0.075	3(3-4)	0.304
Surgery	2(1-4)		3(1-4)		3(2-4)		4(2-4)		2(1-4)		3(0-4)		3(1-4)	0.820

Significance value * ($p < 0.05$)

Table 5 Palliative care Outcomes based on the Characteristics of Nurses

Characteristic of Respondents	Item Palliative Care Outcomes Scale																			
	Pain		Other symptoms		Feelings of anxiety		Family anxiety		Information availability		Existence of support		Self Worth		Feeling good		Time wasted		Practical problems	
	Median (min-max)	P	Median (min-max)	P	Median (min-max)	P	Median (min-max)	P	Median (min-max)	P	Median (min-max)	P	Median (min-max)	P	Median (min-max)	P	Median (min-max)	P	Median (min-max)	P
Gender																				
Male	3(1-4)	0.432	3(1-4)	0.28	3(1-4)	0.492	4(2-4)	0.060	2(1-3)	0.644	3(1-4)	0.769	3(1-4)	0.65	4(2-4)	0.69	4(0-4)	0.530	4(2-4)	0.058
Female	2.5(1-4)		2(1-4)	9	3(1-4)		4(1-4)		2(0-4)		3(0-4)		3(1-4)	6	4(2-4)	7	4(2-4)		4(2-4)	
Marital status																				
(-) Not Married	2(1-4)	0.864	2(2-4)	0.13	3(2-4)	0.838	4(1-4)	0.548	2(1-4)	0.914	3(2-4)	0.942	4(3-4)	0.39	4(2-4)	0.15	2(2-4)	0.421	4(2-4)	0.410
(+) Married	3(1-4)		3(1-4)	9	3(1-4)		4(2-4)		2(0-4)		3(0-4)		3(1-4)	5	4(2-4)	7	4(0-4)		4(2-4)	
Age																				
20-40 years	2(1-4)	0.320	2(1-4)	0.73	3(1-4)	0.024	4(1-4)	0.336	2(1-4)	0.599	3(1-4)	0.088	3(2-4)	0.98	4(2-4)	0.14	4(2-4)	0.853	4(2-4)	0.026
41- 60 years	3(1-4)		3(1-4)	8	3(1-4)		4(2-4)		2(0-4)		3(0-4)		3(1-4)	9	4(2-4)	1	4(2-4)		4(2-4)	
Level of education																				
Diploma	3(1-4)	0.117	3(1-4)	0.02	3(1-4)	0.123	4(2-4)	0.210	2(1-4)	0.794	3(0-4)	0.035*	3(1-4)	0.01	4(2-4)	0.08	4(0-4)	0.078	4(2-4)	0.119
Bachelor	2(2-4)		2(2-4)	5*	3(1-4)		4(1-4)		2(0-3)		4(1-4)		3(1-4)	3*	4(2-4)	9	4(2-4)		4(2-4)	
Palliative training/ seminar ever attended																				
once	2(1-4)	0.005*	2(1-4)	0.00	2(1-4)	0.029	4(1-4)	0.363	2(1-3)	0.647	3(1-4)	0.046*	4(2-4)	0.00	4(2-4)	0.67	4(0-4)	0.047	4(2-4)	0.270
>1	3(1-4)		3(1-4)	2*	3(1-4)		4(2-4)		2(0-4)		3(0-4)		3(1-4)	7*	4(2-4)	3	4(2-4)		4(2-4)	

Significance value * ($p<0.05$)

DISCUSSION

Comparison of the palliative care outcomes between patients and nurses

There were similar perceptions in POS between patients and nurses for the domains of pain, family anxiety, existence of support, self worth (feelings of worth to oneself), feeling good or not depressed, time wasted and practical problems. The similar perceptions between patients and nurses in the pain domain were because pain is the most frequently reported symptom by patients with cancer ([Hökkä et al., 2014](#)). The patients pain could be seen and observed through various indicators, such as sleep disturbance, decreased daily activities, reduced motivation for treatment and reduced interaction between the patients and their families ([Borneman et al., 2010](#); [Swarm et al., 2007](#)). This finding was in line with previous research results ([Dequeker et al., 2018](#); [Fabbian et al., 2014](#)) that found there were similar perceptions between advanced cancer patients and the nurses who treated patients regarding pain intensity, pain scale and estimated pain that emerged using numeric rating scale instruments.

A similarity between patients and nurses was also found in the family anxiety domain. This was because while the patients were undergoing treatment, the patients and nurses could see and observe the anxiety of the family members who accompanied the patients. Patients and nurses could observe a family's anxiety through their behavior, such as crying and worrying when the patient has difficulty breathing. Emotional reactions shown by the families who have members with cancer include anxiety, anger, hatred, and feelings of guilt, crying and seeking information about the patient's illness ([Woźniak & Iżycki, 2014](#)). This perception between patients and nurses about family anxiety was in line with previous research ([Modanloo et al., 2010](#)) and showed that there were similarities in the reported perceptions between patients with chronic diseases treated in wards and their health workers.

It was also found that there was a similar perception between patients and nurses in the family support domain, which was because patients and nurses may have the same culture regarding the way they view the role of the family toward sick family members. The patients experienced the family support and it could be seen and observed by the nurses. The nurses also aware that families always accompany patients for 24 hours/day and contribute for the caring of the patients during hospitalization ([Effendy et al., 2015](#)). Families can also provide support to cancer patients in the form of care, treatment and decision-making support ([Shin et al., 2013](#); [Yi et al., 2016](#)). Similar research results revealed by Akin & Durna regarding the perception of the similarities in the equality between cancer patients and nurses about family support ([Akin & Durna, 2013](#)).

Another domain that was similar for both patients and nurses was the self worth domain (a feeling of worth to oneself). This was due to the attitude and behavior shown by the patients during their treatment program that the nurses observed. The patients adhered to and followed all the treatment programs planned by the health team, to speed up the healing process.

interacted with their families to improve their self worth and reduce feelings of disappointment toward themselves. The patients have a highly valuable feeling of self esteem when taking the treatment if they received detail information about the medication and treatment programs (Leite et al., 2015). In addition, patients with advanced stage of cancer can increase their self worth by spending time with their families and with people who can raise their spirits, and avoiding self-assessment that can cause them emotional distress. Self worth can also be increased by reducing their guilt about themselves or feeling disappointed in themselves, and increasing their spirit and life expectancy (National Comprehensive Cancer Network, 2018).

The domain of feeling good or not depressed also showed no differences between patients and nurses, which was due to the behavior, attitude and actions shown by the patients during their treatment and medication. A stable or non-depressed emotional state was the attitude shown by the patients when they accept their diagnosis of advanced stage cancer and cancer treatments (Religioni et al., 2015). Patients could accept the symptoms they experienced, the changes to their quality of life, the limitations to their independence, and changes to their role in their family and community (McCracken & Velleman, 2010). On the other hand, similar perceptions between patients and nurses also exist in the time in vain domain. This was because the patient and nurse assessed the patient's health condition, which showed no improvement/change in their health, due to the stage of cancer in the patient. The treatment that the patient received was only to provide comfort but could not cure him/her, so that was a waste of time having the treatment. The feeling of time being wasted by the cancer patients was due to the treatment and medication process that showed no improvement, as well as the repetitive cancer treatments, queuing and long waiting times to receive treatment (American Cancer Society, 2017).

This study found that the practical problems domain had no differences between patients and nurses, which was related to treatments' financing problems and long waiting times. Patients and nurses perceived no practical problems related to financing because all the patients have health insurance. Higginson et al (2018) found that the practical problems that arise in patients with advanced cancer are financing their treatment, and difficulties in transportation to health service providers (Higginson et al., 2018). A survey by the Association of Oncology Social Work reports that, by residing far away from medical services, the associated transportation difficulties and time discrepancies in taking drugs can cause practical problems for the patients.

There were differences in the perceptions of patients and nurses for the domain of other symptoms (nausea, coughing and constipation), feelings of anxiety and the information availability domain. In the other symptoms domain, the patients perceived nausea, coughing and constipation as symptoms that greatly affected their condition, so that other symptoms were categorized as very severe for patients. This was due to the presence of other symptoms that further worsen their condition. But the nurses perceived the other symptoms such as nausea,

coughing and constipation as normal reactions due to the development and growth of the cancer. Besides, those symptoms are caused by side effects of the treatment, such as radiotherapy, chemotherapy, and surgery. Similar results related to the differences in the perceptions between patients and nurses about other symptoms were also revealed by previous studies (Cirillo et al., 2009; Strömberg et al., 2001), which showed differences in the results obtained between patients and nurses regarding the symptoms of vomiting, nausea and constipation. Patients perceived the symptoms of nausea, vomiting and constipation as being severe, while nurses perceived the other symptoms that the patient felt as being mild. The differences in the perceptions between patients and nurses were also found in the domain of anxiety. This was because anxiety is a subjective experience and cannot be observed directly. The difference in perception between patients and nurses in the anxiety domain was in line with the previous research (Bahrami, 2010) using the World Health Organization Quality of Life BREF (WHOQoL-BREF) instrument.

In addition, there were also differences in the domain of information availability. This was because the hospital did not have a guide or information map about cancer with palliative conditions and palliative care. So, the nurses and patients had different perceptions about the information needed by patients and nurses. A comprehensive information map provides complete information according to the needs of the health team and cancer patients. The absence of such an information map causes the health personnel to have difficulties in conveying the information needed by the patients (Page & Adler, 2008). Additionally, cultural factors also influence the differences in perception for the information availability domain, such as requests from the patients or families to avoid, delay, and discuss the estimation of the prognosis and life expectancy of the cancer patients (Russell & Ward, 2011). Health workers only provide information to patients based on family consent (Michiels et al., 2009).

Comparison of palliative care outcome scale based on demographic characteristics

The results of this study shows the differences in the perceptions of patients and nurses in POS, based on their demographic characteristics. Differences in the perceptions of patients were influenced by the education of the respondents in the anxiety domain, while differences in the perceptions of nurses were influenced by their age in the practical problems domain, education in the domain of other symptoms, while family support and self worth and training affected the nurses' perceptions for the domains of pain, other symptoms, family support, self worth and time in vain.

The low educational level of the respondents affected the patients' perceptions for the anxiety domain. Patients would find it difficult to perceive how worried they felt since they did not know the signs and symptoms of cancer, the disease's prognosis, and the actions and efforts that could be taken to make them more relaxed. Their education level was also related to the ease with which they could understand information. A study in the Netherlands indicated that education influences

people's awareness and knowledge about cancer, and affects the assessment of a patient's anxiety (Osse et al., 2005). Educational levels also relate to the acceptance and understanding related to the reduction of anxiety experienced by patients (Garcia, 2014).

Differences in the perceptions of the nurses were influenced by their age when assessing the practical problems experienced by patients with cancer. The literature stated that nurses in early adulthood have sensitivity and show concern when conducting an assessment of the practical problems experienced by advanced cancer patients. Age also affects the behavior, attitude, role and responsibilities of nurses towards patients (Zheng et al., 2015). Young adult nurses are more accepting of their role when collaborating with new teams compared to older nurses, when providing interventions related to the practical problems experienced by patients (Malfait et al., 2017).

On the other hand, the nurses' educational factors also influenced their differences in perception for the domains of other symptom, family support and self worth. The higher the education, the more knowledge they have about assessing other symptoms (nausea, coughing and constipation) in patients, family support and assessments, and how to improve the self worth of cancer patients. Nurses with a high level of education have a great deal of self-confidence in providing nursing services, based on their role and the family's support. Nurses' education can also improve the relationships between fellow health service teams when collaborating in improving services (Wiechula et al., 2016). Education is also one of the factors that influence the nurses' perception in understanding a patient's self worth. Education influences nurses to provide information in accordance with the self worth problems experienced by patients, so they are able to create a conducive atmosphere and can encourage patients to participate in improving their self worth (Opiyo, 2012).

Nurses' perceptions were also influenced by training/seminars that nurses had followed for the domains of pain, other symptoms, anxiety, family support, self worth and time in vain. Nurses who attended training in palliative care had the potential to do assessments that are appropriate to what the patient feels, related to their pain and other symptoms, such as nausea, coughing and constipation (Unroe et al., 2015). The knowledge and training/seminars on palliative care are needed by nurses to improve the treatment given to cancer patients (Bhatnagar & Patel, 2018).

Training in palliative care could also influence the nurses' knowledge about the assessment of anxiety experienced by their patients. Nurses could better understand the level of anxiety felt by patients (Gouveia et al., 2015). Nurses need training in assessing the necessary family support toward patients with palliative disease and such training could improve the nurses' abilities to obtain the information needed by the family (Landeiro et al., 2016). Training is also needed to successfully providing services to patients, based on the results of a self worth assessment and the practical problems experienced by the patients. The training provides an

understanding of the responses that can be given, based on the problems that are observed (Chaghari et al., 2017; El-Nagar & Lawend, 2013).

CONCLUSION

There were seven perceptual equations in the domains of: pain, family anxiety, existence of support, self worth, feeling good or not depressed, wasting time, and also practical problems between the perceptions of advanced cancer patients and nurses in palliative care outcomes. However, there were three different perceptions in the domains of: other symptoms, feelings of anxiety and information availability. With these differences, it is expected that nurses should pay more attention to the assessment of the domains of other symptom, feelings of anxiety and the availability of information by using various approaches, and communicating in a manner that can be understood by the patients to obtain accurate information and fully explain about the symptoms and side effects which arise from the cancer treatments.

Declaration of Conflicting Interest

None declared.

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Authorship Contributions

DY: collected, analyzed the data and developed the draft of the manuscript.

CE: contributed to the data's analysis and drafted the manuscript.

SW: contributed to the data's analysis and drafted the manuscript.

ORCID

Dewiyuliana <https://orcid.org/0000-0002-5761-1094>

Sri Warsini <https://orcid.org/0000-0002-4855-2790>

Christantie Effendy <https://orcid.org/0000-0002-8823-229X>

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**ORIGINAL RESEARCH:
RESEARCH METHODOLOGY PAPER**

VALIDITY AND RELIABILITY OF NURSING INTERVENTION CLASSIFICATION: SELF-CARE ASSISTANCE ON PATIENTS WITH STROKE

Intansari Nurjannah*

Faculty of Medicine, Public Health and
Nursing, Universitas Gadjah Mada, Indonesia

***Corresponding author:**

Intansari Nurjannah, S.Kp., MN. Sc., Ph.D
Department of Mental Health and Community
Nursing, Faculty of Medicine, Public Health
and Nursing, Universitas Gadjah Mada
Gedung Ismangoen, Sekip
Bulaksumur Yogyakarta, Indonesia
Phone : +62 274 545674
Fax: +62 274 631204
Email: intansarin@ugm.ac.id

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Abstract

Background: Nursing intervention is part of nursing process. The accurateness of intervention needs to be explored through an effort to measure validity and reliability of the intervention.

Objectives: This study aimed to investigate the validity and reliability of four Nursing Intervention Classifications (NICs) of Self-Care Assistance (SCA) on patients with stroke.

Methods: Validity measurement involved 4 experts, while reliability involved 7 samples for each NIC. Validity was analyzed using content validity index (I-CVI and S-CVI), while reliability was analyzed using kappa and percent agreement.

Results: Sixteen activities of NICs (I-CVI score less than 0.78) were eliminated and two activities considered not applicable. The results of reliability were above 0.85 kappa value with 85% of percent agreement.

Conclusion: Elimination of not valid activities increased reliability.

KEYWORDS

validity; reliability; nursing intervention classification

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INTRODUCTION

Nursing intervention is part of the nursing process, which needs to be continuously developed. There are several standards of nursing interventions that can be used by nurses. The standard of nursing intervention will describe the nursing care activity and is useful for communication across settings ([Butcher, Bulechek, Dochterman, & Wagner, 2018](#)). One of the nursing intervention standards is Nursing Intervention Classification (NIC). This classification has also been reviewed and updated continuously and consists of label name, a definition, a set of activities and background reading for each label of intervention ([Butcher et al., 2018](#)). The essence of each intervention is in the label name and the definition of the intervention while the activities can be modified as long as it is congruent with the definition of the intervention ([Butcher et al., 2018](#)). Although its activities are not the essence of an intervention, however

research needs to be conducted to find out which activities fit to a specific population.

This type of research is called descriptive research in which the goals are to validate nursing interventions in a specific population, to find out the most common core interventions and it also can be used to measure nursing workload ([Butcher et al., 2018](#)). The more precise activities of NIC to be used for each patient population, the easier for nurses to select which activity has to be applied to the patient. In addition, research needs to be conducted to determine the list of "compulsory activities" and "additional activities" which will help refine the classification. Before further research can be done, validity and reliability studies need to be conducted to ensure the integrity of a study's

results (DeVon et al., 2007; Souza, Alexandre, & Guirardello, 2017).

NIC has been widely used and translated into different languages (Butcher et al., 2018) and because of that, there is a risk for reducing the essential meanings of NIC in a different language. In this case, translation of NIC into different languages needs to be checked for validity and reliability as well, to find out whether NIC is applicable or not to be used in a country different from an English-speaking country.

Content validity measurements have the highest priority to be done if we compare them to other validity measurements, because this type of validity describes which items adequately represent the content of a domain (Zamanzadeh et al., 2015). Content validity is related to the number of underlying dimensions, the number of items, and the theoretical framework (DeVon et al., 2007). The content validity study will help to reduce the revision of the measurement in the future with fewer resources for evaluation phase (Rubio, Berg-Weger, Tebb, Lee, & Rauch). The clarity of an item will also be addressed through content validity study, and it can also be used to assess other psychometric properties (Rubio et al.), and will help to make the item able to be more easily measured (Wynd, Schmidt, & Schaefer, 2003). Content validity can be measured by both a qualitative approach (reviewing by experts) and a quantitative approach (by using content validity index) (Souza et al., 2017). Using a panel of experts provides constructive feedback about the quality of the newly developed measure and objective criteria with which to evaluate each item (Rubio et al., 2003).

Measuring reliability of NICs items is also necessary to be done. Reliability is defined as measurement precision or the ability to reproduce the scores obtained from measurement (van der Vlaeten, 2000). One type of measuring reliability is by using interrater reliability, which is a method to measure items where observation methods and two raters are involved (Gwet, 2014). Since there is no best method of analysis to measure interrater reliability, Graham et al. (2012) suggested to use two different methods of analysis which are kappa and percent agreement at the same time. Several researches have been conducted using these two methods of analyses (Morris, MacNeela, Scott, Treacy, Hyde, O'Brien, et al., 2008; Peyré, Peyré, Hagen, & Sullivan, 2010; Tidsrand & Horneij, 2009), which make the results of study stronger and more reliable.

METHODS

Study Design

This research was a descriptive study to measure the validity and reliability of four NICs SCA: Bathing, Feeding, Dressing/Grooming, and Toileting on stroke patients. Content validity was selected for validity analysis and interrater reliability was selected to measure reliability. Data collection for content validity was conducted in November-December 2017 and in January 2018 for interrater reliability measurement. Data for reliability measurements were collected from the stroke unit at one hospital in Yogyakarta, Indonesia.

Validity

Polit and Beck (2006) mentioned that 3 experts minimum are needed in the assessment process for content validity of a study. In this study there were four experts (two experts from nursing academicians and two experts from nursing clinicians) were involved in the process of measuring content validity. Criteria for selecting these experts were their number of publications or their work experience (Rubio et al.). Ideally, an expert panel consists of professional experts and lay experts (Rubio et al.), however in this study, only panel experts with professional criteria were used for measuring content validity. Content validity can be measured qualitatively (expert judgment) and quantitatively (by using I-CVI and S-CVI) (Souza et al., 2017). This research used both measurements as Wynd et al. (2003) mentioned that qualitative measurement depends only on judgment, logic and reasoning of experts in the domain content. Content Validity Index for Item (I-CVI) refers to experts' review of the items (Polit & Beck, 2006). Experts used four choice scale which are 1 = not relevant, 2 = somehow relevant, 3 = quite relevant, 4 = high relevant toward the level of relevance, accuracy, clarity and ambiguity of item in each NICs. Scores for I-CVI were considered as relevant if the score was ≥ 0.78 when ≥ 3 experts were involved (Polit, Beck, & Owen, 2007). Items are also considered as valid if the overall scale (S) score of S-CVI was ≥ 0.80 (Polit & Beck, 2006). Based on I-CVI and S-CVI values, several items of activities in the instrument were eliminated before it was used for reliability measurement.

Reliability

The sample for interrater reliability was calculated using a formula 2×2 table, with confidence level 80%, and alpha 0.05, and the result show that the recommended number of samples for kappa test was 7 for each NICs (Bujang & Baharum, 2017). Raters were two student nurses who have passed their internship period. They were trained by the researcher before they collected the data. In this study, interrater reliability was selected to measure reliability. Kappa and percent agreement were used to analyze the data. Based on the Benchmark Scale for the Kappa (Altman, 1991) cited in McCray (2013), the score > 0.80 was considered very good, or almost perfect (Landis and Koch, 1977 cited in McCray, (2013), while Fleiss (1981) cited in McCray (2013) argued that value > 75 is excellent. For analysis using percent agreement, the result can be divided into two categories, which are accepted and unaccepted. Several literatures mention that the PA value $\geq 70\%$ is accepted (Osborne, 2008); Stemler, 2004 in Morris et al., (2008). In the process of reliability data collection, the researcher limited the number of observations by raters to only two observations each day.

Instrument Translation

Instrument for this data collection was originally in English. Researcher then checked the translation of Indonesian publication for this instrument as this instrument can be found translation book in Bahasa Indonesia (Bulechek, Butcher, Dochterman, & Wagner, 2013).

Ethical Consideration

Ethical approval was obtained from the Ethics Committee of the Faculty of Medicine, Universitas Gadjah Mada. The number of ethical approval was Ref: KE / FK / 1121 / EC / 2017. Respondents were asked to sign the informed consent when they were willing to participate in this study.

RESULTS

The results of study showed that there were as many as 16 activities from a total of 72 activities of NICs that have I-CVI

scores lower than the cut-off (less than 0.78). There were two activities in SCA: Feeding which are: "Use a cup with a large handle, if necessary" and "Use unbreakable and weighted dishes and glass, as necessary" with score 1 in accuracy and clarity (see **Table 1**). However, as suggested by expert panels, these two activities were not applicable to be applied in a hospital setting. The researcher then eliminated these activities as well as 16 other activities, which had low I-CVI scores from the list activities that will be used for reliability measurement.

Table 1 Items of activities from four NICs SAC Bathing, Feeding, Dressing/Grooming, Bathing that were eliminated

NIC	Activities needing to be eliminated	I-CVI score			
		Relevance	Accuracy	Clarity	Ambiguity
Self-Care Deficit Bathing	Facilitate maintenance of patient's usual bedtime routines, pro sleep cues/props, and familiar objects (e.g., for children, favorite blanket/toy, rocking, pacifier, or story; for adults, book to read or a pillow from home), as appropriate	.5	.5	.5	.5
	Encourage parent/family participation in usual bedtime ritual, as appropriate	.25	.25	.25	.25
Self-Care Assistance: Feeding	Create a pleasant environment during meal time (e.g., put bedpans, urinal, and suctioning equipment out of sight)	.5	.75	.5	.5
	Encourage patient to eat in dining room, if available	.25	.5	.5	.25
	Provide social interaction, as appropriate	.5	.5	.5	.25
	Provide adaptive devices to facilitate patient's feeding self (e.g., long handles, handle with large circumference, or small strap on utensil), as needed	.5	.75	.75	.5
	Use a cup with a large handle, if necessary	.75	1	1	.75
	Use unbreakable and weighted dishes and glass, as necessary	.75	1	1	.75
	Provide frequent cueing and close supervision, as appropriate	.25	.25	.25	.25
Self-Care Assistance: Dressing/Gro oming	Use extension equipment for pulling on clothing, if appropriate	.5	.5	.25	.25
	Offer to launder clothing, as necessary	.25	.75	.75	.5
	Offer to hang up clothing or place in dresser	.25	.5	.5	.25
	Offer to rinse special garments, such as nylons	.	.25	.25	.25
	Provide fingernail polish, if requested	.	.5	.5	.25
	Provide makeup, if requested	.25	.5	.5	.25
Self-Care Assistance: Toileting	Facilitate assistance of a barber or beautician, as necessary	.5	.75	.75	.5
	Consider patient's response to lack of privacy	.5	.75	.75	.75
	Institute a toileting schedule, as appropriate	.75	.75	.75	.75

The results of this study showed that the S-CVI/Ave Approach score of relevance, accuracy, clarity and ambiguity increased after several items, which have low score of I-CVI, were

eliminated from the list of activities in each NIC. The kappa and percent agreement values were consistent and scored very high as can be seen in **Table 2**.

Table 2 Content validity score and interrater reliability score of NICs SCA: Bathing, Feeding, Dressing/Grooming and Toileting

NICs	Activities		S-CVI/Ave Approach score								Kappa	PA
			Relevance		Accuracy		Clarity		Ambiguity			
	Total	Eliminated	*)	**)	*)	**)	*)	**)	*)	**)		
Self-Care Assistance : Bathing	14	2	.83	.9	.82	.89	.80	.87	.82	.89	.89	91.67%
Self-Care Assistance : Feeding	25	7	.55	.98	.55	.97	.64	1	.47	.97	.95	98%
Self-Care Assistance : Dressing/ Grooming	19	7	.69	.95	.78	.93	.77	.93	.71	.93	.87	94%
Self-Care Assistance : Toileting	14	2	.91	.95	.91	.93	.92	.95	.89	.91	.93	85.71%

*) Score S-CVI before several activities in NICs were eliminated.

**) Score S-CVI after several activities in NICs were eliminated.

DISCUSSION

Results show that as many as 18 activities from four NICs were eliminated. In NIC SCA: Bathing, two activities which were eliminated can be considered as not fitting with the definition of NIC Self-Care Deficit: Bathing as those activities are related to sleep activities. Beside this reason, those items were also difficult to be applied because in this setting the hospital system does not allow a family to accompany the patient at all times, and the family has to stay outside of the patient's room. Family can only accompany the patient during the visitor time period.

In NIC SCA: Feeding, there were 7 activities that needed to be eliminated consisting of 5 activities with low score of I-CVI and two activities with adequate score in I-CVI but experts considered these two activities were not applicable to be applied in the hospital setting. Those two activities were "Use a cup with a large handle, if necessary" and "Use unbreakable and weighted dishes and glass, as necessary".

Most of the other activities related to items provided by a facility such as specific device – which may not available in the hospital, such as a specific room for eating (dining room), which is uncommon to be provided for patient in this hospital. The reason why an activity such as to "provide frequent cueing and close supervision" was likely not to be applied is because nurses may have high workload. Another item eliminated was "Create a pleasant activity during meal time" which also has low value of I-CVI because in this hospital, providing meals and setting the meal is non-nursing tasks. The activities to provide social interaction during mealtime also needed to be eliminated because most stroke patients are unable to enjoy their social interaction activity because of their condition. This is supported by a study (Olshansky et al., 2012) in which content validity was influenced by development and appropriate content for diverse individuals.

In NIC SCA: Dressing/Grooming, there were also 7 activities needing to be eliminated. Again, the main reason was mostly because there is no facility in this hospital to apply this activity. Several other activities were uncommon to be conducted, which are: provide fingernail polish and makeup, even though this also may be influenced by patients' condition, as they may need more priority activities than these activities. It also supported by a study which content validity was influenced by content words or terms that do not reflect common usage in the population being studied and also the depth and variation of the meaning of a specific term (Olshansky et al., 2012).

In NIC SCA: Toileting, the two activities have low content validity and needed to be eliminated because there was no clear method to assess patient's response to lack of privacy considering that stroke patients mostly have difficulty to communicate. "Institute a toileting schedule activity" also was eliminated because of patients' condition for example if they use catheter for their elimination, and again it is related to the populations being studied (Olshansky et al., 2012).

An important note needs to be made regarding the type of activities that needed to be eliminated. From 18 activities that needed to be eliminated, there are as many as 14 activities containing a modifier such 'as appropriate' (5 item), 'as necessary' (3 item), 'if requested' (2 item), and one each for 'as needed', 'if appropriate', 'if available' and 'if necessary'. There is no clear direction of the function of this modifier. Those modifiers may need to be categorized into 'compulsory/core activity' or 'additional activity', and then the usage of NIC can be more specific and easier to be used by nurses. Although elimination of 18 activities from four NICs seems to be many, however, it may help to refine the NICs from abstract concepts to measurable indicators (Wynd et al., 2003).

The second part of this discussion is related to the reliability of four NICs. Results show that the reliability of these four NICs

was consistent using both kappa value and percent agreement. Even though the reliability of these NICs is very good and accepted, however, we need to note that the results of reliability measurement were high when several items (total 18 items) in the NICs were eliminated. It is supported by Graham et al. (Graham et al., 2012), and Neuendorf (2002) that stated an instrument contributes to influence the score of interrater reliability. The easier instrument can be understood by a rater then the rater can be more consistent to provide a judgment toward each item (Graham et al., 2012). Roach (2006) also mentioned that the type of instrument would also influence the reliability estimates. In this study, however, the requirement to eliminate several items in NIC was related to the specific population, which were stroke patients. Those items may still be kept in the NIC list of activities if the NICs were targeted to a different patient population and setting, for example in another community setting.

Other factors that influence reliability are: training for rater, selection of rater, and whether raters were exhausted or not (Graham et al., 2012; Neuendorf, 2002). Those criteria of factors that contribute to the value of interrater reliability also have been fulfilled in this research, such as training for raters. Graham et al. (2012) stated that training for raters is important to increase the value of interrater reliability. This training is necessary to reduce the number of variations in interpreting data in the instrument (McHugh, 2012). The period of training also is important, as rater training is better if it is around 1-2 hours (Graham, 2012) and can be divided into several sessions, as necessary (Neuendorf, 2002).

Another factor that influences the interrater reliability of NICs is selection of raters, which is where the researcher ensures that raters have the same experience regarding the topic (Roach, 2006). In this study, raters have the same previous experience as they were nursing students who were in the same level and have passed their internship at the same time. Several researches show a positive relationship between rater expertise and the ability to judge an item accurately (Kozlowski & Kirsch, 1987) and Kozlowski & Kirsch, 1987; Smither, Barry, & Reilly, 1989 cited in Graham et al., (2012). However, there is still debate regarding who should be the rater, the qualification of rater and what rater experience, which will influence the value of interrater reliability (Rushforth, 2007). Another factor that influences the value of interrater reliability was rater's fatigue. Raters' schedule to do observation needs to be considered to be rational and realistic, and does not overload their workload (Neuendorf, 2002). In this study, the researcher anticipated rater's fatigue by limiting observation activity into two observations only per day.

CONCLUSION

Although several activities in NICs SCA: Bathing, Feeding, Dressing/Grooming, Toileting, needed to be eliminated, this research was conducted in a specific population, in which several other activities may still be kept as activities in each NICs. Several activities in the NICs may refer to a specific

population and culture in which there may be a need to divide activities in NICs into 'compulsory/core activities' and 'additional activities'. Those NICs that have a good value of content validity lead to very good result in their reliability scores.

Declaration of Conflicting Interest

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ORCID

Intansari Nurjannah <http://orcid.org/0000-0002-5406-8727>

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