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Volume 9, Number 1 Year 2019, June 2019

Articles

- Quality of Work Life of Public School Nurses in the Philippines
- Effects of Spiritual Counseling on Spiritual Health-Quality of Life in Patients with HIV/AIDS
- Predicting Factors of Interpersonal and Situational Influences for Performing Stretching Exercises Based on Pender's Model
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- Purpose, Quality, and Value in Critical Realist Research within Nurse Education

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Editorial Office
Department of Nursing
Faculty of Medicine, Diponegoro University
Jl. Prof. Soedarto, SH., Tembalang, Semarang 50275
Email: media_ners@live.undip.ac.id
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The Nurse Media Journal of Nursing (NMJN) is an international nursing journal which publishes scientific works for nurses, academics and practitioners. NMJN welcomes and invites original and relevant research articles in nursing as well as literature reviews and case reports particularly in nursing.

This journal encompasses original research articles, review articles, and case studies, including:

- Adult nursing
- Emergency nursing
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- Community nursing
- Mental health nursing
- Pediatric nursing
- Maternity nursing
- Nursing leadership and management
- Complementary and Alternative Medicine (CAM) in nursing
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Total citations in Google Scholar	: 403 (since 2012)
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SINTA h-index / i10-index	: 12/11 (since 2017)
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PREFACE

The Nurse Media Journal of Nursing (E-ISSN: 2406-8799, P-ISSN: 2087-7811) is an open access international journal which publishes the scientific works for nurse practitioners and researchers. The journal is published by the Department of Nursing, Faculty of Medicine, Diponegoro University, and strives to provide the most current and best research in the field of nursing. The journal has been indexed in the Google Scholar, Portal Garuda/Indonesian Publication Index (IPI), Indonesian Scientific Journal Database (ISJD), Directory of Open Access Journal (DOAJ), Science and Technology Index (Sinta), ASEAN Citation Index (ACI) and EBSCO. NMJN has applied for indexation in Scopus and is currently under revision.

It is also with pleasure to inform you that the Nurse Media Journal of Nursing (NMJN), has received accreditation from the Directorate General of Research Strengthening and Development, the Indonesian Ministry of Research, Technology and Higher Education. This accreditation is based on the decree number 60/E/KPT/2016 dated on 13 November 2016 and will be valid until November 2021. Upon this achievement, the NMJN would like to thank all people (the NMJN editorial team, reviewers, authors) who have given their support and contribution in achieving this accreditation.

This issue (NJMN, Vol 9(1), 2019) has published ten articles, consisting of seven original research articles, and three reviews. This issue was authored and co-authored by the researchers and professionals from diverse countries, including Indonesia, Philippines, Iran, Republic of Korea, Australia, USA, Oman, and the United Kingdom. All papers have been doubled-blindly reviewed by the editors and reviewers of this journal.

The first article (Macairan, Oducado, Minsalan, Recodo, & Abellar, 2019) is a correlational study which examined the quality of work life (QWL) among 57 public school nurses in the Philippines. The result of this study revealed that public school nurses had high QWL; the lowest mean scores were opportunities at work and social integration at work. The QWL was correlated with age, whereas sex, marital status, educational attainment, and length of work experience were not associated with QWL. The study recommends that public school nurses are provided with more chances for continuous professional growth and opportunities for better social integration to improve QWL.

The second article is a quasi-experimental study investigating the effects of spiritual counseling on the quality of life-spiritual health in patients with HIV/AIDS (Hasanah, Ibrahim, & Sriati, 2019). Thirty patients were evenly assigned to the experimental group who received three sessions of spiritual counseling intervention and the control group. Results showed that there were significant differences in the spiritual health-quality of life between the control and experimental groups. Therefore, spiritual counseling could be a strategy in providing nursing care to improve the spiritual health-quality of life in HIV/AIDS patients.

The next article is authored by Delshad, Tavafian, and Kazemnejad (2019). It was a correlational study which predicted factors of interpersonal and situational influences for stretching exercise (SE) among office employees. Data were obtained from 420 office employees recruited by multi-stage cluster sampling in a university in Iran through the questionnaires of SE and interpersonal and situational influences based on Pender's Health Promotion Model.

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This study revealed that interpersonal influences and undergoing treatment had a significant relationship with stretching exercise, whereas there was no relationship between situational influences and stretching exercise. Through regression analysis, it was found that a strong predictor for stretching exercise behavior was interpersonal factors. Therefore, these factors could be integrated as an educational principle in facilitating admission behavior of stretching exercise.

The next article is an experimental study examining the effect of stretching exercise to body skin temperature (Widyaatmadja & Young-Duk, 2019). This study involved 20 participants who received organ stretching of Mompyeogi movement exercise and were divided into two groups: males and females. The results revealed that participants who were at low temperature (t<330C), underweight and had normal body mass index showed an increase in body skin temperature after performing the exercise. Meanwhile, participants aged 60 to 74 years old and performed normal chest respiration showed a stable temperature. The study recommends the practice of Mompyeogi movement exercise with deep abdominal inhalation for the variations of body skin temperature.

The fifth article (Setiyani & Windsor, 2019) is a qualitative study exploring the meaning of filial responsibility among young adults within the social context of Indonesia. Eight university students participated in this study through in-depth interviews. The data were analyzed using a constructivist grounded theory method. The grand theme in this study was redefining the meaning of filial responsibility with four sub-themes: I am the one', ‘not institutional care', ‘the gendering of caregiving', and ‘it is okay to do so'. This study provides an insight into the shifting patterns in elderly caregiving and support in Indonesia.

The sixth article is a quasi-experiment with non-equivalent control group design (Luthfa & Ardian, 2019), which investigated the effects of family empowerment on increasing family support in patients with type 2 DM. Forty-six respondents were recruited using a consecutive sampling technique and assigned to the control and intervention groups. The intervention group received family empowerment programs for four times. The results showed that there was a significant difference in the family support between the intervention and the control group. Hence, it is recommended that health workers advocate and encourage the family in the planning management of patients with diabetes mellitus.

Another quasi-experimental study was also conducted by Munif, Poeranto, and Utami (2019). This study aimed to examine the effects of Islamic spiritual mindfulness therapy on decreasing stress among 36 nursing students working on the thesis. The participants were divided into the experimental group who received Islamic spiritual mindfulness and the control group. The results showed that there were significant differences in stress levels between the intervention group and the control group. The study suggests the practice of Islamic spiritual mindfulness as an alternative therapy to reduce stress.

The next article is authored by Cashin and Tumanggor (2019). This study is a scoping review which examines what is known of procurement decisions of advanced technology in healthcare generally and particularly in Indonesia. This study showed that there is a paucity of peer-reviewed literature to inform procurement decisions of health technology and incorporation into nursing practice. This study proposed two principals to move to a sustainable adoption and integration of advancing and emerging technology into practice-

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in the health care sciences as well as provide a scaffold to facilitate navigating what can be tricky waters constituted by enthusiasm and trepidation.

The ninth article is a systematic review (Tuppal et al., 2019). This review aims to critically identify, select, appraise, and synthesize research evidence about the barriers to and facilitators of research utilization. Thirty-six articles were included in the analysis of this study. It was revealed that the lack of awareness about research, lack of authority to change the practice, overwhelming publications, and lack of compiled literatures were the topmost identified barriers to research utilization. A consistent reproach on the capability of nurses to maximize and utilize research is suggested.

The last article is authored by Coleman (2018). This study is a Critical Realist review to explore the purpose of educational research, how quality can be assured in such research, and how the value of a research study in nurse education can be determined. The result showed that a wide range of criteria were identified to evaluate the purpose, quality, and value of Critical Realist research. Hence, nurse education should explicitly reflect several principles such as the holistic, theoretically-eclectic, pragmatic, and solution-focused nature of nursing.

Finally, the NJMN would like to thank the respective authors, reviewers, and editors for their contribution and collaboration in publishing this current issue. Furthermore, the editors would like to appreciate and call for academic papers from the nurse-practitioners, academicians, professionals, graduates and undergraduate students, fellows, and associates pursuing research throughout the world to contribute to this international journal.

Semarang, June 2019
Sri Padma Sari

Editor-in-Chief
The Nurse Media Journal of Nursing

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General Guidelines

Articles sent to the journal are not yet published. To avoid double publication, NMJN does not accept any articles which are also sent to other journals for publication at the same time. The writer should ensure that all members of his/her team have approved the article for publication. Any research report on humans as subject should enclosure the signed informed consent and prior ethical approval was obtained from a suitably constituted research ethics committee or institutional review board. If any financial support was received, or relationship(s) existed, the authors should mention that no conflict of interest of any financial support or any relationship or other, exists during a research project. Those points should mention in the Cover Letter to Editor of NMJN.

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2. Abstract. Abstract for research articles, literature review, and case report should use maximum 300 words. Research article should consist of background, purpose, methods, results and conclusion. Abstract is clearly written and is short to help readers get understanding on the new and important aspects without reading the whole article. Keywords are written on the same page with abstract separated each other with semicolon (;). Please use maximum 5 appropriate words for helping the indexing.
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Luky Dwiantoro	: Department of Nursing, Faculty of Medicine, Diponegoro University, Indonesia
Megah Andriany	: Department of Nursing, Faculty of Medicine, Diponegoro University, Indonesia
Meidiana Dwidiyanti	: Department of Nursing, Faculty of Medicine, Diponegoro University, Indonesia
Meira Erawati	: Department of Nursing, Faculty of Medicine, Diponegoro University, Indonesia
Nana Rochana	: Department of Nursing, Faculty of Medicine, Diponegoro University, Indonesia
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Quality of Work Life of Public School Nurses in the Philippines

Kaila Mae L. Macairan[1], Ryan Michael F. Oducado[1], Mika E. Minsalan[1], Risa G. Recodo[1], Gio Franco D. Abellar[1]

[1]College of Nursing, West Visayas State University, Philippines
Corresponding Author: Ryan Michael F. Oducado (rmoducado@wvsu.edu.ph)

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ABSTRACT

Background: School nurses play a crucial role in the provision of comprehensive health services to the school population. A balanced quality of work life (QWL) with favorable conditions that support and uphold employee satisfaction is imperative for school nurses to maximize their provision of care for their clientele. Among the many nursing specialties, research among school nurses is not given much attention.
Purpose: This study aimed to determine the QWL of public school nurses in the Philippines.
Methods: This study utilized a descriptive correlational research design with 57 public school nurses as study participants. Self-reported data were gathered utilizing Walton's QWL scale. Data were analyzed using the Mann-Whitney U test, Kruskal-Wallis test, and Spearman–rank correlation coefficient.
Results: Results indicated that public school nurses had high QWL (M=4.16). Among the eight subscales, opportunities at work (M=4.04) and social integration at work (M=4.03) had the lowest mean scores. There were no significant differences in the QWL according to sex (p=0.929), marital status (p=0.326), educational attainment (p=0.391) and length of work experience (p=0.059), while there was a significant relationship between age (p=0.005) and QWL of public school nurses.
Conclusion: Public school nurses generally have a high QWL. Nevertheless, to further improve their QWL, it is recommended that public school nurses must be provided with more chances for continuous professional growth and opportunities for better social integration.

Keywords: Nurses; quality of work life; school nurses; work satisfaction

BACKGROUND

Quality of work life (QWL) refers to the personnel's reaction to work and its essential outcome in relation to job satisfaction and psychological health. This definition of QWL emphasizes personal outcomes, work experiences, and how to improve work to meet the individual needs of employees (Walton, 1973 cited in Kermansaravi, Navidian, Rigi, & Yaghoubinia, 2015). Improving the QWL is a comprehensive process to improve employees' quality of life at work and is essential in attracting and retaining employees (Saraji & Dargahi, 2006).

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School nursing is a specialized practice of nursing with the duty to promote student health, development, and academic success (National Association of School Nurses, U.S., 2017). In the Philippines, nurses in public schools are working under the Department of Education. School nurses are the front liners in the delivery of health and nutrition programs in elementary and secondary public schools in the country (National League of Philippine Government Nurses, Inc., 2007).

School nurses are vital support personnel in the school system. This is based on the philosophy that the quality of health of the school population influences students' academic performance and instructional outcomes (National League of Philippine Government Nurses, Inc., 2007). Studies have documented the positive impact of school nursing and considered it as a good investment in improving students' achievement (Maughan, 2018; Stock, Larter, Kieckehefer, Thronson, & Maire, 2002).

This study tries to look into the QWL of nurses working in the school setting. While the satisfaction and QWL of nurses have been widely explored, there are, however, unique factors that affect the QWL of school nurses. The high student-nurse ratio, administrative support, salary variation, task requirements, and parents and students' concerns are factors that impact school nursing, making it different from other practice areas of nurses (Guenette, 2014). School nurses have a broad and differentiated scope of practice in their field of expertise. Besides, school nurses do not only serve a single individual rather than the school population. The current nurse to student ratio at the Department of Education is 1:5,000 (Philippine Development Institute for Development Studies, 2018).

As school nurses perform their roles often independently in the field and given their large caseloads, high levels of motivation are needed to serve this role (Johnson, 2017; Zborowska-Dulat, Uchmanowicz, Manulik, & Manulik, 2018). More recently, Senate Bill No. 663 (2016) and House Bill No. 7824 (2018) call to hire one nurse in every public school in the Philippines to ensure students' access to basic health services. Understanding the work conditions of school nurses and their sources of contentment at work are necessary to attract and foster commitment in the field of school nursing.

This study is an open avenue for research about QWL among school nurses in the Philippines wherein there is limited published study related to the topic. Among the many nursing specialties, there is not much focus and attention given to research among school nurses. Thus, the researchers conducted this study to fill the gaps in the literature about the QWL of school nurses.

PURPOSE

This study was conducted to determine the QWL of public school nurses in the Philippines.

METHODS

Research design

A descriptive correlational study was utilized using a one-shot survey design.

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Samples and setting

The participants were the 57 out of 62 public school nurses of the Schools Division in a province in Western Visayas, Philippines. The overall response rate was 92% of the total population included in the study. All public school nurses willing to participate in the study were included. The five (5) public school nurses who were not able to participate were either on duty in the field during the conduct of the survey or refused to participate.

Research instrument and data collection

The researchers used the adapted version of Walton's QWL scale by Timossi, Pedrosso, Francisco, and Pilatti (2008). The scale was composed of a total of 35 items with eight (8) subscales: salary or adequate and fair compensation (4 items), working conditions or the safe and healthy environment (6 items), use of capacities or development of human capacities at work (5 items), opportunities or growth and security at work (4 items), social integration (4 items), constitutionalism or respect to laws at work (4 items), space that work occupy in life or total life space (3 items) and social relevance and importance of work (5 items). To determine the public school nurses' perception of their QWL taking into account their individual needs and aspirations, the participants were asked to answer in a Likert scale polarized in five points with responses ranging from "1 = very dissatisfied" to "5 = very satisfied". The following interpretation of mean was used: 1.00-1.79 = very low QWL; 1.80-2.59 = low QWL; 2.60-3.39 = moderate QWL; 3.40-4.19 = high QWL; 4.20-5.00 = very high QWL. The overall instrument has a calculated Cronbach's alpha of 0.96 (Timossi et al., 2008). A personal data sheet was used to collect data about the participants' socio-demographic and work-related profile.

Prior to the actual survey, pertinent permissions to conduct the study were secured from the Division Heads. Majority of data were collected during the monthly assembly of school nurses at the Department of Education Schools Division on September 2018. However, about 15 percent of the participants were not able to answer the survey forms at this time. Survey forms, enclosed in a brown envelope were distributed to those who were not available during the assembly with the assistance of one of the nurses in the Division Office. The participants were given sufficient time to answer the instrument. It took them approximately 10 to15 minutes to accomplish the survey. Upon retrieval, the survey forms were reviewed for completeness of data entry. This was done to ensure that the results will not have any missing data.

Data analysis

The following descriptive statistical treatments were employed to analyze and interpret the data: frequency count, percentage, rank, mean, median, and grouped median. Mann-Whitney U test and Kruskal-Wallis test were performed to determine significant differences and Spearman–rank correlation coefficient was applied to determine significant relationships between variables. Alpha level of significance was set at 0.05. The SPSS software package version 23 was utilized for all statistical data analysis.

Ethical considerations

The fundamental human rights of the participants, data confidentiality, and anonymity were observed throughout the study. Participants were given full disclosure about the

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research and were given the freedom whether to participate or not in the study. Written informed consent was obtained from each participant to indicate their voluntary participation and involvement in the study. Survey forms were enclosed in a brown envelope, and participants were instructed to seal the envelope before returning the filled in questionnaires. The Declaration of Helsinki (World Medical Association, 2001) and the National Ethical Guidelines for Health and Health-Related Research (Philippine Health Research Ethics Board, 2017) guided the researchers in the ethical conduct of the study.

RESULTS

Socio-demographic characteristics of the respondents

Table 1 shows that the median age of the participants was 34 years old. Majority were young adults (56.1%), females (71.9%), married (64.9%) and with a Bachelor's degree (75.4%). Moreover, the majority worked as a public school nurse for less than 1 year (57.9%). All public school nurses 57 (100%) were employed as Nurse II permanent employees with a Salary Grade of 15. Nurse II is the position title for public school nurses in the Philippine Department of Education School Health and Nutrition Units in the Schools Division with a corresponding compensation of Salary Grade 15.

Table 1. Socio-demographic and work-related characteristics of public school nurses

Category	*f*	%
Age (Median=34 years old)		
Young Adult (24-35)	32	56.1
Middle to Older Adult (36-63)	25	43.9
Sex		
Male	16	28.1
Female	41	71.9
Marital Status		
Single	20	35.1
Married	37	64.9
Educational Attainment		
Bachelor's Degree	43	75.4
Bachelor's Degree with Master Units/ Master's Degree	14	24.6
Length of Work Experience		
Less than 1 year	33	57.9
1-10 years	11	19.3
11 or more years	13	22.8
Position		
Nurse II	57	100
Employment Status		
Permanent	57	100
Salary Grade		
SG 15	57	100

Level of QWL of public school nurses

Table 2 shows the QWL of public school nurses. Overall, public school nurses had high QWL (*M*=4.16, Median=4.06). As to each dimension of QWL, public school nurses had very high QWL in terms of space that the work occupies in their life (*M*=4.29, Very

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high, Rank 1), social relevance and importance of their work (*M*=4.25, Vey high, Rank 2.5), salary (*M*=4.25, Very High, Rank 2.5), and use of their capacities at work (*M*=4.21, Very High, Rank 4). They had high QWL in the areas of constitutionalism at work (M=4.14, High, Rank 5), working conditions (*M*=4.11, High, Rank 6), opportunities at work (*M*=4.04, High, Rank 7) and social integration at work (*M*=4.03, High, Rank 8).

Table 2. Level of QWL of public school nurses

Dimensions of QWL	Mean	Interpretation	Rank
1. Space that work occupies in the life	4.29	Very high	1
2. Social relevance and importance of work	4.25	Very high	2.5
3. Salary	4.25	Very high	2.5
4. Use of capacities at work	4.21	Very high	4
5. Constitutionalism at work	4.14	High	5
6. Working conditions	4.11	High	6
7. Opportunities at work	4.04	High	7
8. Social integration at work	4.03	High	8
Total Quality of Work Life (Median=4.06)	4.16	High	

Differences in the QWL of public school nurses

Table 3 shows the significant differences in the QWL of public school nurses in terms of socio-demographic and work-related characteristics. The results revealed that there were no significant differences in the QWL of public school nurses when classified according to their sex (*p*=0.929), marital status (*p*=0.326), educational attainment (*p*=0.391) and length of work experience (p=0.059). However, the Mann-Whitney U test indicated that the QWL of public school nurses was significantly higher for middle to older adults than for young adults (*p*=0.005).

Table 3. Differences in the QWL according to socio-demographic and work-related characteristics

Variables	Grouped Median		*p*
Age[a] (Median=34 years old)		227.50	0.005*
Young Adult (24-35)	4.01		
Middle to Older Adult (36-63)	4.22		
Sex[a]		323.00	0.929
Male	4.07		
Female	4.05		
Marital Status[a]		311.50	0.326
Single	4.03		
Married	4.09		
Educational Attainment[a]		255.00	0.391
Bachelor's Degree	4.03		
Bachelor's Degree with Master Units/ Master's Degree	4.17		
Length of Work Experience[b]		5.666	0.059
Less than 1 year	4.01		

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Variables	Grouped Median	*p*
1-10 years	4.01	
11 or more years	4.31	

*Notes: [a]Mann-Whitney U, [b]Kruskal-Wallis, *p<0.05*

Correlation between age, length of work experience and QWL

Table 4 shows the Spearman's rho correlation results for the significant relationship between age and QWL and length of work experience and QWL of public school nurses. Statistical analysis revealed that there was no significant relationship between the length of work experience as a public school nurse and QWL (*p*=0.052) while there was a significant relationship between age and QWL (*p*=0.005).

Table 4. Correlation between age, length of work experience and QWL

QWL	*r*	*p*
Age	0.363	0.005
Length of Work Experience	0.258	0.052

**p<0.05*

DISCUSSION

This study investigated the QWL of public school nurses. It was demonstrated in this study that the QWL of public school nurses as a whole was high. This means that public school nurses generally appreciate their job and are contended with the different aspects of their work life. The result of this study is congruent with the findings of some studies in the local setting that investigated the work setting and satisfaction of hospital nurses. Dones, Paguio, Bonito, Balabagno, and Pagsibigan (2016) discovered that although nurses reported the lowest positive responses in physiologic and safety needs, the overall job satisfaction of Filipino nurses was high. Similarly, Lapeña, Tuppal, Loo, and Abe (2017) found that nurses working in a tertiary hospital in Manila, Philippines, had high work satisfaction. However, there were also reports that Filipino nurses were not quiet contended with their work. For instance, Rosales, Labrague, and Rosales (2013) disclosed that staff nurses in Samar, Philippines were slightly unsatisfied with their job.

Public school nurses in the Philippines are not the only school nurses reporting high QWL or satisfaction at work. Previous researches on QWL specific to nurses working in the school setting also support the result of the present study. Nurses working in a public school in the State of Illinois were most satisfied with their professional status and autonomy. Nurses are more satisfied with their job when they believe that they can positively impact students' health (Guenette, 2014). Public school nurses in this study likewise had very high QWL in the aspect of social relevance and use of capacities at work. Use of capacities at work relates to how work provides certain autonomy and how skills and knowledge are being used at work (Timossi et al., 2008; Fernandes, Martins, Caixeta, Costa Filho, Braga, & Antonialli, 2017). Moreover, a study among Polish school nurses also characterized school nurses having a high level of job satisfaction (Zborowska-Dulat et al., 2018). A much earlier study likewise disclosed that majority of school nurses expressed contentment with their jobs and were satisfied with their

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present positions, although issues related salary, control issues, coping, and role strain were mentioned (Junious, Johnson, Peters, Markham, Kelder, & Yacoubian, 2004).

Meanwhile, this study also revealed that public school nurses had high QWL in terms of the space that work occupies in their life. This dimension of QWL is directly related to the balance between time devoted to work and personal life or work-life balance (Fernandes et al., 2017; Timossi et al., 2008). School nurse work schedule was identified as a factor influencing school nurses' decision to enter school nursing in a study among school nurses in a large, urban school district in the U.S. (Smith & Firmin, 2009). Nonetheless, time-workload-caseload was considered a top barrier that impacts school nurses' ability to practice school nursing (Davis, 2018).

In this study, while public school nurses had an overall high QWL, among the eight (8) subscales, they ranked lowest in opportunities provided at work and social integration. Opportunities provided at work relates to opportunities for professional growth, such as participation in trainings and chances for further studies (Timossi et al., 2008). Public school nurses at the Department of Education in the Philippines, however, have limited opportunities for rank promotion. This possibly explains why public school nurses in this study rated aspect of opportunities provided at work of least quality. Moreover, most of the public school nurses in this study only had a Bachelor's degree. School nurses may also desire for further degree advancement and be given more chances to attend seminars and trainings to enhance their competencies.

On the other hand, social integration corresponds to the absence of discrimination at work and focuses on relationship and commitment with colleagues and supervisors (Fernandes et al., 2017; Timossi et al., 2008). Public school nurses are deployed in different public elementary and secondary schools all over the province. Most of the time, they are in the field delivering school-based health services to their clientele. As a result, they may have less time to work closely with their supervisors and fellow public school nurses.

Comparing the findings of this study with the QWL of hospital nurses in other countries or elsewhere, the result of this study is incongruent with most of the findings in the literature. School nurses reported better QWL than hospital nurses. For instance, staff nurses in Egypt had low-level QWL (Morsy & Sabra, 2015) and nurses in public health facilities in South Ethiopia were dissatisfied with their QWL (Kelbiso, Belay, & Woldie, 2017). Results of studies in India among nurses in several hospitals (Battu & Chakravarthy, 2014), in government and private hospitals (Suresh, 2013), in a tertiary care hospital (Hemanathan, Sreelekha, Prakasam, & Golda, 2017) and in private sectors (Fasla, 2017) revealed a moderate level QWL. Moderate level QWL was also disclosed among nurses in Iran (Moradi, Maghaminejad, & Azizi-fini, 2012; Nayeri, Salehi, & Noghabi, 2011) and Bangladesh (Akter, Akkadechanunt, Chontawan, & Klunklin, 2018). On the contrary, nurses in Latvia described their work life quality as satisfactory (Blumberga & Olava, 2016) and QWL was at the customary level among nurses in Saudi Arabia (Albaqawi, 2018). This result of the study provides insights that the school work setting is different from the hospital work environment. Public school nurses commonly deal with promotive and preventive aspects of the health of the school

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population while nurses working in the hospital deal with curative components of care and acute cases. Public school nursing is a highly autonomous practice with less direct supervision from physicians. Moreover, public school nurses have regular working hours compared to the shifting work schedule of hospital nurses. Given these variations in the scope of practice and work environment between school nurses and hospital nurses, public school nurses appear to have better QWL.

The results of this present investigation demonstrated that age was significantly related to QWL and that middle to older age public school nurses aged 36 to 63 years old had higher QWL than their younger counterparts. An aspect of QWL, particularly work condition, was similarly found to be associated with age in an earlier study (Albaqawi, 2018). McNeese-Smith and van Servellen (2000) emphasized that mature nurses have better job satisfaction, productivity, and commitment to the organization. In contrast, while age was significantly associated with QWL in the study of Hemanathan et al. (2017), it was shared that the younger age group (21-30) of hospital nurses in India was associated with QWL.

Prior work of scholars conducted elsewhere also disclosed inconsistent findings. One study noted that age and years of experience had no significant relationship with QWL among nurses working in public health facilities in South Ethiopia (Kelbiso et al., 2017). On the other hand, another study disclosed that experience was related to QWL while age was not associated with QWL among hospital nurses in India (Thakre, Thakre, & Thakre, 2017) and in Iran (Moradi et al., 2012). With these contrasting findings, caution is warranted when interpreting the result of this aspect of the study. It must be noted that the distribution of the participants in this study could be a possible factor why there is a significant difference in age while significant difference cannot be appreciated in length of work experience. More than half of the participants in this study were newly hired, having less than a year of experience as a public school nurse. It was only recently that more permanent positions were opened for public school nurses by the Department of Education. The number of public school nurses needed to serve public schools in the Philippines is expected to rise if Senate Bill No. 663 (2016) and House Bill No. 7824 (2018) will be enacted into law. Cost-benefit study of school nursing services found school nursing to be a cost-beneficial investment of public money (Wang, Vernon-Smiley, Gapinski, Desisto, Maughan, & Sheetz, 2014). Likewise, the U.S. National Association of School Nurses recommends that students should have access to a full-time baccalaureate-prepared registered nurse (Willgerodt, Brock, & Maughan, 2018).

This study has its limitations. Further research may be conducted in a larger sample among nurses working in the school setting, including those in the private sector. Moreover, the study may have benefited from additional qualitative investigation to validate the findings of the study. Also, while Walton's QWL scale has been used in studies conducted elsewhere, further validation of the scale is recommended if administered among Filipino nurses. In addition, although a direct comparison of the QWL of nurses in different work settings was not promising, this study provided insights on the possible variations on the QWL between nurses in the hospital and school settings. Nonetheless, this study sheds light on the QWL situation of nurses

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entrusted to promote the health of the school population. This study also provides evidence that can enlighten school leadership and policymakers to devise ways of improving the QWL of school nurses.

CONCLUSION

Public school nurses have high QWL. Age is a significant factor related to the QWL of public school nurses. The older the nurses, the more they appreciate working in a public school setting. Nevertheless, opportunities at work and social integration are perceived to be of least quality aspects of the public school nurses' work life. Public school nurses must be provided with added opportunities for continuous professional development and be given more chances for better social integration to further improve their QWL.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Effects of Spiritual Counseling on Spiritual Health-Quality of Life in Patients with HIV/AIDS

Ulung Hasanah[1], Kusman Ibrahim[2], Aat Sriati[2]

[1] Postgraduate Nursing Program, Faculty of Nursing, Universitas Padjadjaran, Indonesia
[2] Faculty of Nursing, Universitas Padjadjaran, Indonesia
Corresponding Author: Ulung Hasanah (ulung.hasanah@yahoo.com)

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ABSTRACT

Background: HIV/AIDS is a chronic and progressive disease that has complex health problems which affect the quality of life. Patients with HIV/AIDS need spiritual support to increase their spiritual health. A more effective therapeutic approach using spiritual counseling is seen as effective for improving health in chronic conditions.
Purpose: This study aimed to examine the effects of spiritual counseling on the quality of life-spiritual health in patients with HIV/AIDS.
Methods: This study employed a pre-posttest quasi-experimental design with a control group. The samples were 30 patients each in the experimental group and the control group recruited using purposive sampling. The experimental group received three sessions of spiritual counseling intervention. Data of the quality of life-spiritual health were collected using the WHOQOL-SRPB BREF and analyzed using t-test with significance <0.05.
Results: Results indicated significant differences in the spiritual health-quality of life between the control and experimental groups. The result of paired t-test before and after the intervention in the experimental group showed a p-value of <0.05, whereas in the control group, the p-value was >0.05. After the intervention, the p-value in the experimental and control groups was <0.05, indicating significant differences between the two groups.
Conclusion: This study concluded that spiritual counseling interventions had an effect on increasing the quality of life-spiritual health in patients with HIV/AIDS. Thus, it is necessary for the hospital to consider the results of this study as one of the interventions in providing nursing care to HIV/AIDS patients.

Keywords: HIV/AIDS; quality of life-spiritual health; spiritual counseling

BACKGROUND

HIV/AIDS is one of the chronic and progressive diseases that have complex health problems, which affect the quality of life. This situation can inhibit normal activities in daily life that it requires comprehensive care with regard to HIV care and opportunistic infections (Basavaraj, Navya, & Rashmi, 2010). Fayers and Machin (2015) state that HIV/AIDS patients in their daily lives are required to be able to face complex problems, both physical, psychological, and spiritual. The complexity of the problems faced has an impact on the quality of life.

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HIV is a chronic and life-threatening disease which requires lifelong therapy and treatment; therefore, it is difficult to change the lifestyle and make a commitment to survive and maintain the quality of life (Dalmida, Holstad, Dilorio, & Laderman, 2011). Maintaining health care is important to improve the quality of life and increase life expectancy. Problems that arise among the patients are not only handling physical decline problems but also anticipating and managing spiritual aspects (Vanwingaard, 2013).

Dalmida et al. (2011) proposed a more effective therapeutic approach using spiritual and psychological counseling. Spiritual/religion has important and positive aspects to help health professionals in the treatment of patients with HIV/AIDS (Trevino et al., 2010). It is in line with the research conducted by Jeffries et al. (2014) reporting gays infected with HIV claim that spiritual is an important factor in improving health status. Spirituality is used to overcome the trauma of HIV-stressed life, namely facing death, HIV as sin, stigma, poverty, and health care (Kremer & Ironson, 2014). To realize these conditions, there is a need to make an effort in facilitating patients with HIV/AIDS in their lives with happiness by paying attention to spirituality/religion/personal beliefs.

The spiritual aspect plays an important role in improving the quality of life, so health professionals must use knowledge about religiosity and spirituality in professional practice in patients with HIV/AIDS (Pinho et al., 2017). Research conducted by Rocha and Fleck (2011) mentions the importance of planning interventions to improve quality of life. Spirituality/religion/personal belief is a dimension that is highly valued in different cultures, especially those related to patients with chronic disease (Panzini, Maganha, Rocha, Bandeira, & Fleck, 2011)

Several studies have shown the effectiveness of spiritual interventions to improve quality of life (Izabdkhsh & Shafiabady, 2016; Kashani et al., 2014; Zamaniyan, Bolhari, Naziri, Akrami, & Hosseini, 2016). There has been no evidence of spiritual counseling intervention for HIV/AIDS patients. Hodge and Roby (2010) explain that patients with HIV/AIDS need coping strategies in handling spiritual problems in the form of counseling. Spirituality may be a useful component in dealing with trauma, taking into account the socio-cultural context (Kremer & Ironson, 2014). Therefore, it is important to conduct a study to examine the effectiveness of spiritual counseling on the quality of life-spiritual health in HIV/AIDS patients.

PURPOSE

This study aimed to examine the effects of spiritual counseling on the quality of life-spiritual health of patients with HIV/AIDS.

METHODS

Designs and samples

This study used a pretest-posttest quasi-experimental design with a control group. The number of samples was 30 patients in the experimental group and 30 patients in the control group. The total samples were 60 patients purposively recruited in a regional public hospital in Indonesia in 2018. The inclusion criteria were: (1) patients aged ≥18-40 years, (2) able to read and write, and (3) willing to follow the complete stages of

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spiritual counseling. The exclusion criteria were: (1) patients being in a state of serious illness and experienced a decreased condition so that it might not be possible for them to participate, and (2) patients under the influence of drugs.

Spiritual health intervention

The interventions of spiritual counseling consisted of three sessions based on themes related to spiritual problems in HIV/AIDS patients. The interventions were carried out weekly; each session lasted for 50-60 minutes. The first session was the identification of the three priority issues of spiritual problems among the patients. Next, the researchers did spiritual counseling for the first priority and set up follow-up plans with patients. The second session was counseling problems for the second and third priorities as well as follow-up plans. The last session was evaluating, repeating, strengthening the plan for all three problems.

Ethical consideration

This research was reviewed and approved by the Health Research Ethics Commission of the Faculty of Medicine, Universitas Padjadjaran, and Local Public Service Agency Banjar Public Hospital. The researchers explained the purpose, benefits, and procedures of the study to HIV/AIDS patients who were willing to become respondents. They also signed informed consent. Fair treatment rights or fair interventions were met by researchers by giving the same intervention to each respondent in the experimental group, whereas in the control group, there was a plan to give spiritual counseling intervention after the completion of this study.

Measurements

In this study, the instrument used to measure the quality of life-spiritual health was the WHOQOL-SRPB BREF (WHO, 2002). This instrument was chosen because it has been used in many previous studies and can be easily understood and administered. This WHOQOL-SRPB BREF instrument has been tested in sixteen countries in 5087 respondents, with a Cronbach alpha value of α 0.85, indicating that the consistency of reliability is very good for the SRBP domain (Skevington, Gunson, & O'connell, 2013). This questionnaire used a Likert scale with a 5-point scale, consisting of 32 questions given a score of 1-5. The score range from 32 to 160, and will be added to the mean score and then divided into two categories, namely the good quality of life-spiritual health and poor quality of life-spiritual health. The quality of life-spiritual health category is good when the score is ≥90, and the quality of life-spiritual health is less good when the score is <90 (WHO, 2002; Skevington et al. 2013).

Data analysis

Data were analyzed using descriptive analysis (frequency, percentage, deviation standard, and mean) and inferential analysis (paired and unpaired t-test) with a significance of <0.05. Chi-square, paired, and unpaired t-test were used to analyze the data in this study.

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RESULTS

Characteristics of participants

The results (Table 1) showed that the majority of participants in both groups were aged 26-35 years, male, the high school graduate, employed, not married, having HIV for 1-2 years, and health insurance. Results also showed that there was no difference in the characteristics of participants in the experimental group and the control group (p>0.05).

Table 1. Characteristics of participants (n=60)

Variables	Experimental (n=30)	Control (n=30)	x^2	*p*
	f (%)	*f* (%)		
Age				
18-25 years	9 (30)	9 (30)	1.404	0.496
26-35 years	14 (46.7)	17 (56.7)		
36-40 years	7 (23.3)	4 (13.3)		
Gender				
Female	6 (20)	10 (33.3)	0.767	0.381
Male	24 (80)	20 (66.7)		
Education				
Primary school	1 (3.3)	2 (6.7)	4.288	0.232
Junior high school	9 (30)	15 (50)		
Senior High School	12 (40)	10 (33.3)		
College	8 (26.7)	3 (10)		
Employment status				
Employed	26 (86.7)	23 (76.7)	0.445	0.505
Unemployed	4 (13.3)	7 (23.3)		
Marriage				
Married	11 (36.7)	8 (26.7)	0.785	0.675
Not married	17 (56.7)	19 (63.3)		
Widowed	2 (6.7)	3 (10)		
Long-suffering from HIV				
< 1 years	6 (20)	7 (23.3)	3.175	0.529
1-2 years	10 (33.3)	11 (36.7)		
2-3 years	5 (16.7)	5 (16.7)		
3-4 years	2 (6.7)	4 (13.3)		
4-5 years	7 (23.3)	3 (10)		
Health insurance				
Yes	29 (96.7)	26 (86.7)	0.873	0.350
No	1 (3.3)	4 (13.3)		

Spiritual life-health quality category

Table 2 describes the quality of life-spiritual health of the patients. It can be concluded that in the experimental group, there were changes before and after the intervention, whereas in the control group, there were no changes before and after the intervention with a fixed number.

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Table 2. Distribution of spiritual-health quality of life before and after the intervention in the control and experimental groups.

Categories	Experimental groups (n=30)		Control groups (n=30)	
	Before (%)	After (%)	Before (%)	After (%)
Good	7 (23.3)	30 (100)	8 (26.7)	8 (26.7)
Poor	23 (76.7)		22 (73.3)	22 (73.3)

Effect of spiritual counseling in both groups

Table 3 showed that there was an increase in the mean score of before and after the intervention with a p-value=0.000, which means significant. In the control group, it was indicated a slight increase in the mean score of before and after the intervention with a p-value >0.05, which means not significant. It was concluded that significant changes were found between before and after intervention in the experimental group, whereas in the control group, there were no significant changes between before and after the intervention

Table 3. The comparison of spiritual-health quality of life before and after the intervention in both groups

Groups	The differences in mean		*t*	*p*
	Before	After		
Experimental	75.63(±17.482)	127.77(±12.199)	-17.959	0.000
Control	77.80(±15.577)	77.93(±15.364)	-0.559	0.580

Based on the unpaired t-test in Table 4, it was found that in the experimental group, there was an increase in the mean score of before and after the intervention indicating a difference. In the control group, the mean score before and after the intervention indicated no difference. From the mean value, it could be ascertained that the quality of life-spiritual health before and after in the two groups was different. Furthermore, the p-value before the intervention in the experimental and control groups was (0.614)>0.05, meaning that there was no significant difference. Moreover, the result of the p-value after the intervention in the experimental and control groups was (0.000) <0.05, meaning that there was a significant difference.

Table 4. The results spiritual-health quality of life after the intervention in both groups

Treatment	Groups		*t*	*p*
	Experimental	Control		
Before	75.63(±17.482)	77.80(±15.577)	-0.507	0.614
After	127.77(±12.199)	77.93(±15.364)	13.913	0.000

DISCUSSION

The present study aimed at examining the effects of spiritual counseling on the quality of life-spiritual health in patients with HIV/AIDS. Based on the results of the study, it was found that there were differences in the quality of life-spiritual health categories before and after the intervention in the control and experimental groups.

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The level of spiritual health-quality of life

Based on the research obtained, the quality of life-spiritual health in both groups was influenced by spiritual counseling interventions and was not influenced by demographic characteristics. Some previous researches have shown the importance of spiritual intervention in overcoming spiritual problems (Adegbola, 2011; Corey, 2015; Cashwell & Young, 2014). It is also supported by Ibrahim (2014), who stated that patients with HIV/AIDS need a way to overcome and support for strengthening spirituality in improving the quality of life.

Based on the spiritual life-health quality category obtained in respondents, the control group indicated the quality of life-spiritual health before and after the intervention in the experimental group with an 80% poor category. In the experimental group, before the intervention, there was an 80% poor category, and there was an increase in this category after the intervention. Based on these results, it was found that the quality of life-spiritual health was poor in the control and experimental groups as obtained before the intervention. This result is in line with a study by Hodge and Roby (2010) that spiritual health in quality of life is at a low level in patients with HIV/AIDS in Nigeria. A study conducted by Cronje, Williams, Steenkamp, Venter, and Elkonin (2017) also reported that the lowest score is spirituality in the quality of life.

In this study, the majority of respondents were aged between 26-35 years, male sex, secondary education, working, not married, having HIV 1-2 years, and having health insurance. This is related to the age of 26-35 years in which at the age of adulthood, an individual realizes that his life must be much closer to God. There were acceptance and submission to God through spiritual therapeutic management in chronic patients (Nuraeni, Nurhidayah, Hidayati, Sari, & Mirwanti, 2015). Low education and unmarried status can affect self-management skills to deal with problems. Patients who are employed and have automatic insurance are capable enough to pay for their treatment and care (Imam, Karim, Ferdous, & Akhter, 2011). According to McGowan et al. (2017), showing a longer time with a diagnosis of HIV infection over 1-2 years is one of the factors that contribute to a lower psychological and quality of life.

Factors of spiritual issues, including guilt without hope, feelings of despair, will die, and stigma are problems that must be addressed immediately. This spiritual problem can affect the development of the disease, physical and mental health, and quality of life. This can lead to obstacles to the success of the HIV/AIDS prevention program (Dalmida et al., 2011; Pinho et al., 2016). Obstacles in spiritual problems that occur to respondents are about the problem of stigma from family and society which can reduce the spirit of life, do not want to socialize so that a decrease in appetite causes the immune system to decrease. This results in a decrease in physical health, psychological, disruption of the ability of daily activities and a decrease in quality of life, especially in spiritual health (Szaflarski, 2013). The impact of the existence of spiritual problems in HIV/AIDS patients requires the need for interventions to improve the quality of life-spiritual health.

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The effects of spiritual counseling on spiritual health-quality of life

Based on the results in this study, it was ascertained that this research has proven that spiritual counseling has a positive influence on improving the quality of life-spiritual health in HIV/AIDS patients. This was supported by data showing an increase in scores before and after the intervention of eight domains in the experimental group. The highest score increase was in the domain of faith and belief, and the lowest was in the domain of wholeness and integrity. In addition, the results of the research data indicated that there was an increase in the mean of quality of life-spiritual health and the eight domains before and after the intervention in the experimental group.

Health care providers need to use a spirituality approach in each patient, because the influence of one's beliefs may have a significant positive (or negative) impact on prosperity comprehensively (Doolittle, Justice, & Fiellin, 2018; Kremer & Ironson, 2014). Spiritual care is important as part of holistic support and is key to rediscovering hope and meaning in life (Vanwyngaard, 2013). The role of nurses in spirituality is needed to be able to provide support in nursing plans in the form of counseling (Caixeta, Nascimento, Pedro, & Rocha, 2012). Nurses are HIV counselors who are trained to help HIV/AIDS patients with HIV-related problems, one of which is a spiritual problem (Ministry of Health Republic of Indonesia [MOHRI], 2012). Spiritual problems experienced will be explored, so that they can find meaning, spiritual use, and realize the importance of spirituality in health (Dalmida et al., 2011). This is obtained during the implementation of the spiritual counseling process. Patients use spiritual resources as coping strategies, and as a source of spiritual support. The nurse allows patients to discuss the actual or potential role and impact of spirituality on their health (Caixeta et al., 2012).

The results of the evaluation of the implementation of spiritual counseling during the three meeting sessions indicated that all respondents could openly share their experiences and issues related to spirituality. Most are aware that HIV disease has been suffered due to previous deviant behavior. They wanted to change behavior towards a better one with healthy living and activities as normal. All respondents tried to surrender and accept the disease. This was evidenced by routine treatment at the clinic. Some respondents who could share their spiritual problems said there was guilt, stigma towards themselves and stigma from others, facing death, limited health, desire to commit suicide, stress facing illness and circumstances, feeling no support, no purpose and meaning of life. This is in line with previous studies (Caixeta et al., 2012; Kremer & Ironson, 2014; Szaflarski, 2013; Vanwyngaard, 2013). The efforts to overcome them are important in counseling spirituality with each respondent and determining their role in the management and involvement of religious activities (praying, *sholat,* reciting). However, there were some respondents who showed discomfort by discussing issues of spirituality, which was in line with a study conducted by Szaflarski (2013). However, this can be overcome by using HIV counseling guidelines, and important aspects of spiritual counseling were considered (Cates, 2009; Chou & Bermender, 2011; Dailey, Curry, Harper, Hartwig-Moorhead, & Gill, 2011; Imanuddin, 2017).

Spiritual counseling in this research was more effective in improving the domain of faith and belief. This was probably because almost all used faith in facing the challenges

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of everyday life including comfort, welfare, and joy of life and meaning in life. Efforts to maintain faith and improve faith are by participating in religious activities, recitation, worship, prayer. This is in line with the research conducted by Dalmida et al. (2011) stating that patients with HIV/AIDS in increasing faith and coping by following religious practices and participating in religious activities.

Based on the spiritual life-health quality category obtained by respondents, the control group showed a quality of life-spiritual health before and after the intervention with an 80% poor category. In contrast to the experimental group before the intervention, there was an 80% poor category and there was an increase in the category after the intervention (good category). The change in spiritual life-health quality occurs due to the influence of spiritual counseling interventions. This relates to the model used to view individuals holistically where spirituality and religious involvement are included in the concept of the mechanism of Levin's religious coping models (McCullough, 1999; Pargament, Tarakeshwar, Ellison, & Wulff, 2001). But it can also increase the quality of life which is influenced by many factors including age, education, employment, income, support, HIV status, marital status (Bello & Bello, 2013; Degroote, Vogelaers, & Vandijck, 2014; Nojomi, Anbary, & Ranjbar, 2008).

Spiritual problems in HIV/AIDS patients have an impact on life because HIV has shifted from terminal illness to chronic disease (Deeks, Lewin, & Havlir, 2013). The role of religion and spirituality in the lives of patients with HIV/AIDS has also changed; for example, the role of the spiritual as a strategy in finding meaning in preparing for future deaths. People living with HIV now survive using spirituality as a means of healthy adaptation to HIV. Trevino et al. (2010) in their study, suggest that spirituality provides beneficial results in people living with HIV infection, including psychological stress, pain, and depression. Spirituality clearly plays an important role in the lives of patients with HIV/AIDS, by identifying as a guiding force in life, maintaining a relationship with God as the highest power.

Among the limitation of the study, the present study was only carried out in one place so that it might not generalize to the entire HIV/AIDS patient population elsewhere. The spiritual counseling guide used in this study is the first guide used by researchers and still needs to be tested elsewhere to produce standardized guidelines for future research.

CONCLUSION

Based on the results of this study, it is concluded that spiritual counseling interventions had an effect on increasing the quality of life-spiritual health in HIV/AIDS patients. Thus, it is important for the hospital to consider the results of this study as one of the interventions in providing nursing care to HIV/AIDS patients. It is recommended for future researchers to do a study in a special group to analyze the success factors of counseling techniques for the quality of life-spiritual health.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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Predicting Factors of Interpersonal and Situational Influences for Performing Stretching Exercises Based on Pender's Model

Mohammad Hossein Delshad[1], Sedigheh Sadat Tavafian[1], Anoshirvan Kazemnejad[2]

[1]Health Education and Health Promotion Department, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran.
[2]Biostatistics Department, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran.
Corresponding Author: Sedigheh Sadat Tavafian (Tavafian@modares.ac.ir)

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ABSTRACT

Background: Physical activity affects office employees in achieving a healthy lifestyle and preventing diseases such as Musculoskeletal Diseases (MSDS). Combining sports such as stretching exercises in healthy lifestyle programs is one of the most important decisions to prevent such disease.
Purpose: This study aimed to predict factors of interpersonal and situational influences for stretching exercise (SE) among office employees.
Methods: A cross-sectional study was conducted among 420 office employees recruited by multi-stage cluster sampling. Self-administered questionnaires of SE and interpersonal and situational influences based on Pender's Health Promotion Model, as well as socio-demographic data, were used in this study. The collected data were analyzed using Spearman correlation and logistic regression tests.
Results: Results showed that among 420 participants, the scores of interpersonal and situational influences, and SE were 4.6±11.52, 4.5±14.21, and 2.48±17.64, respectively. There was a significant relationship between interpersonal influence and SE (r=0.54; p<0.05), and undergoing treatment and SE (r=0.77; p<0.05). There was no relationship between situational influence and SE (r=0.107; p>0.05), and interpersonal influences were a strong predictor for SE behavior.
Conclusion: This study showed that the office employees who were more interpersonal influencers were more likely to do stretching exercise behavior. Therefore, interpersonal factors could be used as an educational principle in facilitating admission behavior of SE regarding Pender's Model.

Keywords: Healthy lifestyle; interpersonal influences; muscle stretching exercises; musculoskeletal diseases; situational influences

BACKGROUND

Physical activity is an activity that requires energy and is done and performed by the muscles and skeletal body (Lewis, Napolitano, Buman, Williams, & Nigg, 2017). It is an important part of a healthy lifestyle and can reduce the risk of bone fractures. One form of physical activity is stretching exercises. Investigations showed that stretching behavior is a kind of physical exercise for flexed or stretched to achieve better muscle tone. Stretching behavior in Iran is relatively low, and there is no coherent program for

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training stretching, especially in offices (Pourhaji, Naserinia, Pourhaji, Pourhaji, & Ranjbar, 2017).

Work-related musculoskeletal disorders (WMSDs) are a common cause of absenteeism in the workplace (Mansfield, Thacker, & Smith, 2017; Tavafian, Jamshidi, Mohammad, 20174). A review by Mansfield et al. (2017) reported that the participation rate of people due to musculoskeletal disorders in physical activity programs is still low. This suggests that healthy people, as compared to people with skeletal musculoskeletal disorders in the workplace, show greater participation in physical activity (Delshad, Tavafian, & Kazemnejad, 2017). Despite the existence of studies on the importance of exercising and decreasing sitting time in computer workers, especially stretching exercises; unfortunately, a small number of Iranian office employees are engaging with this issue (Delshad et al., 2017).

One of the models that are increasingly used in sporting activities is the Penders Health Promotion Model (Zare, Asadi, Vahedian-Shahroodi, & Bahrami-Taghanaki, 2017). Two of the important factors on changing behavior in this model are the strategy of interpersonal influences and situational influences (Bennie et al., 2017). The interpersonal influential strategy is one factor of direct and indirect paths for any physical activity in both genders. Based on the health promotion model, an influential interpersonal factor is the knowledge of other behaviors, beliefs, or attitudes of others. These cognitions may or may not be compatible with reality (Khodaveisi, Omidi, Farokhi, & Soltanian, 2017).

The situational influence is an approach that evaluates not only individual perceptions and cognition of any situation or context, but also how to behave as a facilitator or barrier to behavior. Situational influences on health promotion behaviors, such as exercises, include perceptions of existing options, desires or needs, and aesthetic features of an environment that behaves like exercises (Hsiao, Chien, Wu, & Chiao, 2017). Individuals must be associated with and understand the behaviors, can order interpersonal interactions to be more likely to act in the direction of behavioral intention, and adapt and coordinate themselves with the cognitive symptoms associated with the behavior in question. On the other hand, the use of situational influences factor enables individuals to make more sporting behaviors by using environments or situations that feel calm, dependency, and in an environment or situation that is uneasy, alien, threatening and unhealthy, leading to successful behavior. Also, attractive and interesting environments, as a desirable background, help people transform their intent to behavior (Zhang et al., 2017).

In the health promotion model, both situational influences and interpersonal influences give direct and indirect effects on health behaviors. Interpersonal influences, in addition to the direct effect, are indirectly influenced by social pressures or persuasion to a commitment to a plan of action. The situational influences, in addition to the indirect effect, may be directly provided by a saturated environment from the guide that triggers of action, such as a slogan (exercise) that necessitates the characteristics of the behavior of exercise; in some way requires an obligation to exercise health (Yang, Luo, & Chiang, 2017).

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Considering the important roles of interpersonal influences and situational influences on behavioral exercises as investigated in various studies (Hsiao et al., 2017; Mansfield et al., 2017; Shirvani, Sanaeinasab, Tavakoli, Saffari, & Me'mar, 2017), it is necessary to predict the factors influencing stretching exercise behavior among office employees to improve and promote the SE behaviors.

PURPOSE

The present study aimed to predict the interpersonal and situational influences for stretching exercise (SE) among office employees.

METHODS

Design and samples

This study employed a cross-sectional research design. The samples were 430 office employees who were working in the three health networks of North, East and Shemiranat regions of Tehran and were affiliated to a university in Tehran, Iran. Ten health networks were randomly selected from May to September 2017. From each health network, office employees were randomly selected from eight comprehensive health service centers. The inclusion criteria were the individuals working in the university as an employee and working with the computer in his/her workplace. The excluding criteria were individuals sufferings from any disability or illness that prevented them from doing SE or being not allowed to do SE because of their physicians' recommendation.

Instruments

In this study, the demographic questionnaire, and self-administered questionnaires based on HPM (interpersonal influence, situational influences) regarding SE behaviors were used. The interpersonal influence was assessed using a 5-item questionnaire. This question evaluated through a 5-option scale: 1=never, 2=sometimes, 3=often, 4=very often, and 5=always. The rate for this statement was from never to always in a range of 1 to 5. The total score ranges from 5 to 25 points; the higher score showed a better status. Situational influences were assessed using a nine-item questionnaire. The rate for each statement was evaluated through a 3-option scale from never to always in a range of 1 to 4. The score criterion is from 9 to 36 points (Delshad, Tavafian, & Kazemnejad, 2019). Questions that assessed the behavior of stretch marks included variables such as age, sex, marital status, occupation, level of education, work experience with computers, economic status, number of children and undergoing treatment. The self-report was completed by the individuals at the time of 20 minutes.

The content validity of the questionnaires was confirmed by the experts' panel. These experts were 15 specialists (Sihawong, Janwantanakul, Sitthipornvorakul, & Pensri, 2011), So, by studying books and similar articles and summing up the themes of interviews with health education and health promotion specialists and sports medicine experts, a questionnaire was set up and provided to professors, experts and experts in health education and health promotion of Sports Medicine and Occupational Health. The specialist's panel reviewed all of the items and supplied their consultants with a questionnaire and evaluated the questionnaire. The Content Validity Index (CVI) of the

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interpersonal influences and situational influences were 0.88 and 0.78, respectively. It is also necessary to compute Content Validity Ratio (CVR) as a necessary criterion for terms "is useful, but not necessary, and does not require a statement" (Delshad et al., 2019). In this study, the content validity ratio of the interpersonal influencers was 0.82, and for the situational influences of 0.79. To determine the internal consistency of the questionnaire, a preliminary study was carried out on 30 employees with similar criteria to the research sample. The alpha range for interpersonal influences was 0.71 and for situational influences was 0.71, indicating the internal consistency of the questionnaire. A questionnaire was used to measure stretching exercise behavior (Hutchinson et al., 2018).

Data analysis

The collected data were analyzed using SPSS software version 16 and Spearman correlation and logistic regression tests.

Ethical consideration

All ethical issues were considered in this study. The Research Ethics Committee of Tarbiat Modares University approved the study in May 2016 (ID 52/1115 IR.TMU.REC.1395.329).

RESULTS

Socio-demographic characteristics of the respondents

In this study, the mean age of subjects was 37.1±8.04 years. Most of the subjects were in the range of 34-34 years old (25.2%), and the lowest percentage was in the target group of age 20-24 (6.2%). Furthermore, 73.1% were women, and 26.9% were men. The mean score of interpersonal influencers was 11.55±4.6, and the mean of situational influences was 14.21±4.5. A total of 83 employees were treated for skeletal musculoskeletal problems (Table 1).

Table 1. Socio-demographic characteristics of the respondents

Variables	*f*	%
Age (37.1±8.03)		
21-24	26	6.2
25-29	45	10.7
30-34	106	25.2
35-39	78	18.6
40-44	97	23.1
45 and above	68	16.2
Number of children		
No child	176	41.9
single child	126	30
Two	89	21.2
Three	27	6.4
Four	2	0.5
Work experience with computers		
≤5 years	220	52.4
5-10 years	121	28.8

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Variables	*f*	%
11-15 years	55	13.1
16-20 years	23	5.5
≥20	1	0.2
Suffering from WRMSD pain.		
Yes	154	36.7
No	266	63.3
Economic situation (Rials)		
Less than ten million	60	14.3
Ten million	80	19
10 to 20 million	140	33.3
More than 20 million	140	33.3
Undergoing treatment		
Yes	83	19.8
No	337	80.2

Predictors of stretching exercise behavior based on health promotion model

The mean and standard deviation of the interpersonal influence score and the situational influence and the area to be acquired are presented in Table 2. As Table 2 shows, the situational negative influence was a negative predictor for engaging in stretching exercise [OR (%95CI): 0.94(0.87-1.02), *p*=0.158)]. Furthermore, the results of this study showed interpersonal influences [OR (%95CI): 1.42(1.21-1.41), *p*=0.003)] was a positive predictor for the stretching exercise behavior.

Table 2. Predictors of stretching exercise behavior based on health promotion model

Scale	Mean±SD	Acquired range	OR(%95CI)	S.E	Beta	*p*
Interpersonal influence	4.6±11.52	0-25	1.42(1.21-1.41)	0.040	0.141	0.003
Situational influences	4.5±14.21	0-36	0.94(0.87-1.02)	0.040	-0.057	0.158
Stretching Exercise	2.48±17.64	35-0	1.41(1.13-1.43)	0.047	0.232	0.004
Undergoing treatment	-	-	4.15(1.54-11.19)	0.506	1.42	$p<0.05$
Age	37.1±8.04	-	0.50(0.47-0.52)	0.50	0.056	$p<0.05$

The results of the analysis of odds ratios showed that there was a significant relationship between the underlying condition of the employees' work history due to musculoskeletal problems and stretching exercise behavior. Thus, the employees who were treated had a higher mean score for their stretching exercise behavior and the probability of gestures of stretching of the treated office employees' maybe 1.4 times more likely to be non-existent or not treated because of the perceived risk of non-exertion in the past. The variable of being treated as an accelerating factor in stretching is considered.

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Relationship between predictors of stretching exercise behaviors with demographic characteristics

The Spearman correlation test was used to examine the correlation between Situational Influences and Interpersonal Influence and Stretching Exercise behavior. The results are presented in Table 3.

Table 3. Relationship between predictors of stretching exercise behaviors and demographic characteristics

Scale	Age	Undergoing treatment	Interpersonal Influence	Situational Influences	SE behavior
Age	-				
Undergoing treatment	*r*=0.115**	-			
Interpersonal Influence	*r*=0.046**	*r*=-0.052	-		
Situational Influences	*r*=0.003	*r*=-0.031	*r*=0.144**	-	
Stretching Exercise behavior	*r*= -0.001**	*r*=0.77**	*r*= 0.54**	*r*=0.107	-

Spearman correlation coefficient= p<0.05 **

The Spearman's correlation coefficient showed that there was a significant relationship between interpersonal influencers and stretching behavior ($p<0.05$ and $r=0.54$), but between Situational Influences and Stretching Exercise behavior ($p<0.05$ and $r=0.107$), there was no meaningful relationship. Among the characteristics of respondents, there was a significant relationship between age and treatment in the office employees' ($r=0.15$, $p<0.05$); the correlation of this relationship indicates a low level of communication.

DISCUSSION

This study aimed to predict the interpersonal and situational influences for stretching exercise (SE) among the office employees. The results of this study showed that interpersonal factors were the important predictors of stretching exercise behavior among office employees. This result supports previous studies reporting that factors of interpersonal influences were predictable. However, intrinsic influencers had no effect on them, and there was no correlation between these two interspecific and interpersonal criteria (Cho, Choi, Lee, & Cho, 2015; McMahon et al., 2017).

Interpersonal influences are defined as cognitions concerning the behaviors, beliefs, or attitudes that decide people' predisposition to engage in health-promoting behaviors. The situational influences on health promotion behaviors include perceptions of existing options, desires or needs, and aesthetic features of an environment. In order to have situational interactions, individuals must be associated with the cognitive symptoms associated with the behavior in question. The behavior of office employees who do not engage in the usual exercise program could be prompted or inhibited through associated interpersonal influences, situational influences, and facilitators or barriers (Cho et al., 2015).

In the present study, due to the difference in age group, the severity of the relationship between interpersonal influencers and stretching exercises in the study of the status quo

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with correlation is better evaluated. Employees who have high interpersonal influences and those who are persuaded to a commitment to a plan of action stretching behaviors do so faster than those who do not interact with interpersonal influences or situational influences. In the older group, people are more interested in interpersonal relationships because of their loneliness, and this should not be neglected. However, in a qualitative study by Cho et al. (2015), the age of 62.6% (more than half of the healthy adult participants in urban areas) had no significant effect on health promotion of their physical activity. Furthermore, a review of the role of yoga in patients reported that there is a high degree of heterogeneity in the types of educational interventions in the study. The duration of treatment, exposure to the disease, various symptoms of the disease were as situational factors, disadvantages, benefits, and warnings in the person (Rao et al., 2017).

In the present study, planning with the help of interpersonal influences and situational influences strategies has had a strong impact on encouraging office employees' to elucidate stretching behavior. Due to the planning, the process of pre-occurrence and predetermination illuminates and helps fill the gap of intent and behavior (Lee, Small, & Jacobsen, 2017). In this study, strategic planning using interpersonal influencers was one of the factors influencing the behavior of stretching exercises, and with the help of variable in the past due to musculoskeletal problems, of stretching behavior. Employees with high interpersonal influences do this behavior faster than those who do not interact with interpersonal influences. This study emphasizes the strategies for using interpersonal influences and special attention to the role of health planning. Therefore, it can be said that individuals are required to have appropriate planning strategies based on employees' beliefs to conduct stretching behavior, as what Kaushal and his colleagues have pointed out this long ago (Kaushal, Rhodes, Spence, & Meldrum, 2017).

The result of the present study is in line with a study by Wu, Pender, and Yang (2002), reporting that among the major determinants of health behavior in the health promotion model are interpersonal influences and situational influences. The reason for the difference between predictors can be found in cultural differences in the importance of barriers to physical activity. It seems that beliefs about the benefits of sport and barriers among Iranian employees are more pronounced (Wu, Pender, & Yang, 2002). As in the study of Cain, Meehan, Roche, Clarkin, and De Panfilis (2019), interpersonal influences affect everyday life and are an important dimension for interpersonal performances.

In numerous studies (Cho et al., 2015; Delshad, Hidarnia, & Niknam, 2014; McMahon et al., 2017; Sihawong et al., 2011), the positive effects of stretching and yoga have been brought; however, in comparison with the present study, the history of treatment in the office employees' is considered as an accelerating factor in stretching. In the present study, the history of treatment for musculoskeletal problems is a good predictor of staffing for regular stretching exercises. However, individuals also experienced a reduction in their stressful behavior while enjoying yoga (Sullivan, Carberry, Evans, Hall, & Nepocatych, 2017). Meanwhile, another study showed that yoga and boosting exercises on back pain did not have any significant statistical effect compared to adherence to evidence-based methods (Brämberg, Bergström, Jensen, Hagberg, &

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Kwak, 2017). These results indicate that the behavior of employees in different populations is low regarding the easiest way to perform stretching exercises.

In the present study, there was no significant relationship between ages and stretching behavior. This result is inconsistent with a study by Palmer and Thompson (2017) and consistent with a study by McGuinness et al. (2017). Comprehensive health services centers are considered as an appropriate opportunity for promoting sports in health care providers and health team offices (Learmonth et al., 2017). In another study, the role of planning in health behaviors has been mentioned (Issel & Wells, 2017). There is no evidence of stretching exercises and situational influences and beliefs about work constraints (Walker, Tullar, Diamond, Kohl, & Amick, 2017).

Among the limitations of this study was the collection of information on the behavior of stretching exercises through self-reporting that individuals may report their behavior more than real. Also, considering the cross-sectional nature of this study, it is suggested to design and implement quasi-experimental studies to determine the exact effect of interpersonal influences and situational influences on stretching behavior. In addition, in this study, the sampling was based on cluster sampling, which might not be able to generalize this information to all Iranian office clerical groups. Despite the existing limitations, it seems valid in view of consistency with many other similar studies.

CONCLUSION

This study showed that the interpersonal factors were the most predicting factors for stretching exercise behavior among the office employees. Therefore, interpersonal factors to facilitate the acceptance of behavior can be considered as a training principle attention. Future educational studies can be used to predict the present study.

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CONFLICT OF INTEREST

The authors acclaimed that they have no rivaling interests.

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The Effects of *Mompyeogi* Movement Exercise on Body Skin Temperature

Swanny T Widyaatmadja[1], Kim Young-Duk[2]

[1]Department of Nursing, STIKES Telogorejo Semarang, Indonesia
[2]Department of Environmental Engineering, Catholic Kwandong University, South Korea
Corresponding Author: Swanny T Widyaatmadja (swanny_tk@yahoo.com)

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ABSTRACT

Background: Spine stretching and flexibility exercise have been introduced by a group of *Mompyeogi* movement exercise (‘*mom’* as body and ‘*pyeogi’* as stretching) that is growing in the Republic of Korea. Although it does not move as fast as an aerobic exercise, the benefit of body organ stretching movement position on this movement exercise can be perceived by *Mompyeogi* participants.
Purpose: This study aimed to investigate the effects of *Mompyeogi* movement exercise on the alteration of body skin temperature.
Methods: A pre-post experimental study was carried out to 20 participants who were divided into two groups: male and female. Each group was assigned to do either normal breathing (chest respiration) or deep breathing (abdominal respiration) when performing Mompyeogi movement exercise. Body skin temperatures were measured a couple of times before, during, and after the exercise using thermal infrared cameras. The collected data were analyzed descriptively in frequency and percentage.
Results: Results showed that *Mompyeogi* movement exercise combined with deep abdominal breathing methods increased body skin temperature. Participants who were in low group temperature (t<33°C), underweight, and had normal body mass index showed an increased body skin temperature after the exercise. On the other hand, participants who were in the group age of 60-74 years old performing normal chest respiration showed a stable body skin temperature after the exercise.
Conclusion: Stretching organ as a part of basic *Mompyeogi* movement exercise combined with deep abdominal breathing increased the body skin temperature. Future research of *Mompyeogi* movement exercise needs to explore a self-healing effort as a preventing and promoting programs contributed to holistic nursing practice.

Keywords: Body skin temperature; inhalation; *Mompyeogi* exercise; infrared thermoregulation

BACKGROUND

The placement of proper posture is required to support the correct alignment of the spine with instilling an active lifestyle. Posture determines the efficiency of any individuals’ breathing with a relaxed, straight sit with a strong core, active scapula but not tight, and spine erect to expand ones’ chests to take a larger breath, and have more energy on daily activity (Golubic, 2013). A behavioral study showed that the mastery of

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body language posture could influence a wider respiratory and have well-preserved spine discs (Huang, Galinsky, Gruenfeld, & Guillory, 2010). The process of spine stretching and flexibility exercise introduced by a group of *Mompyeogi* movement exercise is one of the spinal strengthening exercises that is expanding in South Korea. The word *'mom'* meaning as body and *'pyeogi'* meaning as stretching, have become the basic concept of *Mompyeogi* movement exercise to keep a good body position in any activities. Although the body is not moved as fast as an aerobic exercise, the benefit of body organ stretching movement position in this exercise can be perceived by *Mompyeogi* participants. Body organ stretching position is the main position of *Mompyeogi* movement in which cannot be found in the other exercises (Kyung-Yong, 2017).

During physical exercise, there is a changing on energy for a muscle pump, body temperature regulation, breathing rate, heart rate, carbon dioxide blood, and pH (Gerald et al., 1995). The physiological response to exercise depends on the intensity, duration, and frequency of the exercise as well as the environmental conditions (Deborah, Keith, & George, 2004). A similar opinion stated that during exercise, and immediately after that, active skeletal muscles become significant heat sources. Relating to stretching exercise, there is an impact to the muscle contraction, increasing blood flow affect to thermoregulation of body temperature after exercise (Nigel, Michael, & Glen, 2014; Taylor, Wilsmore, Amos, Takken, & Komen, 1998).

The skin temperature represents the main variable controlling the heat exchanges at the body/environment interface and can significantly vary according to the environmental condition, intensity, and duration of the exercise. As the exercise progresses, the dynamics of physical activity have a noticeable effect on skin blood flow and temperature. The time-evolution of skin temperature during exercise can give useful information about the adaptation of the subject as a function of a specific type, intensity and duration of exercise (Tanda, 2015); the skin temperature response depends on the type of exercise and the level of training (Nigel et al., 2014; Tanda, 2015). It is supported by several previous studies about thermal infrared camera assessment of skin temperature (Bernard, Staffa, Mornstein, & Bourek, 2013; Choi & Lofness, 2012). Advances in body temperature measurement contribute to thermoregulation research and measurement of human body temperature during clinical and exercise settings. The thermoregulatory mechanisms play important roles in maintaining physiological homeostasis during physical exercise and rest (Lim, Byrne, & Lee, 2008; Mitchell, Harris, Cordaro, & Starnes, 2002).

Previous research showed that body temperature investigates the possibility of the use of human body skin temperature to assess thermal sensation by studying skin temperatures from ten body segments and analyzing the correlation between the physiological data: the skin temperature and overall thermal sensation. Results of this study revealed that skin temperature change rates (gradients) were more consistent with the thermal comfort condition than with the actual levels of skin temperatures of participants; and that the measured skin temperatures at their wrists provided more interpretable data than that of any other body segments (Choi & Lofness, 2012). The other study found that infrared thermal imaging can be an appropriate method for

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determining the temperature of organisms if this is understood as the surface temperature, and the surrounding environment and temperature are considered (Bernard et al., 2013). However, there has been no evidence of studies which measured local skin abdominal surface area temperature during exercise. Therefore, a thermal infra-red imaging camera was used in this study to measure the body skin temperature on organ stretching posture position of *Mompyeogi* movement exercise to get the benefit of the exercise. The thermal infra-red imaging camera as a non-invasive procedure and a risk-free technique detects local skin temperature on the abdominal surface area. It will represent the interface between the body and the environment that can reflect both the dynamic response and temperature reaction. This study also observed the relationship between gender, ages, body mass index (BMI), and distinguished between normal inhalation and deep inhalation.

PURPOSE

This study aimed to investigate the alteration of body skin temperature through the stretching exercise of *Mompyeogi* movement. This study also examined the body skin temperature according to the characteristics of the participants (gender, ages, body mass index (BMI) and breathing/ respiration types).

METHODS

Research design and samples

This study was tailored in a descriptive research design through an experimental study. The present study was conducted on 20 participants who were divided into two groups: male and female, evenly. The participants were purposively recruited from Wonju *Mompyeogi* Movement Association, Seoul, South Korea.

Intervention

Twenty participants were divided into two groups: male and female. Each group was assigned to do either normal breathing (chest respiration) or deep breathing (abdominal respiration), resulting in four different groups by gender and breathing techniques. For preparation, to eliminate the effects of the temperature due to the body metabolic food process, the participants' temperature measurement was performed at least 30 minutes after eating, smoking, or drinking a hot or cold liquid before taking skin temperature, as well as setting the participants in organ stretching position.

In this study, the procedures of organ stretching were started with: (1) lying on backup over a half-folded cushion placed on a cylinder-shaped pillow with a diameter of 15 cm, (2) raising arms overhead and slightly bend in "hands up" position, ensuring that part of buttocks touch the floor (the pillow was placed just below the seventh thoracic spine, added by a half-folded cushion to push the backbone moving upward), (3) staying in this pose with crossed legs for about 10 minutes and ensuring that shoulders were firmly pulled back while the chest wide opened, the mouth closed, and the neck should be vertical to the floor (doing normal/ deep breathing), and (4) getting up in one time after being 10 minutes in this pose.

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Measurement

In this study, body skin temperature measurements were recorded by infrared camera Sonel KT-640 Thermal Imager, a fully radiometric camera which records temperature at each point of the image-high-resolution TTT detector micro bolometric matrix (640 x 480 pixels, 25 µm) type. The absolute accuracy of the measurement was declared at 20°C±2% reading. Thermal sensitivity was <0.05°C at 30°C. This technology combines between visual and IR image, in a range temperature from -20°C to 35°C, the emissivity of body skin of 0.98, in working temperature of -15°C to 50°C. The recording was in the extended jpg format, and real-time monitoring was performed (Gruner, 2003).

All participants performed the procedures by lying on back position, while the pictures were taken on the anterior body of the abdominal skin surface area around the navel point. By using thermal imager infrared instrument KT-640, the temperatures were recorded three times, i.e., before the exercise, and two times during exercise in five and ten minutes. Standard measurement procedures were started with instrument preparation by setting up the equipment on human skin emissivity of 0.98, the temperature range between 30°C to 35°C, a distance of 0.5m to 1m, setting calibration, picture focus, captured and picture saved, and then move to the next participant. The thermal images were taken indoors at around 6 to 9 p.m., during the winter season, in room temperature of 24°C, and relative humidity of 70%.

Data analysis

Descriptive statistics using frequency and percentage were used to analyze the data, according to gender, age, and respiration methods.

Ethical consideration

The study was approved by the ethical committee of *Mompyeogi* Association and the Wonju *Mompyeogi* Movement Association, where the study took place. All respondents have informed the purpose of the study and signed an informed consent to indicate their voluntary participation in the study.

RESULTS

Twenty participants of Wonju *Mompyeogi* movement association were involved in this study. The participants consisted of 10 females and 10 males. The female participants were mostly in middle age (9 participants), had an average height and weight of 1.57 m and 54.7 kg, respectively, and had 5.2 years of the exercise experience. Meanwhile, the male participants were mostly the elderly (7 participants), had an average height of 1.68 m and weight of 68.2 kg, and 6.6 years of exercise experience (see Table 1).

Table 1. Characteristics of the participants

Data	Value	Female	Male	Total
Participant		10	10	20
Ages*				
Middle age	45-59	9	3	12
Elderly	60-74	1	7	8
Height (m)		1.57	1.68	

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Data	Value	Female	Male	Total
Weight (kg)		54.70	68.20	
BMI (kg/m^2)				
Underweight	<18.5	2	0	2
Normal	18.5-24.9	6	7	13
Overweight	≥ 25	2	3	5
Exercise experience (years) *(M)*		5.2	6.6	

**World Health Organization standard (WHO, 2011)*

Based on the skin temperature group, Figure 1 shows that the body skin temperature of seven participants (39%) in the low-temperature group (<33°C) increased after 5 minutes and 10 minutes of *Mompyeogi* movement exercise.

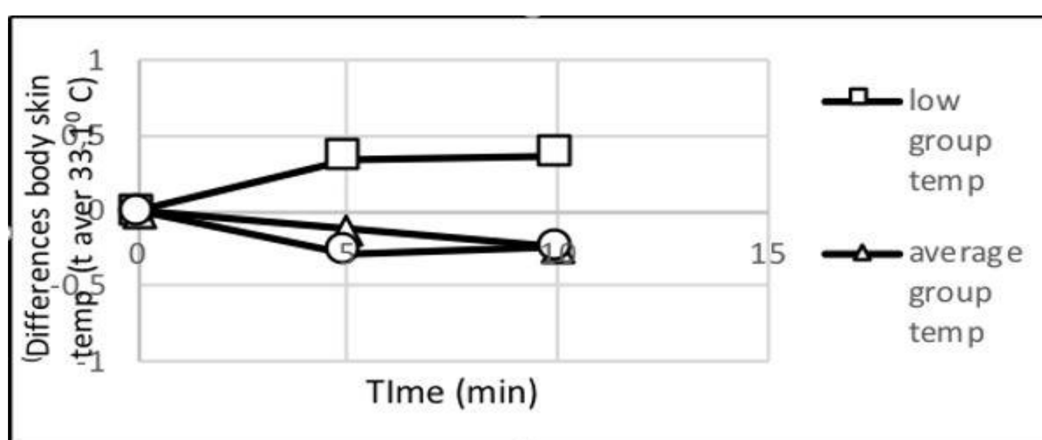

Figure.1. Temperature rate by time measurement on body skin temperature groups

Figure 2 shows that the temperature rates of 8 participants (44%) with chest (normal) respiration decreased after 10 minutes of *Mompyeogi* stretching exercise, while the other 10 participants (56%) with abdominal (deep) respiration showed an increased temperature rate after 10 minutes of exercise.

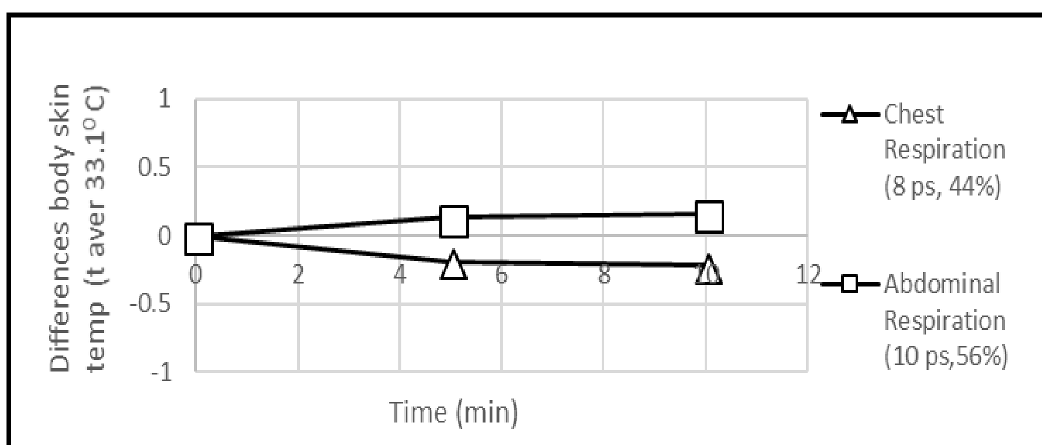

Figure. 2. Temperature rate by time measurement based on respiration methods

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Based on the BMI measurement, Figure 3 shows that 11 participants (67%) in normal level of BMI showed increasing temperatures after 10 minutes of exercise. Meanwhile, the underweight participants (11%) and overweight participants (28%) showed decreasing temperatures after the exercise.

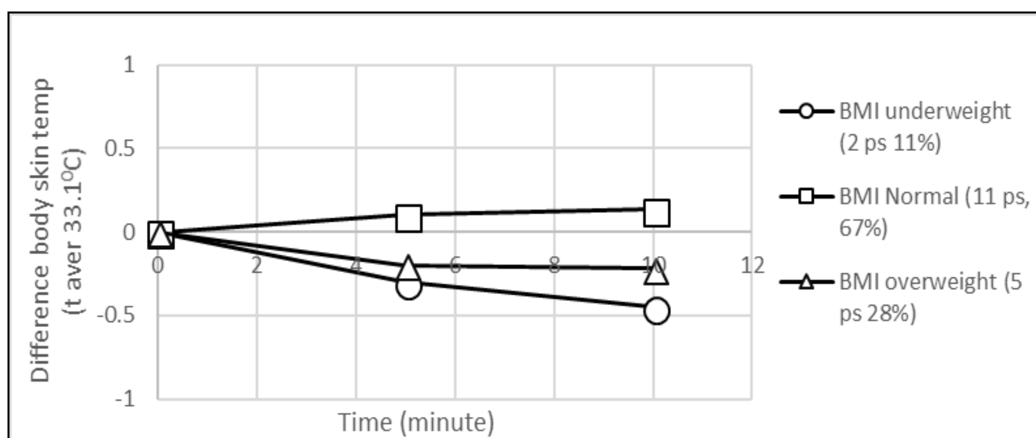

Figure 3. Temperature rate by time measurement based on Body Mass Index (BMI)

The results of combination assessment based on the relation of temperature groups and respiration methods showed that the body skin temperature of the participants in the low group temperature with chest respiration increased in 10 minutes of assessment as seen in Figure 4. A similar result was yielded in 6 participants from low group temperature with abdominal respiration. Meanwhile, the high-temperature group of 4 participants with chest respiration showed a decrease in 10 minutes. In the high temperature group with abdominal respiration, a decrease was found in 5 minutes, and an increase was found in 10 minutes.

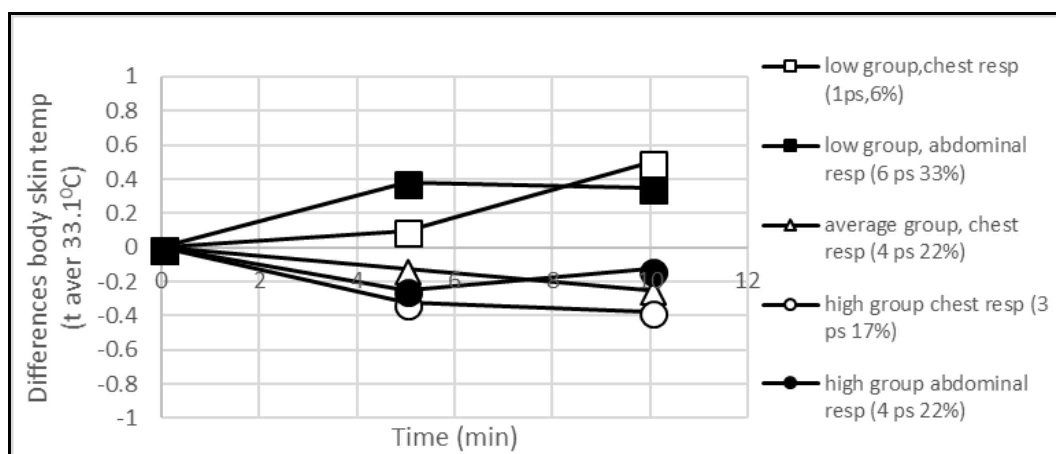

Figure 4. Temperature rate by time measurement based on skin temperature groups and respiration methods

Figure 5 shows the increasing body skin temperature on female and male participants performing abdominal (deep) respiration.

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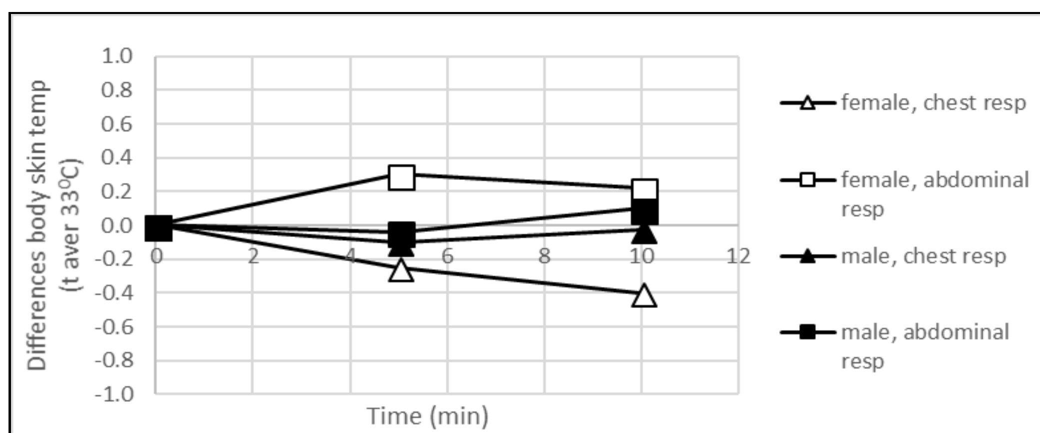

Figure. 5. Temperature rate by time measurement based on gender and respiration method

Figure 6 compares the middle age group with the elderly group based on their body temperature measured in differently ordered respirations. Figure 6 shows a meaningful increasing result for the participants of *Mompyeogi* in middle age group with abdominal respiration in the first 5 minutes, followed with a slight decrease in the remaining 5 minutes. On the other hand, the elderly group with abdominal respiration showed an increase in skin temperature in 5 minutes and a decrease after the 10-minute exercise.

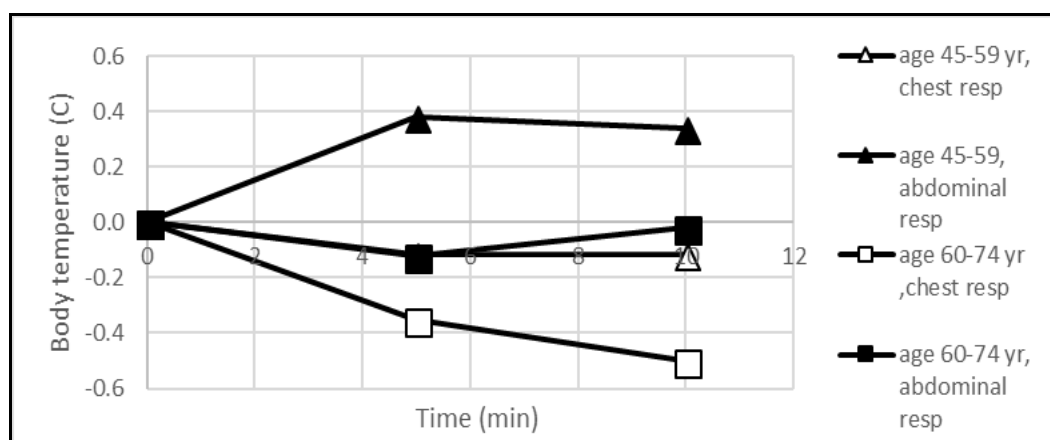

Figure 6. Temperature rate by time measurement based on age's groups and respiration methods

Figure 7 illustrates that temperature rate of underweight and overweight participants with chest respiration decreased at the end of 10 minutes of exercise, while the temperature rate of the underweight and normal level of BMI participants with abdominal respiration increased.

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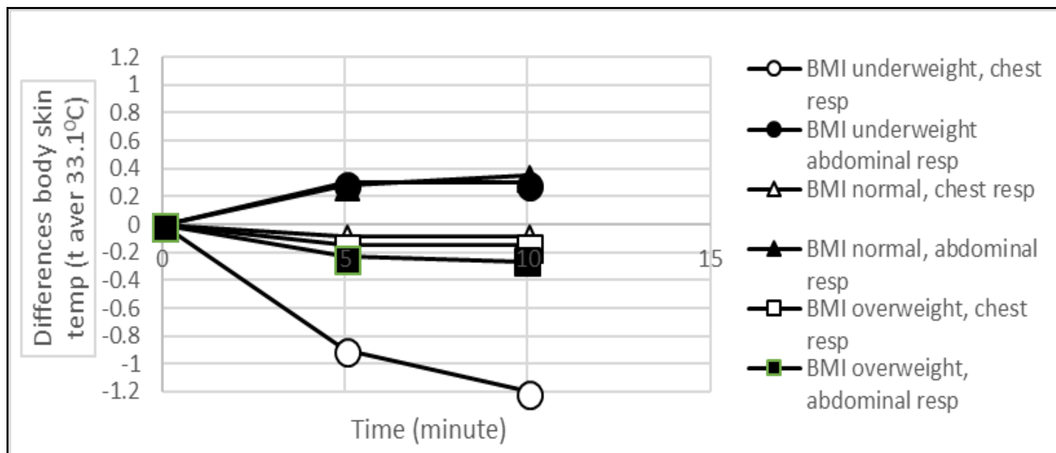

Figure 7. Temperature rate by time measurement based on BMI and respiration methods

DISCUSSION

This study involved twenty participants who fulfilled the requirement in the whole assessment screening mapping distribution. The analysis focused on the differences of skin temperature of *Mompyeogi* movement, on the position of body organ stretching, temperature group distribution, body mass index (BMI), and respiration methods related to gender and age group. The differences in skin temperature observed by the distribution of temperature group variations found that during exercise, the rate of energy increases rapidly known as the heat produced during metabolism. The contraction of large muscle groups was mainly responsible for the change in body temperature during exercise. More heat production means a more significant rise in body temperature during exercise. Conversely, in this study, it was found that the average temperature groups (22%) and high-temperature groups above 33°C (39%) decreased after assessment on 5 and 10 minutes of body organ stretching position. This result is related to a previous study of human body homeostatic systems, in which the brain hypothalamus works as the thermostat for body temperature control. Temperature receptors throughout the human body send feedback to the hypothalamus. If the hypothalamus receives an indication that the body is either too hot or too cold, the brain gives a signal to the body to react accordingly to the temperature receptors; the skin sends the heat signal to the hypothalamus (Giovanni, 2016; Paulev-Zubeita, 2017).

The differences in skin temperature variance were observed by the distribution of respiration methods. This result agrees with another report that core body warming results are achieved with breathing techniques (Maria, James, Jennifer, & Klaus, 2013). Tibet study and western study obtained the same opinion that practicing the phase of deep breathing is a safe technique to regulate core body temperature in a normal range. The participants with this technique were able to elevate their body temperature, within a limit, and reported a feeling of more energized and focused breathing technique which causes thermogenesis, which is a process of heat production. The depth of breathing refers to the amount of air taken in with each breath. In this occasion, the role of hypothalamus as a thermoregulatory circumference affects the respiratory system,

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including the lungs and breathing muscles, and the circulatory system including the heart, blood, and blood vessels (Paulev-Zubieta, 2017).

Differences in body skin temperature variance by the distribution of temperature group variations and respiration methods indicated that the body is equipped with mechanisms to prevent large changes in temperature. Exercise is a high-energy condition, requiring the breakdown of nutrients to fuel muscle contraction. The increased metabolism observed in muscles is correlated with elevated tissue temperatures and adaptations in blood flow and sweat production, serving to regulate heat removal during muscular exercise. The body has the capacity to filter excess heat energy if temperatures increase above a certain point. The first step in this process is transporting the heat from muscle tissue to the surface of the skin. This is accomplished through a process known as vasodilation. Capillaries, the smallest blood vessels in the body, can increase their diameter to accommodate large volumes of blood. Blood flow to muscles may increase, thus facilitating the removal of excess heat. Subsequently, capillary networks near the surface of the skin will dilate to increase blood flow and facilitate the removal of heat from the body. During exercise, through vasodilation of capillaries in the skin, our body is attempting to expel the excess heat that generated in our muscles, then follow with the negative feedback of thermoregulation (Michael, & Darren, 2015).

The differences in body skin temperature variance observed by the distribution of gender and respiration methods indicated that in this condition core, body warming is achieved with breathing techniques. Practicing deep breathing is a safe technique to regulate core body temperature in a normal range. Skin temperatures become more heterogeneous. Protective mechanisms buffer heat losses with elevated subcutaneous adiposity and distribution in female, insulating the skin from its heat source, the body core (Nigel, Michael, & Glen, 2014). Meanwhile, the differences in body skin temperature variance by the distribution of age group and respiration methods showed a meaningful increasing result for the participants of *Mompyeogi* in the average age of 45-59 years old with abdominal respiration. Meanwhile, the elderly age with abdominal respiration showed an increase in 5 minutes and a decrease after 10 minutes of exercise.

The relation between body mass index (BMI) and skin temperature in different body areas have been investigated and still result in different opinions between the findings of BMI classification in normal weight, overweight and obese, and they have not related to thermal response at skin level (Fernandez-Cuevas, Marins, Serrano, & Arnaiz-Lastras, 2012; Savastano, 2009). Furthermore, greater sub-cutaneous abdominal adipose tissue provides significant insulation and cooler temperatures, and the mean of body surface temperature is dependent on body fat (Chudecka, Lubkowska, & Kempińska-Podhorodecka, 2014).

Differences in body skin temperature variance by the distribution of BMI and respiration methods showed that *Mompyeogi* organ stretching exercise with deep inhalation using abdominal respiration would increase the body temperature rate. The layer of female fat is different from male, which is influencing the process of insulating in their body, and the work of exercise requires energy. The muscles break down the nutrients, such as glucose and fat, into the more readily processed forms of energy.

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Adenosine triphosphate, or ATP, is a ubiquitous form of energy used by muscle cells throughout the body. The cells are continually producing and breaking down ATP, and these chemical reactions produce heat. When exercising is begun, the rate of ATP turnover increases tremendously, thus increasing the temperature of the muscle. During exercise, when multiple muscle groups start contracting and increasing their activity, large amounts of heat are produced. In accordance with the basic laws of thermodynamics, the heat will flow away from its site of production and increase the temperature of the surrounding fluid and blood. Most biochemical reactions occur optimally at specific body temperature; however, muscle activity during exercise often leads to increases in total body temperature.

CONCLUSION

The stretching of body organ using *Mompyeogi* movement exercise combined with proper respiration methods has given benefits in increasing body temperature that creates better thermoregulation in the human body. This study showed that there was a relationship between the organ stretching using *Mompyeogi* movement with abdominal respiration or deep inhalation methods and the increasing body skin temperature among the participants from the low-temperature group (<33°C) and the underweight and normal body mass index (BMI). Organ stretching using *Mompyeogi* movement exercise has a good impact on the well-trained participants. Further research of *Mompyeogi* movement exercise needs to explore a self-healing effort as a contributing prevention and promotion programs for holistic nursing practice.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Filial Piety: From the Perspective of Indonesian Young Adults

Rahmi Setiyani[1], Carol Windsor[2]

[1]Nursing Department, Faculty of Health Sciences, Universitas Jenderal Soedirman, Indonesia
[2]School of Nursing, Faculty of Health, Queensland University of Technology, Australia
Corresponding Author: Rahmi Setiyani (rahmi.setiyani@unsoed.ac.id)

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ABSTRACT

Background: Filial piety refers to expectations for children to respect parents and fulfill care responsibility, including provide direct care and support them in their old age. However, socio-demographic changes might shape how young generation would see and practice the value of filial responsibility in parent's old age.
Purpose: This study aimed to explore the meaning of filial responsibility among young adults within the social context of Indonesia.
Methods: Symbolic interactionism formed the framework for this study. The constructivist grounded theory method guided the analysis of the data obtained from in-depth interviews with eight university students. The participants were selected using a purposive and snowball sampling technique with the following criteria: 18 years old or over, currently enrolled as a student and had living parents.
Results: The result showed that redefining the meaning of filial responsibility was obtained as the main theme which linked all four categories: 'I am the one', 'not institutional care', 'the gendering of caregiving', and 'it is okay to do so'. The findings revealed that the value of filial responsibility was still upheld by Indonesian young people. However, their views had been changed somewhat from the traditional practices which were family oriented and highly gendered to a more contemporary form where caregiving was extended to non-family caregivers and supposed to be less gendered in practice.
Conclusion: This study offers an insight into the shifting patterns in elderly caregiving and support in Indonesia. The findings also indicate the need to further promote gender equality in elderly caregiving.

Keywords: Elderly caregiving; filial responsibility; population aging; young adults

BACKGROUND

There is a rapidly increasing aging population worldwide. In Indonesia, the proportion of persons aged 60 years or over in 2017 represented 9 % of the population, and by 2050 the country will be among the top ten countries with the largest number of elderly persons (United Nations, 2017[a]). Population aging is projected to have a profound effect on the support ratio. United Nations (2017[b]) reported that the support ratio for an older Indonesian in 2010 was 13. However, this number is projected to continue declining, and by 2035, will have fallen to 6.4 (United Nations Population Fund [UNFPA], 2014). These low ratios highlight the economic and political burden that many countries are

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likely to deal with in the coming decades regarding health care, pensions, and social protections for a growing older population. The Indonesian government has taken significant steps to protect the health of all citizens through the implementation of the national health protection program. However, this is not followed by the progress in economic and social protection, especially those working in the informal sector (Widjaja & Simanjuntak, 2010). Consequently, support for elderly people will be affected.

In Indonesia, long term support for older people is usually provided by family members, particularly adult children, because government support is limited (Kadar, Francis, & Sellick, 2013). Besides, the presence of value of filial piety has also shaped this reality. Filial piety typically refers to expectations for children to respect parents and fulfill care obligations towards them. These may include providing direct care and supporting parents in their old age (Chappell & Funk 2011). However, social changes, including rural to urban migration, changes in the living arrangement, the decline in family size and globalization, female participation in the labor force and changes to family size and structure, have raised concern over the availability of the support (Kadar, Francis, & Sellick, 2013). These changes may also shift how people would see and practice the value of filial responsibility.

The current issue of long term family support for older people elderly parents in Indonesia remains under investigation. Therefore, to determine future needs regarding elderly care in Indonesia, it appears timely to explore the current situation by investigating young people's perceptions of their responsibilities in the provision of care for older people, specifically for elderly parents. The view of the young generation would be important since they will experience the social and cultural changes and be prospective caregivers for their parents in old age.

PURPOSE

This study aimed to explore the meaning of filial responsibility as constructed by young people in Indonesia.

METHODS

Theoretical approach

This study used symbolic interactionism as the theoretical framework to depict the meaning of filial responsibility as perceived by young people in the social context of Indonesia. This theoretical approach is situated within a broad tradition dedicated to the study of human society and human conduct and with a specific focus on meaning formation through social interaction (Blumer, 1969). There are three basic assumptions of symbolic interactionism: (1) people act toward things on the basis of the meanings that things have for them; (2) the meaning of things is derived from social interaction with others; and (3) meaning is handled in and modified through an interpretative process (Blumer, 1969). In Indonesia, people engage with norms and social expectations regarding a responsibility to look after elderly parents. Symbolic interactionism offers a perspective to understand young people's perception of filial responsibility by getting inside the process of meaning construction, examining the process from the perspective of those who engage in the construction process and taking into account various factors

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in the meaning construction process, rather than simply examining the presence of various internal and external factors or any changes in their social world.

Participants

Participants were undergraduate students in a state university in Central Java, Indonesia. University students were selected because they possibly had to negotiate dilemmas in the future over choices between employment and caring responsibilities. Participants were selected using purposive and snowball sampling techniques. They were screened for their eligibility to participate in this study based on the criteria that they were 18 years old or over, currently enrolled as a student at the university where the study was conducted proven by student ID card and had living parents (one or both).

Data collection

In-depth interview was employed to generate understanding about an individual's interpretation of filial responsibility. This method was chosen since it suited the methodological and theoretical position of this study. In-depth interviewing enables the researcher to understand an individual point of view and is closely related to the development of the interpretive research tradition (Minichiello, Aroni, Timewell & Alexander, 1995). The interview guide was formulated using the following steps: (1) writing down the larger research questions of the study and outline the major areas that are relevant, (2) developing questions within each of these broad areas and adjust them to fit kinds of respondents, (3) adjusting the language according to the respondents, (4) developing open-ended type of questions to elicit more detailed responses, and (5) arranging questions to meet the logical flow of the interview.

The interview was face to face and took place in a mutually agreed upon setting. The interviews were conducted in Bahasa Indonesia and audio-recorded, each lasting for 55 minutes to 70 minutes. Throughout each interview session, the researchers addressed the topic and questions to guide the discussion. The interview was started using an open-ended starting question, such as "What do you think are the responsibilities of children toward their elderly parents?" When participants introduced particular ideas, follow up questions would be asked to explore. Following were a few examples of the questions to guide the discussion "In your opinion, who should provide the support?", "Who should assume the responsibility?", "How do you think the responsibility should be demonstrated?", "Can you explain other ways to demonstrate the filial responsibility?", "Do you think that the practice of support provision will change in the future?".

Ethical considerations

Ethical approval for the research was gained from the Human Research Ethics Committee of the Queensland University of Technology (QUT). Participants were given information about the aims and the nature of the research, including the right to refuse and withdraw from participation at any time, before signing the written consent. Confidentiality of the participant was preserved by limiting access to the data only to the researcher and the supervisory team. For securing the anonymity, the participant's name was replaced with an ID number in the data labeling.

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Data analysis
Data were transcribed verbatim by the researchers after the completion of each interview. Transcriptions were in Bahasa Indonesia to preserve the originality of meaning. When the data analysis was finished, the codes and key quotation were translated into English. Constructivist grounded theory methods guided the process of data analysis. The analytical process began through the process of coding, which was conducted in three phases: initial, focused, and theoretical (Charmaz, 2006). Throughout the process of analysis, memos were written in addition to the process of coding to keep the researcher grounded in the data and to increase the level of abstraction of ideas (Charmaz, 2006).

Rigor
Evaluation criteria, consisting of credibility, originality, resonance, and usefulness, were used to determine the rigor of this study (Charmaz, 2006). To ensure the credibility of the study, the researchers had carefully chosen methodology, participants and data collection method so that it was congruent with a research problem, as well as stayed close to the data during analysis and provided an adequate number of quotation in the report. Regarding originality, this research offered new insights into the process of the social construction of the meaning of filial piety in Indonesian society. There was no published research on perceptions of filial piety within the Indonesian context when this study was conducted. A clear description and direct quotations were provided in the written report so that readers who have no direct experience with the study context can reflect upon the meaning of filial piety in their situation and thus enhanced the resonance of this study. The individual participants might not have a direct benefit from this study. However, it has been indicated that this study provides a better understanding of the current situation and future trend in elderly care in Indonesia.

RESULTS
The results of the study showed that out of the eight participants, four were females, and four were males. All participants were single and aged of 18-23 years old. All participants had both living parents (father and mother). Majority of them were from Java Island and now living separately with parents (different province or city) due to study. Participants were from various departments (study major).

Redefining the meaning of filial piety
This study aimed to explore the meaning of filial responsibility as constructed by young people in Indonesia using symbolic interactionism approach. Redefining the meaning of filial piety constituted young people's perceptions of their responsibility in the provision of care for elderly parents. This core category comprised of four categories: 'I am the one', 'not institutional care', 'the gendering of caregiving', and 'it is okay to do so'. The first three categories depicted the traditionally accepted elderly caregiving practice where family members and particularly women assumed the role of a major provider of elderly care. Meanwhile, the last category referred to justifying and accepting less conventional practices of elderly care.

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I am the one

This category depicts young people's views of the caregiving role. They perceived themselves as the one responsible for caring for parents as they aged. There are five different meaning that the participants attribute to their future caregiver role.

First, the caregiver role is perceived to be an enactment of filial obligation. Fulfilling the filial duty is perceived to be a matter of personal choice that comes voluntarily and with no pressure from anyone.

> "I don't think my family; my parents would ever demand me to do that (giving supports, taking care of) as they aged. That is purely my wish" (R.7).

Second, the caregiver role is viewed as a fulfillment of social expectations. The following excerpt indicates the expectation of parents of filial support from children.

> "My parents said that children are the only hope they have for support. "If not you (children), who will take care of us in the future?" said my parents" (R.4).

A perceived sense of indebtedness also guides young people in this study to assume the caregiver role and to provide future support for elderly parents. Time to repay their sacrifices indicates a pattern of reciprocal exchange between parents and children whereby children perceive an obligation to repay parents for past sacrifices.

> "We have to remember that when we were very young, our parents were so busy taking care of us. So, if now it is time for us to repay their sacrifice, why don't we just do it" (R.1).

Role modeling provides an additional explanation of the construction of caregiver roles among young people in this study. It is common among those living in three-generation households to be exposed to caregiving environments. Thus, in engaging in intense interactions with a caregiving situation, the younger generation has an opportunity to define their own value of intergenerational support and to act accordingly. Participants cited that parents were the role models for elderly care.

> "I'd like to do what my parents did for their parents (looking after them)" (R.2).

Finally, young people perceived that assuming filial responsibility was a demonstration of adherence to religious teachings as it was cited in the holy book.

> "It has been described in the Quran (The Muslim holy book) about children duties toward parents, and I will do my best to observe it" (R.4).

Not institutional care

This category highlights young people's understanding of institutional care. It appears from the study that this form of service has not yet been largely accepted as an alternative for elderly care in Indonesia for various reasons. Nursing home placement, in the participants' view, is the converse of a belief in filial obligation. As they perceived

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that institutionalization violates the value of filial piety, they were critical of the formal use of care and endorsed care of elderly parents at home.

> "It (admitting parent into a nursing home) is contrary to my belief about filial piety" (R.1).

The hesitation of young people to use formal care services as an alternative care arrangement for elderly parents is also shaped by the view that elderly care is a matter of family responsibility. Institutional care service, in their view, is aimed at elderly people who have no family.

> "When they still have family, why do they have to live in a nursing home?" (R.8).

A perceived negative judgment from the society and lack of benefits further hinder adult children from considering institutional care as a future care arrangement. The following excerpts reflect these views.

> "People will see me cynically. Though they might not show it explicitly. I thought I would have a bad image from the society. How could a child send the parents to a nursing home?" (R.1)
> "They may receive good physical care there (at the nursing home), but how about their psychological needs?" (R.7)

The gendering of caregiving

This category suggests that women in Indonesia are still widely expected to play a dominant role in elderly caregiving.

> "My mother took care of my great grandpa. Sometimes my aunt helped her" (R.3).

Participants perceived that female and male adult children were assigned to distinct roles based on who had the primary role in the care and how care tasks were shared.

> "Men are less likely doing something dealing with the human body such as bathing, toileting, and so on. They prefer buying medicine, taking to doctor, giving emotional support, or doing some other things" (R.2).

The traditional gendered-based division on labor, which expects women to deal with domestic works and the belief that they have natural caregiver personality are suggested to construct this reality.

> "Men are expected to work for their family, while women have an obligation to take care of household responsibilities, children, husband and also parents" (R.3).

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> "Elderly parents are usually looked after by daughters. I don't know why. It's probably because they are more skillful in doing such things (caregiving tasks) than sons. Moreover, they are very patient and attentive" (R.5).

It is okay to do so

This last category depicts the less traditional way to enact the filial duty in Indonesia context. Adult children in this study start to revisit family as the primary care provider and consider using alternatives of elderly care, particularly paid caregiver as they see an inability to assume the caregiving role in the future because of work responsibility.

> "Actually, it is okay to do so (hiring a paid worker). It doesn't mean that they (children) release their responsibility to take of the parents. They may do so as they are busy working" (R.2).

Further, the demonstration of filial piety has shifted from day to day care to the symbolic one, such as paying a visit, as the phenomenon of migration among young people increases.

> "If my parents are getting older, and I am working out of my hometown, I will frequently pay them a visit" (R.4).

That the traditional gender role in Indonesia is being challenged was reflected in the view of the female participants that the responsibility to care for elderly parents should be equally distributed between female and male children.

> "There should be equality between men and women with regard to caregiving responsibility. Caregiving tasks should be shared" (R.1).

The core category of Redefining the meaning of filial responsibility captures the overarching perception of filial responsibility among young people in Indonesia. Redefining the meaning of filial responsibility reflects the process whereby young people give new meaning to children's responsibilities to their parents. They shifted the traditional practices in elderly caregiving, which is family focused and highly gendered and then constructed a new perspective of filial piety that moves beyond family and gender boundaries.

DISCUSSION

Changes in socioeconomic feature have left questions regarding the future of elderly caregiving in Indonesia. The changes might also affect how the value of filial responsibility perceived and enacted by the young generation. Filial responsibility (filial piety) is generally defined as a value emphasizing respect, honor, loyalty, and obligations of children to their parents (Tsai, Chen & Tsai, 2008). Although the discourse of filial piety was more pronounced in Chinese cultural contexts, it was subtly echoed in some studies in other Asian societies (Beh & Folk, 2013; Chan, 2017). The present study makes several advances towards a better understanding of the meaning of filial piety in Indonesia context.

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Young people in Indonesia initially defined filial piety in ways similar to previous generations. Elderly care was family focused whereby family members were the only persons deserving to provide the care for elderly parents. Involving non-family members in care was perceived as a violation of filial values. When elderly parents were cared for by 'non-blood' relatives, it was often considered to be something shameful and to be avoided (Schröder-Butterfill & Fithry, 2014). This caregiving norm could be found in some cultures, particularly those with a collectivistic orientation. However, in other culture, caregiving responsibilities go beyond immediate family members and involve kinship relationships, for example, close friends and neighbors (Pharr, Francis, Terry, & Clark, 2014).

Regarding the care arrangement, home in this study was considered to be the ideal place where care would be provided, and caregivers would co-reside with care recipients. The previous study suggested that intergenerational co-residence was an exemplification of filial piety. The stronger the filial piety expressed by adult children, the more likely they would co-reside with their parents (Zhang, Gu, & Luo, 2014). For the study participants, institutional care was generally unacceptable, and caring responsibilities sat firmly in the domain of women's work. As such, the involvement of men in care was understood as limited to less intense and non-direct care tasks. Thus, there was a clear boundary between being filial and non-filial regarding who performs the care and where the care takes place. Briefly, to be a filial child, one would need to commit to being caregivers of parents in the future, provide direct care to their elderly parents, deliver the care at home and assume clear gendered caring roles. In most cultures, caregiving was primarily prescribed based on the female gender, some regulated by rules which assign a strict hierarchy designating specific female family members, but others don't (Pharr et al., 2014).

However, the participants had also realized that in certain situations, the above-expressed meaning of filial piety did not readily fit with their reality. Social change, namely migration and the increasing participation of women in paid employment brought about by globalization and economic development, have given rise to challenges to the traditional practices of filial piety. Although young people in this study were not actual caregivers, a sense of ambivalence was obvious as they identified potential conflicts between care and work responsibilities. On the one hand, they wished to retain the responsibility to care for elderly parents but, on the other hand, realized that migration and participation in the workforce are inevitable and desired features of their futures. Migration became a strategy to improve the welfare of the family (Liu, 2014). For adult daughters, participation in paid work was obviously problematic since they were expected to provide direct physical care for elderly parents. The previous study suggested that industrialization and urbanization have contributed to some new caregiving crises. Adult children are becoming less available to provide a form of assistance that requires them to be physically present (Chen, 2011). However, a study suggested that it was not the event of migration that has a detrimental effect on the older generation, but rather the breakdown of the webs of interdependence and reciprocity (Liu, 2014).

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Where such conflict arises, young people are likely to re-examine previously held meanings of filial piety and construct new meanings. The perception that elderly parents should be taken care of by family members is no longer valid. In certain circumstances, such as when children are engaged in work, involving non-family members in elderly caregiving is no longer considered to be un-filial behavior. The boundary between being filial and non-filial in regards to who performs the care becomes less significant. This is reinforced in a study where nursing home placement has been considered to be alternatives for elderly care to cope with family caregiving crisis (Chen, 2011). The study suggested that older residents have become more understanding of their children's lives and are willing to accept institutional caregiving

Furthermore, filial children do not always have to co-reside and provide direct care. When children live away from parents, filial piety can be demonstrated in symbolic ways such as paying visits and sending remittances without undermining filial meaning. This situation confirms a previous study suggesting that the increased urban and transnational labor migration, especially adult daughter has affected adult children to practice filial duty in diverse ways such as financial remittance and regular communication (Chan, 2017).

Care work has been long defined as women's labor domain. An ethnographic study in rural Indonesia revealed that caring responsibility was likely to assume by daughters rather than sons, and it was more profound in matrilineal society (Schröder-Butterfill & Fithry, 2014). However, the gendering of caregiving is likely being revisited in this present study. Increasingly, it is considered that the responsibility for caregiving should be equal between genders and not solely a daughter's responsibility. In attaining higher education, female adult children in this study saw expanded opportunities to work outside the home. Female labor participation in Indonesia has increased from 44 % in 1990 to 51% in 2017 (World Bank, 2017). They foresaw that they would need to negotiate their caregiving roles, including task divisions. Previous studies indicated that, although both genders were strongly expected to support their elderly parent, task divisions tended to be gendered, even among sons who identified themselves as the main caregiver. The daughter was more likely to provide direct daily care, as opposed to sons who more likely to play indirect organizational roles, including monetary support (Lylod-Sherlock et al., 2018; Schröder-Butterfill & Fithry, 2014). Changes in attitudes of male adult children toward care are also integral to the process of redefinition of gender roles. Similar to breadwinning, they see that family caregiving should be considered to be a less gendered task. Even though there was a willingness, it seems that gender role in regards to caregiving was quite difficult to change. A study in transnational families found that the men who either migrate or stay behind acted as reluctant caregivers, while the women remained obliged to undertake care work (Fan & Parreñas, 2018).

The appearance of new meanings of filial piety does not mean that the processes of meaning construction have ended, but rather, it is an ongoing process. As long as individuals engage in interaction with diverse others and confront changes in their social worlds, filial piety will be continuously undergoing modification in its meaning. In the present study, the core category implies a shift in the meaning of the obligation to care

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for elderly parents somewhat from the conventional practices, which are family oriented and highly gendered, to a more contemporary form where caregiving is extended to non-family caregivers and thus appears to be less gendered in practice. A traditional perspective that views elderly caregiving to be exclusively the responsibility of family members and particularly woman has been challenged in this study. Change in the meaning of filial piety was also shown in previous studies. For example, Liu (2014) found a shift from the traditional pattern of elderly caregiving, which focused on the will and welfare of the elderly to mutual support between generations.

There are a number of limitations to consider in this study. First, due to time constraints, only eight interviews were conducted. Although an in-depth interview method was employed, the researcher considered that some issues could not be fully explored with this number of interviews. Second, the researcher had limited time to build a trusting relationship with participants prior to the commencement of an interview. Thus, it was possible that there might have been some hesitation on the part of the participants to share personal views and experiences with the researcher. Further, due to the choice of participants, the findings of this study only reflect the meaning of filial responsibility from the perspective of adult children who are expected to be caregivers in the future and who have a high level of education resulting in the increase job prospects. The perspectives of those who are in actual caregiving situations were not captured in this study.

CONCLUSION

The research findings have suggested that filial piety is an important value in Indonesia, and it continues to be upheld by society. However, the meaning has shifted alongside a changing social world. It is therefore important that health care professionals understand and appreciate the value of filial piety as it is perceived by an individual to provide culturally sensitive interventions. The hesitation in using formal care services, particularly institutional care, indicates the need to develop alternatives for elderly care, such as home care and day care services run by health professionals. Using these kinds of services, elderly people can receive sufficient support without relocating to nursing homes. This study also reveals the issue of gender differences in caregiving in Indonesian society. The findings imply the need to promote equality between men and women regarding caregiving responsibility.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Effects of Family Empowerment on Increasing Family Support in Patients with Type-2 Diabetes Mellitus

Iskim Luthfa[1], Iwan Ardian[2]

[1,2] Nursing Faculty, Sultan Agung Islamic University, Semarang, Indonesia
Corresponding Author: Iskim Luthfa (iskimluthfa@unissula.ac.id)

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ABSTRACT

Background: Patients with type-2 Diabetes Mellitus (DM) need support from their families to perform self-care to prevent complications; however, not all families have effective support. Family empowerment is a family-based strategic intervention which can improve family support to those patients.
Purpose: This study aimed to determine the effects of family empowerment on increasing family support in patients with type 2 DM.
Methods: This study used a quasi-experiment with non-equivalent control group design. Forty-six respondents were recruited using a consecutive sampling technique and assigned to the control and intervention groups. Respondents in the intervention group were given family empowerment intervention by visiting their homes four times, for 120 minutes each. In contrast, the control group was given the intervention of standard booklets. The Hensarling Diabetes Family Support Scale (HDFSS) was used to observe the family support on both groups. Data were analyzed by independent t-test.
Results: Results showed that there was a significant difference between the intervention and the control group with t=7.86 and p=0.00. There were mean differences of 2.29 and 0.28 between the intervention and the control group, respectively.
Conclusion: Family empowerment affected family support in patients with type-2 DM. Based on this study, it is recommended that the health workers advocate and encourage the family in the planning management of patients with diabetes mellitus.

Keywords: Family empowerment; family support; type-2 diabetes mellitus

BACKGROUND

Data on diabetes mellitus (DM) in Indonesia has significantly increased in terms of prevalence and incidence every year. Indonesia is ranked the fourth as the largest country with DM sufferers in the world after the United States, China, and India since 2000. It is estimated that by 2030, Indonesia will remain the fourth with the increase from 8.4 million of DM in 2000 to 21.3 million in 2030 (Wild, Roglic, Green, Sicree, & King, 2004).

The phenomenon arising these days and worrying is that people experience diabetes mellitus at their youth. The survey conducted by Wild et al. (2004) reported that most of DM with type-2 population in developing countries occurs at the age of 45-64 years while those in developed countries are at the age of more than 64 years. However, based

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on data from the Ministry of Health of the Republic of Indonesia (MOH RI) in 2013, type-2 diabetes found in the adolescence of 15 years old and above reached about 12 million (6.9%), while in the age of teenagers undergoing prediabetes reached 116 million (MOH RI, 2013).

Diabetes Mellitus is a chronic disease which causes people to suffer for their entire lifetime. Due to their youth of being attacked by DM, the patients will experience a lengthy period of illness. To prevent arising complication, DM patients are strongly encouraged to take care of themselves (Sari, Purnawan, Sumeru, & Taufik, 2018; Suhanda, Afgani, & Feriandi, 2016). Self-care treatment for people with DM includes treatment of physical activity (exercise), treatment of diet regulation, control of the blood glucose level, medication treatment, and treatment of complication prevention (American Diabetes Association [ADA], 2018)

For patients with DM, obeying a series of self-care routines which will last for a lifetime is a big challenge and not an easy thing to do. Feeling bored and tiresome can occur at any time, which causes people with DM weary in practicing the self-care. Hence, family support is needed to help them to increase their confidence in their ability to keep performing self-care (Tamara, Bayhakki, & Nauli, 2014).

Family support can be done by optimizing family functions to help patients with type-2 DM to adapt and adhere to the actions of self-care through four dimensions, i.e., empathic dimension (emotional), encouragement dimension (rewards), facilitative dimension (instrumental), and participative dimension (participation) (Hensarling, 2009). Nonetheless, the fact shows that only some families have effective support in dealing with problems of family members with chronic diseases. This is in line with the research conducted by Luthfa (2016) which examined family support for type 2 diabetes mellitus patients. The results reported that out of 56 family respondents, 32.1% had high support, and 67.9% had low support.

The efforts to improve family support can be made in some ways. One of which is through family empowerment (Olin et al., 2010). Family empowerment is a nursing intervention used by nurses to assist families in caring for and providing support to family members with chronic illness and is seen as the most important element for treatment success (Graves & Shelton, 2007). Previous research has proven that family empowerment can improve family support (Olin et al., 2010), as well as the increase of the self-care of the sick (Muhtar, 2013), which will have an impact on improving the quality of life of family members who experience chronic illness (Kashaninia, Payrovee, Soltani, & Mahdaviani, 2018). Previous research has also explained the positive effects of family empowerment on family support that emphasizes more on optimizing family roles and functions.

Management of DM by involving families is currently being developed. Nurses as health care providers should not only examine the characteristics of respondents starting from knowledge, attitudes and health care skills, but also examine family and cultural characteristics that can affect the assessment of health (Kosegeran, Ratag & Kumaat, 2017). Nursing intervention is not only given to the sick individuals, but also the

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families who care for them. There is limited evidence of family empowerment to increase family support in patients with DM. Thus, conducting a study on the effects of family empowerment on increasing family support is necessary.

PURPOSE

The purpose of this study was to determine the effects of family empowerment on increasing family support in patients with type-2 diabetes mellitus.

METHODS

Research design

This study used a quasi-experiment with non-equivalent control group research design.

Samples and setting

The samples were taken by using Jacob Cohen's formula (Polit & Beck, 2001), with a significant level (SL) of 95% (α=0.05), power of test of 0.8 and effect size of 0.86. The samples were 56 and were assigned to two groups, i.e., the intervention group consisting of 28 respondents given family empowerment intervention by visiting their homes four times for 120 minutes each, and the control group consisting of 28 respondents given the intervention of standard booklets. The inclusion criteria included the families who: (1) have cared for and lived in one house with type 2 DM patients, (2) aged of 20-65 years, (3) hold at least elementary education, and (4) had health insurance. The exclusion criteria were families having members with chronic diseases other than DM, such as stroke, HIV, TB, and others.

Research instrument and data collection

The research instruments used were learning event units (LEU) and booklets for DM care guidelines. The LEU consists of 4 stages adopted from the family empowerment intervention with chronic diseases (Wise, 2005). The instrument used to find out family support was the questionnaire of Hensarling Diabetes Family Support Scale (HDFSS). The HDFSS consists of 29 question items that cover four dimensions of support, namely, emotional support/empathy, support for appreciation, instrumental support, and information support (Hensarling, 2009).

The implementation of the family empowerment strategy adopted the nursing process approach through four stages of home visits with a pause of every one week visit (each home visit was allocated for 120 minutes). The interventions were carried out by referring to the LEU protocol that had been prepared. The implementation of material intervention refers to the standard material in the booklet (guidebook) about DM and its treatment.

In the first phase (professional dominated phase), the researchers conducted DTR (developing trust relationships) and initial data collection by organizing pre-testing using the Hensarling Diabetes Family Support Scale (HDFSS) instrument in the experimental and control groups. In the second phase (participatory phase), home visits were carried out in the intervention group. The intervention material provided referred to the standard material contained in the booklet relating to the concept of DM disease and ways to prevent complications. The intervention was carried out by involving the

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whole family members (caregivers) using the booklet and audiovisual media (animated images). The methods used were lectures, discussions, guidance or counseling, and demonstrations. In the third phase (challenging phase), home visits were carried out in the intervention group. The intervention at this stage was carried out to strengthen the role and function of the family in providing support to family members who have type 2 diabetes. The material presented at the third visit referred to the standard material in the booklet, which is related to how to treat DM at home and the form of family support that can be given. At this third stage, the process of transferring roles occurred from nurses to families to provide support to family members who have type 2 diabetes. Finally, the fourth phase (Collaborative phase), the last intervention was conducted by evaluating the two groups. Researchers administered a post-test using the Hensarling Diabetes Family Support Scale (HDFSS) instrument to determine the extent to which families were able to provide support after the intervention.

The evaluation of family support improvement was carried out one week after the intervention in the third phase. One-week time was considered effective because the evaluation only measured the family's ability to provide support at this time, so it was possible that this result is still temporary. Meanwhile, to measure the ability of families to recognize health problems in the future independently and not to experience dependence on health services, repeated interventions (booster) can be carried out every three months, and evaluations can be done a year later. Evaluation in a one-year period is considered to be able to improve the results of permanent family support. After being given the family empowerment intervention, the family gave an appreciation that the educational program with home visits like this was considered effective because it involved families that one whole family could understand DM.

Data analysis

Univariate analysis was performed using the RASCH measurement model. The RASCH model was used due to its ability to convert ordinal data into intervals by transforming logarithms to odd ratio functions. Thus, the data obtained were in the form of equal and interval, displayed in the form of logit value (logarithm odds digit) measure. This logit measure value was then used by the researcher for the bivariate analysis test by using the independent t-test.

Ethical consideration

This study was approved by the health research ethics committee at the Nursing Faculty, Sultan Agung Islamic University (Unissula) Semarang with the number 207/A.1/FIK-SA/VII/2018.

RESULTS

Demographic characteristics of respondents

The majority of respondents in both groups ranged from 51 to 60 years old. The sex of the respondents in both groups was mostly female. Most of the respondents both groups graduated from an elementary school. The majority of respondents in both groups suffered from type 2 diabetes mellitus for <1 year. The variables of age, gender, education, and length of DM had a p-value <0.05, which indicates that the four variables in the intervention group and the control group had the same characteristics.

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Table 1. Characteristics of respondents in the study

Variable	Intervention (n=28)		Control (n=28)		*p*
	f	%	*f*	%	
Age					
30-40	-	-	-	-	
41-50	7	25.0	5	17.9	0.00
51-60	19	67.9	20	71.4	
61-70	2	7.1	3	10.7	
> 71	-	-	-	-	
Sex					
Male	11	39.3	10	35.7	0.00
Female	17	60.7	18	64.3	
Education					
Elementary school	11	39.3	13	46.4	
Junior high school	5	17.9	3	10.7	0.00
Senior high school	10	35.7	10	35.7	
University	2	7.1	2	7.1	
The length of the illness					
<1 years	14	50.0	16	57.1	
1-5 years	12	42.9	10	35.7	0.00
6-10 years	1	3.6	1	3.6	
>10 years	1	3.6	1	3.6	

Demographic characteristics of family (caregivers)

Most of the respondent family types in the two groups were nuclear family. The caring family members (primary caregivers) in both groups were mostly husbands. The education of the caregivers in both groups was mostly high school level. The economic status based on regional minimum wages (RMW) per month in the intervention group was in balance where as many as 14 respondents (50.0%) received wages below the RMW and as many as 14 respondents (50.0%) received wages above the RMW. In the control group, respondents who received wages below the RMW were 16 (57.1%). The variables of family type, caregiver, education and economic status in Table 2 have a p-value <0.05, which means that the four variables in the intervention group and the control group had the same characteristics.

Table 2. Characteristics of the family (caregivers)

Variable	Intervention (n=28)		Control (n=28)		*p*
	f	%	*f*	%	
Family type					
Nuclear Family	23	82.1	25	89.3	0.00
Extended Family	5	17.9	3	10.7	
Caregiver					0.00
Husband	12	42.9	12	42.9	
Wife	11	39.3	10	35.7	
Child	5	17.9	6	21.4	
Education					0.00
Elementary school	8	28.6	9	32.1	

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Variable	Intervention (n=28)		Control (n=28)		*p*
	f	%	*f*	%	
Junior high school	5	17.9	5	17.9	
Senior high school	14	50.0	13	46.4	
University	1	3,6	1	3.6	
Economy					
< RMW	14	50.0	16	57.1	0.00
> RMW	14	50.0	12	42.9	

Note. RMW: Regional Minimum Wages

Differences of the family support after the intervention in both groups

The result of the paired t-test in the intervention group obtained a value of 9.31 for the t-count and p=0.00 was smaller than the value of α (0.05) (Table 3), meaning that there were differences in the family support level before and after given family empowerment intervention strategies. Based on the mean value before and after the intervention, it was found that there was a significant difference in the mean value of 2.29. This explained that giving a family empowerment intervention strategy significantly improved family support in the intervention group.

The results of the paired t-test in the control group obtained t=3.95 and p=0.00, which was smaller than the value of α (0.05), meaning that there was a difference in family support level before and after the intervention. Based on the mean value before and after the intervention, the difference was very small as equal to 0.278. This described that although there was an increase in the family support, yet it was not statistically significant in the control group.

Table 3. Mean differences of the family support after the intervention in both groups

Group	Logit Person Measure		Mean Difference	*t*	*p*
	Pre Mean *(SD)*	Post Mean *(SD)*			
Intervention	0.07 (1.40)	2.35 (1.86)	2.29	9.31	0.00
Control	-1.22 (1.31)	-0.94 (1.44)	0.278	3.95	0.00

The difference in family support after the intervention in both groups

The results of the independent t-test on the difference in logit person measure of the family support variable between the intervention group and the control group. The data shows that the t-test value was 7.86, and the p-value was 0.00, smaller than the value of α (0.05), meaning that there was a significant influence of giving family empowerment intervention strategies to increase the family support.

Table 4. The difference in family support after the intervention in both groups

Family Support	Logit Person Measure Intervention Groups		Logit Person Measure Control Groups		*t*	*p*
	Mean	*SD*	Mean	*SD*		
Differences measure	2.29	1.30	0.28	0.37	7.86	0.00

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DISCUSSION

This study aimed to determine the effects of family empowerment on increasing family support in patients with type 2 DM. The results of the study showed that the nursing intervention strategy through family empowerment could increase the family support for patients with type 2 diabetes mellitus. Family empowerment is a solution to overcome family health problems independently (Graves & Shelton, 2007). However, the ability to communicate and understand health problems extensively may become a challenge for nurses in carrying out family empowerment. Through family empowerment, nurses try to improve communication skills, problem-solving skills, conflict resolution skills (individual and family handling), and self-care management skills (Shields, Finley, Chawla, & Meadors, 2012).

The concept of family empowerment has three main components. Family empowerment is a dynamic process, involves the role of the family, and requires an intervention framework for the implementation of family empowerment (Olin et al., 2010). Referring to the concept of the component, family empowerment has a broad purpose dimension. Family empowerment helps the families through the process of changes that will be carried out, builds resilience and adaptability of the family, explores and increases the potential of the family, the role and function of the family health, the mediation of family-centered care relationships, and family competencies of managing health problems, as well as fosters and assists families to the stage of independence (Graves & Shelton, 2007; Olin et al., 2010; Whitley, Kelley, & Campos, 2011; Wise, 2005).

Family empowerment involves all components of the family, including parents and children. Nurses try to explore the potential of the family and try to develop it. Interactive education methods are the right model in the family empowerment (Graves & Shelton, 2007). Family empowerment is a nurse intervention strategy that is seen as an important element in health promotion programs, in which it provides self-care behavior information (Malini, Yeni, & Saputri, 2018), and increases family trust in caring to improve the quality of life (Baffour & Chonody, 2012; Maryam, Resnayati, Riasmini, & Sari, 2018). The empowerment of families with family members who experience chronic diseases is given by providing accurate and complete information about the condition of the disease and management of its care, prioritizing a sense of empathy as well as showing genuine concern, and this can improve family competency in caring for the sick family members. Anticipating the prognosis of diabetes mellitus is difficult, but some previous studies have suggested that low self-care is a major factor. Therefore, family empowerment on how to self-care for people with DM is a very important thing to be given. Family empowerment in patients with type 2 DM emphasizes two important aspects, namely management of care and effective interaction between families and nurses. Empowerment-based interventions regard families as partners. Family empowerment in patients with type 2 diabetes mellitus aims to control DM disease by increasing knowledge, skills, competence, and family resources (Nachshen, 2005).

Previous research has shown that family support is an important factor in compliance with management of chronic diseases, and also as an indicator of the positive impact on self-care of diabetic patients (Mayberry & Osborn, 2012). However, in reality, not all

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families have effective support in dealing with problems of family members with chronic diseases because of low knowledge (Kovacs et al., 2013). Family support is a process of providing assistance provided by the family to other family members who have health problems to maintain and improve their health status. Family is the most important source of support. The supports that the families provide to patients with type 2 diabetes mellitus include four dimensions, i.e., emotional support/empathy, appreciation support, instrumental support, and information support (Hensarling, 2009). Emotional support is the most important form of support and is the basis of the other three forms of support. Emotional support is included in the affective function of the family. Support provided by the family can be in the form of trust, empathy, understanding, attention, security, love and affection, and encouragement (Friedman, Bowden, & Jones, 2010). Giving emotional support will encourage people with type 2 diabetes to be able to control emotions, and be able to reduce despair, reduce feelings of inferiority (Nugroho, 2000). The appreciation support refers to the assessment of the family in the form of giving feedback (Bomar, 2004) that can be in the form of praise, guidance, and attention. The appreciation support may improve psychosocial status, enthusiasm, motivation, and increase the self-esteem of patients with DM. The instrumental support is real and direct assistance provided by the family in the form of labor assistance, facilities, funds, including providing free time to serve and listen to complaints of sick family feelings. Instrumental support is included in the economic function and family health care function. The economic function refers to the fulfillment of financial needs of family members to maintain their health, and the family health care includes providing free time for discussion, doing care at home, providing adequate shelter, providing food and helping to help with health care facilities. As family is the most important source of information, it is easier for people with diabetes mellitus to receive information and be motivated to maintain their health, and this information is supported by the family which can be in the form of advice and information about food diet, physical activity, conditions or symptoms of DM complications, and how to treat it (Friedman et al., 2010).

Family support is influenced by several factors (Friedman et al., 2010). In this study, most of the family is the first type of family (nuclear family). Qualitatively, people with diabetes mellitus who come from nuclear families will receive more support than patients who come from extended families. However, quantitatively, people with diabetes mellitus have the possibility to get more support from extended families who live together. Furthermore, the majority of caregivers in this study is the husband – the head of the family, who is seen as someone who holds power and makes decisions. The majority of caregivers also hold the third level of education so that they can be the family support providers. Education is associated with the ability to receive information. The higher the education of the family support providers, the better they will be in receiving information that will increase the support for people with DM. Furthermore, support is also influenced by the socio-economic condition of the family that is associated with the level of income or employment. Middle to upper socioeconomic families tend to have higher levels of support, affection, and involvement than parents or families with lower socio-economic levels (Friedman et al., 2010).

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The results of this study showed that the family empowerment strategy influenced family support in patients with type 2 diabetes. Although several factors outside the intervention may have an influence on increasing family support, yet the researchers have tried to minimize the confounding variable through the use of matching techniques to include respondents into the intervention group and the control group based on the characteristics of the respondent and family. Furthermore, the selection of samples has been carried out through a selection based on the inclusion and exclusion criteria which the researchers set. This strategy is considerably right to be used to help families dealing with chronic diseases. This strategy emphasizes that the family as a system has mutual influences where imbalances within the family if come out, will affect all family systems.

CONCLUSION

The results of this study indicated that family empowerment had a positive effect on increasing family support in patients with type-2 diabetes mellitus. These results may contribute to the improvement of intervention strategies used by community nurses to develop a family-based chronic disease management program. Further research directed at achieving long-term goals of family independence may be conducted by recognizing the possible future health problems so that the families do not experience dependence on health services. Also, following up family empowerment intervention strategies a year later may be necessary.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Effects of Islamic Spiritual Mindfulness on Stress among Nursing Students

Badrul Munif[1], Sri Poeranto[1], Yulian Wiji Utami[1]

[1] Department of Nursing, Brawijaya University, Indonesia
Corresponding Author: Badrul Munif (munifbadrul2@gmail.com)

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ABSTRACT

Background: Academic stress is a major problem that often occurs in nursing students. Islamic spiritual mindfulness (ISM) is an adaptive coping strategy which can be used to mitigate various negative psychological reactions to respond stressors experienced by the body to build self-awareness that it is Allah (God) who determines problems that any individuals experience today.
Purpose: This study aimed to determine the effects of Islamic spiritual mindfulness on reducing stress among nursing students.
Methods: The present study used a pre-post quasi-experimental design with a control group. The participants were 36 students of bachelor of nursing who are Muslim and experienced stress in working on their thesis. The participants were assigned to two groups: the experimental group receiving Islamic spiritual mindfulness and the control group. Data were collected using questionnaires of Depression Anxiety Stress Scale (DASS) and analysed using paired t-test and unpaired t-test.
Results: The results showed that the mean of stress level of students in the intervention group decreased from 20.6±2.97 to 11.4±5.81 after the intervention. Meanwhile, in the control group, the mean of student stress level slightly decreased from 19.7±2.82 to 17.8±5.01. The t-test obtained a p-value of 0.001, indicating that there were significant differences in stress levels between the intervention group and the control group. The effect size obtained the value of 0.59, meaning the level of influence was in the medium category.
Conclusion: This study concluded that Islamic spiritual mindfulness was effective in reducing stress among nursing students working on the thesis. It is recommended for the nursing profession, especially mental health nurses, to apply Islamic spiritual mindfulness therapy as one of the psychotherapy interventions.

Keywords: Islamic spiritual mindfulness; nursing students; stress; thesis

BACKGROUND

Mental health is a healthy condition of emotional, psychological, and social aspects, which is evident from the condition of satisfying interpersonal relationships (Videbeck, 2011). WHO (2018) reported that approximately 300 million of people experience depression, 60 million experience bipolar disorder, 23 million are affected by schizophrenia, and 50 million are affected by dementia. The prevalence of mental disorder, such as mental-emotional disturbance in Indonesia is still high at 6.0% of the

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total population of Indonesia, and in Jakarta, approximately 5.7% of the population over the age of 15 years had a mental disorder with symptoms of emotional stress, anxiety, and depression (Ministry of Health Republic of Indonesian [MOH RI], 2013). American Psychological Association [APA] explains that stress is a major contributor to mental illness emotionally and physically to everyone at all ages (APA, 2012). Mahmoud, Staten, Hall, and Lennie (2012) stated that conditions of uncontrollable stress would cause anxiety disorders and anxiety disorders which are not well managed can contribute to the onset of depression. Stress, anxiety, and depression are forms of mental-emotional disorders that often occur in students (Zakiyah, 2016).

Research of the latest epidemiological data conducted in baccalaureate nursing students in Hong Kong indicated that the prevalence of students who experience mild to severe stress was 41.1% from 661 students (Cheung et al., 2016). A study by Rizvi, Qureshi, Rajput, and Afzal (2015) on 60 medical students in Islamabad Pakistan also found the prevalence of stress of 50%. These findings are consistent with the research of Wardi (2016) that the academic demands are major stressors on students, one of which is the load of paper. A thesis is one of the requirements that must be met to obtain academic degrees at undergraduate level (Ministry of Research, Technology and Higher Education, 2017). Regarding the thesis, a study by Sudarya, Bagia, and Suwendra (2014) found that the most dominant factor affecting the stress among the students in the preparation of the thesis are internal factors such as physical condition, behavior, interests, emotional intelligence, intellectual, and spiritual intelligence, and also external factors such as extra duty, friends, faculty counselors, and family. These factors affect a series of psychological response which requires adaptation, causing the pressure inside the students that causes stress.

Zakiyah (2016) identified the characteristics of the stress level among students who were doing a thesis in Jakarta and found that the majority of students experienced moderate levels of stress (46%). Wardi (2016) conducted a study to describe the conditions of stressed students in completing their thesis in views of physiological reaction, psychological, cognitive, and behavioural aspects. The study found that 35.5% of students experienced moderate stress levels, 40% had moderate physiological stress reaction, 38% had moderate psychological stress reactions, 35.5% had moderate cognitive stress reactions, and 38.7% had moderate behavioural stress reactions. In a preliminary study conducted by the researchers in June 2018, involving ten nursing students working on the thesis at a school of health in Banyuwangi, it was found 30% of students experienced moderate stress levels and 20% experienced severe stress levels. Stress on students in doing thesis may result in delayed of graduation (Gamayanti, Mahardianisa, & Syafei, 2018).

Mindfulness is one of the interventions which can be used to deal with stress among students. Mindfulness is an exercise to be aware of the condition that an individual experienced at this time to make the objectives and focus on solving the problems faced (Dwidiyanti, Pamungkas, & Ningsih, 2018). One of the forms of mindfulness is Islamic spiritual mindfulness. High levels of mindfulness are associated with high Muslim spiritual welfare (Fourianalistyawati, 2017; Thomas, Furber, & Gray, 2018). Islamic spiritual mindfulness is a supportive educative action to build self-awareness that the

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problem an individual is experiencing today is the scenario of Allah, and Allah is most capable one to cope with it. Islamic spiritual mindfulness is expected to bring a sense of always being watched by the God, introspection, reception, surrendered (resignation), invoke the aid of the Almighty God (prayer) and the spirit out of conscience to encourage perpetrators to good deeds. These are effective issues to cope with stress coping in Islamic spiritual mindfulness (Dwidiyanti, Fahmi, Ningsih, Wiguna, & Munif, 2019). Islamic spirituality is a *dawafi* spirit that is motivation and tendency soul that Allah has bestowed the human soul to always encourage any individuals to the good deeds which are beneficial to himself and others (Al-Jauziyyah, 2004). Islamic spiritual therapy including mindfulness has been proven to be effective on preventing depression and other psychological disorders (Razak, Mokhtar, & Solomon, 2013), and reducing stress (Kang, Choi, & Ryu, 2009; Song & Lindquist, 2015).

There is a need to investigate the effects of mindfulness intervention based on Islamic spirituality on decreasing stress as such intervention has not been extensively practiced. Mindfulness interventions that have been developed at this time are Christian spiritual mindfulness (Cernetic, 2018), and recently, spiritual mindfulness-based interventions based on Hinduism values with Gayatri mantra has been implemented and proved to have a significant effect on the reduction of anxiety and stress among Hindus (Candrawati, Dwidiyanti, & Widyastuti, 2018). The evidence of the implementation of Islamic spiritual mindfulness to decrease stress in students working on their theses is limited. Therefore, it is necessary to investigate how Islamic mindfulness affects the stress among the students working on the thesis.

PURPOSE

This study aimed to determine the effects of Islamic spiritual mindfulness therapy on reducing stress among nursing students working on the thesis.

METHODS

Research design and samples

This study used a pre-post quasi-experimental design with a control group. The samples were 36 nursing students who were working on the thesis. The samples were divided into two groups, namely the experimental group that received the intervention of Islamic spiritual mindfulness (n=18), and the control group that did not accept the intervention (n=18). A purposive sampling method was used to recruit the samples. The inclusion criteria were final year nursing students working on the thesis assignment and experienced stress. The exclusion criteria were final year nursing students experiencing stress in the completion of the thesis who had other stress management therapies and experienced further mental-emotional disorders such as anxiety and depression.

Measurement

Before the study, the researchers conducted an initial screening using the DASS 42 (Depression Anxiety Stress Scales) to determine the level of stress among students subjectively, with the criteria for stress levels, i.e., a normal stress (0-14), mild level (15-18), moderate level (19-25), severe level (26-33) and very severe level (>34). The DASS questionnaire was given to 95 final-level of nursing students who were working on the thesis, and 36 participants who met the inclusion criteria were recruited.

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Intervention

The intervention in this study was the Islamic spiritual mindfulness which was given in five sessions for five days with a duration of 20 minutes each. In each session, the participants did the following activities: (1) raising the desire to develop spiritual energy and spirit of worship, (2) analyzing the problem for introspection, (3) developing full awareness of mistakes, (4) feeling the heart' response, (5) dzikr, (6) acceptance, and (7) relaxation.

Data analysis

The Saphiro-wilk test was used to find out the distribution of data in each group. The collected data were further analysed using the t-test and unpaired t-test.

Ethical consideration

This research has received an ethical approval from the research ethics committee of Universitas Brawijaya Malang-Indonesia with number 351/EC/KEPK-S2/12/2018.

RESULTS

General characteristics of participants

The general characteristics of respondents were based on gender, age, and stress level. In this study, it was found that the characteristics of participants in the experimental group and the control group by sex were mostly female 29 (81%), the mean age was 21.56 years old (0.65) and mean of stress were 21.17 (2.89) (Table 1).

Differences in the mean score of stress before and after intervention in the experimental group and control group

Based on Table 2, there was a difference in the mean score of stress in the intervention group between before and after the intervention with a difference of 9.2, and the results of further analysis obtained a p-value of 0.000 ($p<0.05$). Furthermore, there was also a difference in the mean score of stress between before and after the treatment in the control group with a difference of 1.9, and the results of further analysis obtained a p-value of 0.148 ($p>0.05$)

Table 1. *General characteristics of respondents (n=36)*

Variable	*f*	%
Gender		
Male	7	19
Female	29	81
Age (21.56±0.65)		17
23 years old	6	50
22 years old	18	33
21 years old	12	
Stress (21.17±2.89)		0
Normal (0-14)	0	28
Mild (15-18)	10	67
Medium (19-25)	24	5
Severe (26-33)	2	0
Very Severe (>33)	0	0

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Table 2. The mean score of stress before and after the intervention

Group	Time	Mean	*SD*	Difference	95% confidence		*t*	*p*
					Lower	Upper		
Experimental	Pre test Post test	20.6 11.4	2.97 5.81	9.2	6.89	11.55	8.37	0.000
Control	Pre test Post test	19.7 17.8	2.82 5.01	1.9	-0,76	4.65	1.52	0.148

Differences in the mean score of stress after intervention in the experimental group and control group

Based on Table 3, it can be explained that there were significant differences in the mean score of stress between the two groups. The experimental group has a mean score of 11.4, and has a difference of 9.2, which is higher than the control group. A further analysis obtained p=0.000 (p<0.05). The effect size score was 0.59, indicating that the effect of Islamic spiritual mindfulness on the decrease of stress among nursing students working on the thesis was in the moderate category.

Table 3. The difference in the mean score of stress after the intervention

Group	Mean	*SD*	Difference	95% Confidence		t	*p*	*ES*
				Lower	Upper			
Experimental	11.4	5.81	9.2	-10.06	-2.71	-3.53	0.001	0.59
Control	17.8	5.01	1.9					

DISCUSSION

Working on a thesis for university students may result in stress. The level of stress can be in the moderate category (Gamayanti Mahardianisa, & Syafei, 2018; Zakiyah, 2016). In this study, it was found female students tend to have more opportunities to get stressed. Videbeck (2011) stated that the stress disorder is more often experienced by women. In her study, Zakiyah (2016) reported that characteristics of nursing students experiencing stress were aged 21-23 years, female gender (78%), and the level of stress was moderate (52%). These findings are in accordance with the results of the present study, in which the majority of respondents' gender was female as many as 28 (78%), the mean of age was 22 years old (50%) and the majority experienced stress in moderate category as many as 24 (67%). Calvarese (2015) reported that there were significant differences between male and female students to stress reactions. Women experience more stress reactions at a higher level of depression, frustration, and anxiety than men. This is because women tend to put forward feelings rather than rational so that it makes women more difficult to forget it when experiencing academic failure (Matud, 2004; Rivera-torres, Araque-padilla, & Montero-simó, 2013).

Pursuing higher education to college is a priority of young adults. Stuart (2007) stated that age could affect the individuals in the face of stressors, as age is one factor that can affect an individual's coping. College students are individuals at adulthood (18-24

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years). At this age, the students tend to use maladaptive coping mechanisms when faced with the stressor; therefore, it is very easy for the students to experience stress (Krisdianto & Mulyanti, 2015). Maladaptive coping is performed by ignoring stress, avoiding others, blaming others, consuming alcohol, quitting the study, and suicide (McCarthy et al., 2018).

This study showed that Islamic mindfulness could reduce the stress among the students. This result is in accordance with the opinion of Lazaridou and Pentaris (2016) who said that the mindfulness therapy performed by enhancing spiritual values is very effective, as mindfulness is closely related to spirituality, and both have strong relationships, since this mindfulness-based intervention originates from the eastern spiritual traditions, especially Buddhism (Thomas, Raynor, & Bakker, 2016). This statement is also supported by a study of Sadipun, Dwidiyanti, and Andriany (2018) which reported that spiritual-based mindfulness intervention had a significant effect on improving emotional control of adult patients with pulmonary TB, in addition to its effective stress reduction. Another study also found that controlling anger and calm the heart of schizophrenic clients through spiritual mindfulness could decrease with the risk of violent behavior (Sari & Dwidiyanti, 2014).

Mindfulness-based interventions, in addition to effectively lowering stress spiritual, have also proven effective in controlling anger and reassurance to clients schizophrenia with the risk of violent behaviour (Sari & Dwidiyanti, 2014). Islamic spiritual is proven effective to give influence on the prevention of depression and other psychological disorders. Spiritual therapy aims to build a sense of self-acceptance so that the client does not feel depressed anymore. Even otherwise, the client will be able to express his feelings to life and better mental health. The spiritual approach plays an important role in expressing feelings and provide comfort for the client. Acceptance of ill will encourage the individual client to be closer to God and accept the illness as a trial from God. In the Islamic spiritual therapies, the heart and the mind as a therapeutic target in dealing with various psychological diseases (Mardiyono et al., 2011; Razak et al., 2013).

This study has the limitation that it was implemented in a small sample size. Furthermore, the researchers could not able to control several confounding factors which might influence the results of the study. Further research may be conducted in a larger sample and control the factors influencing the intervention.

CONCLUSION

There were differences in the mean score of stress levels between the groups receiving Islamic spiritual mindfulness, and the group which did not receive such treatment. The experimental group receiving Islamic spiritual mindfulness showed a higher decrease of stress levels than the control group. Based on the results, it is recommended that nurses apply Islamic spiritual mindfulness therapy as one of the psychotherapy interventions to provide the first treatment to clients who experience stress. Nurses can work with educational institutions to open opportunities to provide psychotherapy interventions to deal with students who experience stress due to academic burdens.

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A Scoping Review of the Health Technology Procurement Decision Process in Indonesia

Andrew Cashin[1], Roxsana Devi Tumanggor[2]

[1]School of Health and Human Sciences, Southern Cross University, Australia
[2]Psychiatric Nursing Department, Faculty of Nursing, University of Sumatera Utara, Indonesia
Corresponding Author: Roxsana Devi Tumanggor (tumanggordevi@gmail.com)

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ABSTRACT

Background: There is no doubt technological development in the caring sciences can be an enabler of better outcomes. Technological development and the adoption of new technology can also become a constraint and pose challenges to the current patterns of work and organizational elements. A framework for decision making of when to purchase and incorporate new technology is required.
Purpose: This paper aimed to determine what is known of procurement decisions of advanced technology in healthcare generally and particularly in Indonesia.
Methods: A scoping review was conducted to ascertain the current understanding of what forms the basis of procurement decisions of health technology generally and particularly in Indonesia.
Results: A paucity of peer review literature was identified**.** There was no identified peer-reviewed literature with a focus on Indonesia. Without a guiding evidence base and agreed decision-making framework, it is likely that there is great variation in practices.
Conclusion: In the absence of a solid body of literature to inform practices, two principals to move to a sustainable adoption and integration of advancing and emerging technology into practice in the health care sciences are presented, and provide a scaffold to facilitate navigating what can be tricky waters constituted by enthusiasm and trepidation.

Keywords: Health technology; innovation; nursing; nursing adoption of health technology; procurement

BACKGROUND

At the point of approach to the end of the first one-fifth of the new 21st century, technological development has become synonymous with progress in societal worldview. This societal conceptual formation is applied almost ubiquitously, so it comes as no surprise that people are engaged in a discourse related to technological development in nursing and more broadly, the caring sciences. There is no doubt that technological progress has increased efficiency and quality of service delivery in many domains, and that such advancements hold promise to continue the march in a forward direction. There is little disagreement that such advancement is an enabler of progress. However, it is essential to remain focused on the awareness of what it is that is augmented by the technology. Technology, while it can change work practices and

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workflow, does not replace professional capability, but rather augments it. A blind enthusiasm in the value of technology without application of the usual standards of the requirement of evidence and full disclosure of the underpinning philosophy of application has occurred at times in healthcare and healthcare education. In some cases, good or best practice has been constrained as the focus has shifted to being bedazzled by expensive gadgets and programs. As technological advancement can lead to improvements that are expensive and disrupt usual ways of doing work and existing financial budget structures (Cheng, Huang, Ramlogan, & Li, 2017), the investment of money and energy needs to be based on the same standards we have embraced in evidence-based practice. The issue of cost is exacerbated in countries with less money per capita to spend on healthcare and the need for a systematic approach to procurement decisions magnified.

Technological development as a concept is rooted in technology, and the etymological origins of technology come from the Greek word *tekhnologia* meaning systematic treatment. The word can be broken into the origin elements techne art and logos study (Harris, Nagy, & Vardaxis, 2010). Basically, technology is something that is systematically developed to solve problems or promote efficiency. Our minds often race to the latest machines that 'go bing' or digitally based system, but in keeping with the origins of the word technology humans have been refining the technology for centuries in the domain of healthcare (Casselman, Onopa, & Khansa, 2017). So, while of contemporary importance, this topic is not new in nursing or caring sciences generally.

Technological advancements in nursing and healthcare, in general, can become disruptive as they disrupt usual patterns and flow of work, and even disrupt budget structures as purchasing spans conventional divisions (Cheng, Huang, Ramlogan, & Li, 2017; Coye & Kell, 2006). While technology in healthcare has advanced across time as a natural part of evolution, healthcare agencies, particularly when reimbursement and allocation of funding are involved can be less than agile. Businesses and organizations, in general, are geared to incremental change of existing technology as opposed to adapting to the introduction of new technology (Ebersold & Glass, 2015). Technology is often expensive and can represent a substantial investment that influences budgets and the organization's program direction not only in the short terms but across years (Coye & Kell, 2006). The effect of this is plausibly magnified in countries that have lower health budgets per capita.

Indonesia is classified as a low-income country (Seeberg et al., 2013). Current health priorities in Indonesia are underpinned by the need to provide access for the population to universal healthcare. In terms of health spending per capita, Indonesia is ranked 5 out of 7, along with Cambodia and Laos, in Southeast Asian countries (Tangcharoensathien et al., 2011). Healthcare demand is compounded by the high rate of maternal and newborn mortality rates in many regions in Indonesia (Goodburn & Campbell, 2001). A strong focus of healthcare spending is the related basic women and child health issues. In Indonesia, it has been identified that the procurement of advanced technology requires a high degree of financial investment, and the need to develop capabilities is often not existing at the clinician or institutional level (Clifford, Blaya, Hall-Cliffor, & Fraser, 2008). Procurement processes in nursing and healthcare, in general, include

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purchasing inclusive of contracting and operational delivery (Lingg, Wyss, & Duran-Arenas, 2016). There is a limited budget to invest in procuring and implementing advanced technology, so the decisions of what to procure are critical.

PURPOSE

This study aimed to determine what is known of procurement decisions of advanced technology in healthcare generally and particularly in Indonesia through a scoping review of the peer-reviewed literature.

METHODS

A scoping review of peer-reviewed literature related to health technology procurement decisions from January 2010 until October 2018 was undertaken (Arksey & O'Malley, 2005) to identify peer-reviewed publications related to procurement decisions of advanced technology in healthcare. The scoping review was selected associated with the breadth of the question and likelihood that a range of papers would be identified that would include varied methods and formats not fitting the requirements of a systematic review. The search terms utilized were: (search one) health technology AND procurement decisions, (search two) health technology assessment AND procurement decisions, and (search three) health technology AND procurement decisions AND Indonesia. The databases searched were CINAHL, Medline, and Health Business Elite. The restrictions of published in English and peer-reviewed were applied. Articles were searched at the abstract level. Abstracts of the returned articles were reviewed, and studies outside the scope of the objectives and duplicates were removed. The pearl growing strategy was utilized in which the reference lists of the identified papers were examined to identify any other relevant papers not identified by the search (Harter, 1986). The included articles were charted with relevant information that included the type of paper, participants, and findings extracted to facilitate a descriptive-analytical review (Arksey & O'Malley, 2005).

RESULTS

The search revealed a paucity of published papers related to health technology procurement decisions in peer-reviewed journals. Both of the searches (one and two) resulted in the same four returns. Three were applicable to the review. The fourth paper was related to perceived barriers to healthcare adoption by healthcare professionals in the United Kingdom with no focus on procurement decisions and excluded from the review. Search three resulted in no identified papers. The included papers were charted (Table 1).

Table 1. Charted search results

Article	Methods	Participants	Findings
Torbica & Cappellaro (2010)	Discussion paper	N/A	Access to health technology is intimately linked to national health coverage, reimbursement, and procurement policies. The decision-making criteria for procurement

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Article	Methods	Participants	Findings
			vary significantly in Europe. Numerous studies that examine pharmaceutical spending have been completed, but little attention was paid to medical devices. An evidence-based approach is preferred. Risks of an overly aggressive procurement are high cost, and the risk of an overly defensive approach is delayed access to health technology.
Kosherbayeva et al. (2016)	Implementation report of the introduction of a health technology assessment approach in one hospital in Kazakhstan	The staff of a general city-based hospital in Kazakhstan	The introduction of a health technology assessment process for procurement and use of new health technologies after a trial were conducted on one application. They were found to be successful and were subsequently generalized to seven hospital departments. Considered timely, managers of health care are increasingly interested in rational investment to cover the expanding range of services. The health technology assessment included clinical safety, cost, and clinical effectiveness.
Lingg, Wyss, & Duran-Arenas (2016)	A qualitative study that included 59 interviews of stakeholders representing the macro, meso, and micro levels of those impacted by the procurement of high-risk medical devices in orthopedics. The aim was to compare factors affecting regulations and procurement processes and to understand how they connected to clinical practice.	Stakeholders sampled from Mexico, Switzerland, Germany, and the UK	The factors impacting procurement in the developing country, Mexico differed to those in the European countries and the UK. In Mexico, the cost was a stronger driving factor than evidence. The level of evidence used in health technology assessments was raised as an issue in general, along with a lack of post procurement monitoring for effectiveness.

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The review of reference lists did not identify any other papers within the scope of the review. General sources identified in the reference lists that were outside the scope of the review were incorporated in the discussion of the findings. From the limited number of identified papers, there was a consensus that a systematic approach to making procurement decisions related to new technology in the context of healthcare is desirable (Kosherbayeva et al., 2016; Lingg, Wyss & Duran-Arenas, 2016; Torbica & Cappellaro, 2010). Assessment of the technology needs to include the domains of clinical safety, efficacy, and cost-effectiveness (Kosherbayeva et al., 2016; Torbica & Cappellaro, 2010). Compared to other fields of healthcare, such as pharmaceutical intervention, relatively little attention has been paid to technology-related innovations and the development of a systematic approach to decision making of inclusion in the care regime (Torbica & Cappellaro, 2010).

The only research study identified contrasted themes arising from interviews of stakeholders related to procurement decisions from three high-income countries and one middle-income country (Lingg, Wyss & Duran-Arenas, 2016). Of the 59 interviews conducted, 26 were at the macro level of government officials and regulators, six at the institutional meso level responsible for the procurement, and 15 were orthopedic specialists at the user/consumer micro level. In addition, 12 were medical product suppliers. The limitation of not interviewing patients was acknowledged. However, the restriction of health professionals interviewed at the micro user level to medical practitioners was not acknowledged. This limitation is significant as physician preference has previously been raised as an issue that has negatively impacted rational procurement processes (Coye & Kell, 2006).

It was proposed that concerns may differ between countries based on income level and that lower to middle-income countries may be more concerned with broader issues related to providing access to universal health care. The findings supported this, in that in Mexico, the lowest income country included in the study, cost and controlling for corruption surfaced were major drivers in procurement choices. Interestingly, concerns related to the robustness of the quality of evidence used to inform decisions were raised across groups and countries.

The study by Lingg, Wyss, and Duran-Arenas (2016) was related to high-risk medical devices. It can safely be assumed that the issues identified re-robustness of systematic processes to inform choices would be magnified where health technology defined as lower risk is concerned as less regulation exists when the direct risk to patient health is less.

DISCUSSION

While the small amount of identified existing peer-reviewed literature cautions the need to critically consider practice in the area of procurement decisions in the adoption of new health technology, it falls short of informing practice, particularly in low-income countries. To further contextualize the issue a brief consideration of four domains identified in the broader literature in which advancement has accelerated identified in the literature is warranted to highlight the challenges faced and provide glimpses of the future that underpin the importance of this discussion. Much of these advancements are

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in domains that would not be categorized as high risk and so do not come under increased regulatory scrutiny where it exists. These areas are the point of care technology including in vivo diagnostics, wearable healthcare, telehealth, and electronic medical records. Two guiding principles are proposed in the context of the review to promote sustainable and evidence-based adoption of health technologies.

Point of care diagnostics

Point of care testing or in vivo diagnostics has become a widely discussed topic in the last decade; however as a topic, it has ascended and reseeded in prominence across time (Huckle, 2008). Point of care testing chronologically came before our experience of modern laboratories, as urine testing and looking at patient fluids was common practice at the point of care for centuries. This sometimes comes as a surprise as for many, if not most, of us as our education and careers have certainly come about in the time since the 1950's when large scale use of blood tests and the need for special rooms to conduct these evolved (Huckle, 2008). Significant developments in technology in the last 20 years, in particular, has seen a dramatic improvement in testing devices with an accompanying increase in quality and safety and the development of closed systems that do not require re-calibration and a subsequent decrease in the expertise required to administer the tests. This device development has been accompanied by a development in digital support capacities to allow reporting and communication of findings and interoperability with other developments, such as the electronic medical record where they exist. The distinction between technological development and information technologies (IT) in the digital age has blurred (Coye & Kell, 2006). Developments of note have occurred, particularly in areas of non-communicable diseases such as diabetes blood glucose monitoring and cardiac care.

Point of care technology development becomes particularly disruptive in terms of workflow and practice and budgets. Work practices include who is able to do the testing, the recording, and communication of results, and when a centralized laboratory is not involved it potentially means changes in support to clinicians in this domain. Central laboratories provide traditionally important support in the interpretation of findings and recommendations for follow up testing (Huckle, 2008). Budgeting implications are clear as costs are shifted from the central laboratory and dispersed at the point of care throughout an organization.

Wearable healthcare

Like the point of care, diagnostics wearables are not a new phenomenon in healthcare (Sultan, 2015). Think of the development of spectacles in the 13th century, hearing aids through the ear trumpet in the 17th century, glass contact lenses in the 19th century, and pacemakers, insulin pumps and soft contact lenses in the 20th century (Casselman, Onopa, & Khansa, 2017). The recent developments in IT through big data analytics have seen an escalation of interest in this domain (Wu, Li, Cheng, & Lin, 2016). The market is vast with the market related to wearable sensors being estimated to increase to $100.35 million in the US alone by the end of 2018 (Casselman et al., 2017). Again the structure of this discussion implies a divide between the point of care diagnostics, wearables, and IT. However, examples provided such as in blood glucose monitoring demonstrate the interdependency. The inter-relatedness is propelling the necessity in the

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development of interoperability and standardization of systems (Casselman et al., 2017). Glimpses of the short-term future are provided by examples such as that of Apple targeting development in the area of blood glucose monitoring through development of sensors for the skin and potentially contact levels to measure glucose level through tears (Wu et al., 2016). Again, disruption occurs through the changing practice of work and the flow of patient-related information along with the implications of the budget stream in the organization from which costs are met.

Wearables are intimately related to a shift in thinking from treating illness to a focus on wellness as evidenced through the explosion in the associated market in fitness and fitness trackers. Again, the need to shift the focus from treating illness to promoting wellness is not a new phenomenon and was heavily espoused by Florence Nightingale (Smith, 1982). Healthcare reform internationally is predicated on reducing costs and promoting access to services by re-shaping demand and on doing this, patient engagement is required (Ahern, Woods, Lightowler, Finely, & Houston, 2011). The familiarity with wearable's and embracing the value of the data provided to inform practice is a huge step towards this required engagement.

Telehealth

Telehealth refers to the remote provision of healthcare using telecommunication tools that can include ordinary phones, but more often includes video-enabled devices (Dorsey & Topol, 2016). Telehealth can support patient care, including assessment, patient education, and monitoring (Schwamm, 2014). In line with a shifting focus from ill health to health and wellbeing, a less dominant term that is used interchangeably with telehealth is the term telemedicine. Telehealth can occur through synchronous or real-time contact, or asynchronous contact such as through secure messaging (Schwamm, 2014). It is clear that there are seductive possibilities in terms of convenience for patients, reduced costs in terms of travel costs, and those related to missed work when attending traditional delivery sites. There are also some limits such as those related to access for physical assessment not compensated for by remote sensors and the reliance on reliable internet services to allow a quality service (Dorsey & Topol, 2016).

The main limitation in the expansion of services in this area has been issues of reimbursement (Pearl, 2014). Funding arrangements internationally have been slow to keep pace with developments (Dorsey & Topol, 2016; Schwamm, 2014). Other limitations have related to fears of potential changes in work practices as patients theoretically are now no longer restricted to their local or even national providers for services (Schwamm, 2014). Patients can source service from a variety of providers not limited by geographic proximity. Of course, this promotes access to care but raises concern re business structures and ensuring relevant national standards of care are met.

Electronic medical records

From the somewhat limited published research available, in terms of focus and rigor, not volume, the uptake of health information technology is associated with generally positive results (Buntin, Burke, Hoaglin, & Blumenthal, 2011). The evidence is perhaps described as most convincing around decision support and treatment prescription (Jones, Rudin, Perry, & Shekelle, 2014). The quest for standardization and

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interoperability as discussed earlier has often been taken as a need for standardized languages and tick box systems, as opposed to standardized operating platforms. The record systems developed have often not provided the fluidity matching the lived experience of healthcare providers. Despite what the evidence would suggest, uptake and consumer satisfaction have been slower than would be expected. There appears to be a strong link between the human element of satisfaction and utilization that has led to positive outcomes where they have occurred (Buntin et al., 2011). The research as a body has not yet adequately addressed outcomes to the level needed to inform evidence-based policy shifts (Jones et al., 2014).

In line with the integrated nature of the above four domains of exemplars, some shared concerns need to be acknowledged in addition to the disruptive elements identified. These concerns must form part of a cost-benefit analysis. These are security-related concerns. The first and very well publicized concern is that of privacy. The second and equally concerning security concerns are related to 'hackability' and external control. If hacking occurs, patient safety is at stake as well as privacy (Casselman et al., 2017; Ebersold & Glass, 2015). Hacking can include device control to administer treatment or to change transmitted results of sensors and therefore lead to treatment based on false data. Disruptive attacks, such as those leading to a denial of service in which battery operated devices are forced offline, also need to be guarded against and pose a risk (Ebersold & Glass, 2015).

Moving to a sustainable and systematic adoption approach for advancing technology

To move to a sustainable adoption and integration of advancing and emerging technology into practice in the health care sciences, two fundamental principles need consideration. The first is a move from preference and enthusiasm to an evidence-based decision-making process guiding commissioning and procurement. The second principle is the requirement to be fully cognizant of what is being augmented by the integration and be able to clearly articulate the underlying philosophy of existing approaches and the state of play of evidence in the area.

Where adoption of advancing technology or emerging technologies has been concerned, adoption has often been based on individual preferences and enthusiasms couched in the difficult to refuse language of servicing the community and meeting patient need (Coye & Kell, 2006). Enthusiasm can be fueled by vendors offering incentives such as provider education with skewed or little evidence of the impact on the outcome of care. On a related, although slightly tangential note, consider the introduction of high-fidelity mannequins into health education programs as an example. These expensive devices became commonplace despite high costs and high intensity of teacher time requirements despite little and where it exists relatively small-scale evidence of any improvement in achievement in learning outcomes (McGarry, Cashin, & Fowler, 2014). While the literature related to high fidelity human patient simulation is vast, few studies have been conducted that have demonstrated improved learning outcomes as compared to usual teaching practice. In education spheres, the enthusiastic adoption was championed, and these mannequins often became symbols of a progressive school and were integrated into advertising campaigns for particular programs. Adoption of technology must be

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based on evidence in congruence with the adoption of evidence-based practice that now underpins many professional standards of practice (Cashin et al., 2015; Cashin et al., 2017).

Being clearly able to articulate precisely what is being augmented and able to articulate the state of play of evidence in that particular area is essential. Bot doctors have been a hot topic of discussion in newspapers and magazines recently. There are often associated claims of greater reliability from the bot doctor in diagnosing than medical practitioner comparisons in the stories (Elder, 2018). Such discussion links to the findings in electronic medical record evaluation of performing well in decision support discussed above. Neither topic of discussion and associated findings are surprising, given that we have known reasonably conclusively since the 1980s that prognostic decisions based on an actuarial approach are superior and more reliable than those based on clinical judgment (Miller & Morris, 1998). By 1989 a review identified more than 100 well-designed studies that demonstrated this (Dawes, Faust, & Meehl, 1989). Perhaps the take-home message is the need to make available resources to facilitate access to consolidated actuarial data to support decision making, whether in digital or other formats, as the primary concern. In this case, the digital advancement just augments dispersion and access.

Although the discussion has been in no way exhaustive, rather aimed at contextualizing the issue with accompanying brief examples, a conclusion will be made by considering electronic medical records a little further. Electronic medical records are language based, as is thought in general (Heidegger, 1962). Language forms the socio-semiotic or the meaning-making context for health disciplines (Cashin, 2011). Language is not only descriptive; it also has a regulatory function in that it encompasses rules of who can say what and invites people to take roles in communicative interactions (Halliday, 1975). Foucault has been credited with describing subjectivity as that of a category which is constructed by the discourses to which an individual is a subject. Language is fluid and in a constant state of flux. It is not just a case of language as a sign that points to something; semiosis also involves the interrelated elements of referent and user (Sless, 1986). Issues have arisen in the design of electronic medical records and the emerging discipline of nursing informatics in which the focus has remained at the level of language as a sign. In attempts to standardize language and create streamlined reporting, scopes of practice have been reduced. The maxim with regard to nursing and more broadly health work that if it is not recorded, it does not occur, has followed, and scopes of practice have been reduced inadvertently (Cashin, 2011). Moving to records with free text boxes may be a potential resolution to this issue as language is not then artificially rendered static and evolution of work practice constrained (Schwamm, 2014). This is important when considering the disruptive element of technological innovation. Such a simple idea, although appearing perhaps lower tech, makes sense if we apply the second principle in the move to a sustainable adoption and integration of advancing and emerging technology into practice in the health care sciences.

CONCLUSION

It is clear that the advancement of technology has characterized healthcare delivery and caring professions throughout time. The focus has intensified in this domain related to

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the relatively recent explosions in development in digitally based technology. The future looks bright as solutions emerge to offset increased demand from the rise in the experience of non-communicable diseases and the increased burden on health systems related to increased longevity. There is a paucity of peer-reviewed literature to inform procurement decisions of health technology and incorporation into nursing practice. While this is the case, in general, it is particularly the case in low-income countries where no peer-reviewed papers were identified in this review. Further research is indicated to refine practices. The urgency is amplified in low-income countries where the available money to spend on healthcare is less and the need to optimize spending even greater. The study limited identified literature suggested the likelihood of variance in factors influencing decisions between countries with different income levels. The two principals to move to a sustainable adoption and integration of advancing and emerging technology into practice in the health care sciences outlined provide a scaffold to navigate the tricky waters of knowing what to invest in and when. It also provides criteria on which current processes can be assessed and be incorporated as outcome measures in future studies.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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