# Nurse Media

## JOURNAL OF NURSING

Volume 8, Number 1 Year 2018, June 2018

## Articles

- Patient Safety Goals' Level of Attainment in Selected Tertiary Hospitals in Manila, Philippines: A Preliminary Study
- Quality of Life and Associated Factors in Indonesian Diabetic Patients with Foot Ulcers
- Nursing Students' Attitudes towards Caring for Dying Patients
- Self-Management Counseling and Physical Health Status among Patients with Pulmonary TB in Bogor, Indonesia
- Relating Factors of Insomnia among Haemodialysis Patients

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

- Adult nursing
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- Gerontological nursing
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- Mental health nursing
- Pediatric nursing
- Maternity nursing
- Nursing leadership and management
- Complementary and Alternative Medicine (CAM) in nursing
- Education in nursing

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The **Nurse Media Journal of Nursing (NMJN)** is published twice a year every June and December.

For year 2018, 2 issues (Volume 8, Number 1 (June) and Number 2 (December) are scheduled for publication.

The NMJN is published by the Department of Nursing, Faculty of Medicine, Diponegoro University and available at http://ejournal.undip.ac.id/index.php/medianers. It has been indexed and abstracted in Google Scholar, Directory of Open Access Journal (DOAJ), Indonesian Publication Index (IPI) and Science and Technology Index (SINTA 2).

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Articles of the Nurse Media Journal of Nursing has so far been cited in:

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- Science and Technology Index (SINTA Score=S2) (*http://sinta2.ristekdikti.go.id/journals/detail?id=914*)

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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), and EBSCO. Currently, NMJN is also in the process of indexation in the ASEAN Citation Index (ACI) and Scopus.

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 in November 2016. Based on the Science and Technology Index (Sinta), NMJN is in the second rank (Sinta 2). Upon this achievement, the NMJN would like to thank all people (editorial team, reviewers, and authors) who have given their support and contribution in achieving this position.

This issue (Volume 8 Number 1, June 2018) has published five articles, consisting of three correlational studies, one descriptive study, and one interventional study. This issue was authored and co-authored by the researchers and professionals from diverse countries, including Indonesia, Philippines, and Saudi Arabia. All papers have been doubled-blindly reviewed by the editors and reviewers of this journal.

The first article was a descriptive study conducted by Abe and Tuppal (2018). This study evaluated the National Patient Safety Goals (PSG) level of attainment in selected three tertiary hospitals in Metro Manila, Philippines. Two hundred and fourteen nurses were recruited. The study showed that the PSGs level of attainment obtained high extent. The results indicated that the selected hospitals have a high level of attainment for patient safety goals and remain at the core of health service delivery in each organization.

The second article was a correlational study which aimed to investigate the quality of life (QOL) in patients with diabetic foot ulcer in each domain and investigate the factors associated with this condition (Sari, Purnawan, Sumeru & Taufik, 2018). The result of this study revealed that the QOL in the domains of emotions, positive compliance, family life, and friend were high, while the QOL in the domains of daily activities, physical health, leisure, finances, positive attitude, and treatment ranged from low to average.

The next article was authored by A'la, Setioputro, and Kurniawan (2018). This study explored 192 nursing students' attitude and its relationship with the students' demographic profile in caring for the dying patients in Indonesia. The study used the Frommelt Attitudes towards the Care of the Dying Care Form B Indonesian version (FATCOD-BI) as the instrument. The results showed that student nurses' attitude in caring for dying patients was in the low category and there was no significant relationship between gender and training experience and students' attitudes towards caring for the dying patients. In contrast, experiences in caring for dying patients and academic level were associated with students' attitudes.

The next article was an interventional study examining the effects of self-management counseling on physical health status in 60 patients with pulmonary TB (Jauhar, Nursasi, & Wiarsih, 2018). The counseling was given for four sessions in two weeks for about 60-90 minutes each session in the intervention group. The result showed that the physical health status in the intervention group increased, but there was no influence of self-management counseling on the improvement of physical health status. These findings need more rigorous studies to investigate the effect of self-management counseling delivered at early treatment on the improvement of physical health status.

The last article was conducted by Kusuma, Ropyanto, Widyaningsih and Sujianto (2018). This study was a correlational study aiming to analyze the relating factors of insomnia in hemodialysis patients. The study involved 102 patients in two dialysis units in Semarang, Indonesia. The result revealed that insomnia occurred in 63 respondents (61.8%). Further analysis indicated that insomnia was related to anxiety and age, whereas other factors such as gender, education level, occupation status, marital status, hemoglobin level, smoking and coffee consumption habit, and dialysis factor (period of dialysis) were not correlated. This study recommends that anxiety screening should be performed on hemodialysis patients.

Finally, the NJMN would like to thank the authors, reviewers, and editors for their contribution and collaboration in publishing this current issue. Also, 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 2018

Sri Padma Sari

Editor-in-Chief
The Nurse Media Journal of Nursing

# Author Guidelines

## 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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World Health Organization. (2008). *The global burden of disease: 2004 update*. Geneva, Switzerland: World Health Organization. Retrieved from: http://www.who.int/healthinfo/global_burden_disease/GBD_report_2004update_full.pdf

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**Nurse Media Journal of Nursing, 8(1), 2018, 1-12**
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# Patient Safety Goals' Level of Attainment in Selected Tertiary Hospitals in Manila, Philippines: A Preliminary Study

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## ABSTRACT

**Background**: Continuous efforts in the implementation of the National Patient Safety Goals (PSG) as a framework to guide the service providers have been made. However, there are reported incidents of untoward patient outcomes due to wrong medication administration, wrong site of surgical operation, acquisition of healthcare-associated infections, adverse reactions, and incidence of fall.

**Purpose**: This study aimed to evaluate the PSGs' level of attainment in selected tertiary hospitals in Metro Manila, Philippines.

**Methods**: This study employed a field, descriptive and historical research survey conducted in three tertiary hospitals in Metro Manila. The participants were nurses having at least one year of experience in their current workplace ($n$=214). The sets of questionnaires used to get the data include the demographic profile and PSGs indicators adapted from the National Patient Safety Goals (NPSGs). Data responses were analyzed with descriptive statistics and One-Way ANOVA.

**Results**: Based on the findings, the PSGs level of attainment obtained high extent with overall mean average: PSG 1 ($M$=4.35), PSG 2 ($M$=3.97), PSG 3 ($M$=4.07), PSG 4 ($M$=3.61), PSG 5 ($M$=3.89), PSG 6 ($M$=3.77) and PSG7 ($M$=4.20). Furthermore, there were significant differences on PSG 3 and PSG 4 with p-values of 0.00 and 0.02 respectively, which were tested at 0.05 level of significance. Others PSGs showed no significant differences.

**Conclusion**: The results indicate that the selected hospitals in Metropolitan Manila, Philippines have a high level of attainment for patient safety goals and remains at the core of health service delivery in each organization. It is recommended that the hospital further enhance the knowledge, skills, and attitudes towards a sustained patient safety culture through continuing education programs, benchmarking, institutionalization, and accreditation.

**Keywords**: Patient safety goals; Philippines; nurses

## BACKGROUND

Patients seek healthcare services to address and improve certain conditions. When patients accept the sick role, they give their trust and confidence to the members of the healthcare team and the institution with expectations for safety and recovery. The healthcare service organizations play a pivotal role in promoting patient safety. The National Patient Safety Goals (NPSGs) set a framework to ensure safety. However, there were reported untoward patient outcomes including wrong medication administration, wrong site of surgical operation, healthcare-associated infections (HCAIs), adverse reactions, and the incidence of fall (Donaldson, Corrigan, & Kohn, 2000; Harrison, Cohen, & Walton, 2015; Marjadi & McLaws, 2010; Navoa-Ng et al., 2011; Nguyen et al., 2001; Robst, 2015; Seiden & Barach, 2006).

The World Health Organization (2018) surmised that in the developed countries, patients are harmed while receiving hospital care, and of every hundred 100 hospitalized patients at any given time, 7 in developed and 10 in developing countries will acquire HCAIs. Harrison et al. (2015) supported the WHO's Health Facts stating that in Southeast Asia limited knowledge about the patient harm is a patient safety threat. Harrison et al. (2015) further surmised Indonesia, Vietnam, the Philippines and Laos, HCAIs are prevalent among the neonates, patients who had invasive procedures, high body temperature, extended hospital stays (i.e., >6 days), antibiotic use or were admitted to an ICU unit. These HCAIs have been associated with limited knowledge and preventive measures, lack of written protocols, and reliance on verbal orders as found in Indonesia (Marjadi & McLaws, 2010). Surgical-site related infections are on the rise in Vietnam albeit preventive measures (Nguyen et al., 2001). In the Philippines, HCAIs have been commonplace (e.g., ventilator-associated pneumonia, central line and catheter-associated urinary tract infection) due to poor hand hygiene, and non-compliance by healthcare workers with infection-control policies, (Gill et al., 2009; Navoa-Ng et al., 2011; Rosenthal et al., 2008; Rosenthal et al., 2013). Another preventable patient harm includes inappropriate, unnecessary antibiotics prescription and administration errors (e.g., incorrect timing, frequency, and preparation) contributed to the patient harm (Marjadi & McLaws, 2010).

Patient harm accounts for other healthcare-associated outcomes preventing the provision of safe, effective, efficient, quality, timely, and relevant care. The WHO initiated global safety strategies to prevent the detrimental effects of HCAIs and other associated issues related to patient harm such as long-term disability and deaths, and high incurred out-of-pocket medical expenses due to more extended hospital stays and non-responsiveness to drug resistance (World Health Organization, 2018). On the other hand, the Joint Commission International (JCI) aids to standardize, improve quality of services, and promote patient safety as a response to the growing concern on patient harm (Joint Commission International, 2007). The PSGs are ever changing and continuously being modified to meet the demands of healthcare services but contain same core elements and objectives of ensuring patient safety. These goals serve both as guide and challenge for the healthcare institutions.

In the Philippine, the Department of Health (DoH) reinforces and institutionalizes the implementation of quality assurance where patient safety becomes the pillar of quality care as a response to the 55th World Health Assembly held on May 18, 2002 (Department of Health, 2008). The issuance of Administrative Order (AO) No. 2008 – 0023 aims to "ensure that patient safety is institutionalized as a fundamental principle of the health care delivery system in improving health outcomes" (Department of Health, 2008, p. 1). Furthermore, the AO lays its foundation grounded in the critical elements of a patient safety program including leadership, institutional development, reporting system, feedback and communication, adverse event prevention and risk management, the disclosure of reported serious events, professional development, and patient-centered care, and empowerment of consumers.

With this, the DoH and the Philippine Health Insurance Corporation (PHIC) are working collaboratively with other service partners in ensuring patient safety. In a similar vein, the service providers endeavor to standardize services through accreditation either local or international to ensure patient safety. Despite the increasing awareness of safety and development of goals, patient harm remains a concern and creating a culture of safety has been the targeted by these institutions. However, the paucity of evidence prompted the Department of Health (2008) that "there is a dire need to encourage more research into patient safety, epidemiological studies of risk factors, effective protective interventions, assessment of the associated cost of damage and protection" (p. 1). Hence, the researchers were motivated in the conduct of this preliminary evaluation to investigate the critical elements of NPSGs level of attainment in selected tertiary hospitals. The findings of this preliminary study hope to contribute to the existing body of knowledge in the implementation of patient safety in the Philippines, develop a holistic model for patient safety, and propose future studies on how nursing service can implement PSG effectively.

## PURPOSE

This study aimed to evaluate the level of attainment of patient safety goals among nurses in selected tertiary hospitals in Metro Manila, Philippines.

## METHODS

This study employed a field, descriptive and historical research survey designs. There were three tertiary hospitals with a bed capacity ranged from 300-500 and categorized as specialty and teaching hospitals were chosen as the research locale. Before the data collection, the researchers sought for ethical approval from each institution in coordination with the Nursing Service Offices. Upon the receipt of the approval, the researchers personally distributed the questionnaires to the eligible participants. The eligible participants were selected with at least one year of experience in their current workplace primarily from surgery/operating room, infection control, and clinical units where patient safety indicators are considered to be critical. Two-hundred fourteen nurses were informed and consented about the conduct of the study, their voluntary participation, and rights to anonymity and confidentiality. The researchers were available for any queries regarding the administration of the questionnaires.

The self-rated questionnaires were content, and face validated by three experts in this field guided by the NPSG indicators as the primary source (Joint Commission International, 2007). Each participant evaluated the indicators using a 5-point Likert scale (5-attained at a very high extent and 1-attained at a very low extent). The questionnaires also underwent a pre- and post-test and revealed high reliability ($\alpha$ >.70).

Descriptive statistics were utilized in describing the demographic profile of the participants; weighted averages were utilized to determine the level of attainment on patient safety goal wherein areas with at least 3.50 are considered strengths while weighted averages less than 3.50 are weaknesses. The One-Way ANOVA was used to measure the significant differences in the PSG level of attainment. The data were computed using SPSS.

## RESULTS

### Profile Characteristics

Table 1 shows the frequency and percentage distribution of participants' profile characteristics. Among the participants, 89.25% were staff nurses, and 10.75% were managers and supervisors. Majority of the participants with 76.20% (*n*=164) were in <1 to 5 years of service. As many as 12.60% (*n*=27) were in >5 to 10 years of experience. Those with >10 to 15 years and more than 15 years in both service garnered 5.61% (*n*=12). Furthermore, 96.73% (*n*=207) were BSN graduates, while 2.80% (*n*=6) were master's degree holder and 0.47% (*n*=1) was a doctorate degree holder.

*Table 1. Distribution of profile characteristics (n=214)*

| Profile Characteristics | f | % |
|---|---|---|
| Position | | |
| Managerial or Supervisory | 23 | 10.75 |
| Staff Nurse | 191 | 89.25 |
| Length of Service | | |
| Less than 1-5 years | 164 | 76.20 |
| 5-10 years | 27 | 12.60 |
| 11-15 years | 12 | 5.61 |
| More than 15 years | 12 | 5.61 |
| Highest Educational Attainment | | |
| BSN Graduate | 207 | 96.73 |
| Master's Degree Holder | 6 | 2.80 |
| Doctorate Degree Holder | 1 | 0.47 |

### PSGs' Level of Attainment in Selected Tertiary Hospitals in the Philippines

PSG No. 3 indicators obtained high means include: label of all medications, medication containers, and other solutions on and off the sterile field in perioperative and other procedural settings (*M*=4.28, High Extent), reduce the likelihood of patient harm associated with the use of anticoagulant therapy (*M*=3.96, High Extent) and maintain and communicate accurate patient medication information (*M*=4.17, High Extent). PSG No. 4 obtained high means include: leaders establish alarm system safety as a hospital priority (*M*=4.17, High Extent), identify the most critical alarm signals to manage (*M*=3.81, High Extent), establish policies and procedures for managing the alarms (*M*=3.59, High Extent), and educate staff and licensed independent practitioners about the purpose and proper operation of alarm systems for which they are responsible (*M*=3.64, High Extent). PSG No. 5 indicate the following obtained means: comply with either the current CDC or the current WHO hand hygiene guidelines (*M*=3.80, High Extent), implement evidence-based practices to prevent HCAIs due to multidrug-resistant organisms in acute care hospitals (*M*=3.91, High Extent), implement evidence-based practices for preventing surgical site infections (*M*=3.85, High Extent) and implement evidence-based practices to prevent indwelling catheter-associated urinary tract infections (CAUTI) (*M*=4.13, High Extent). PSG No. 6 obtained a high mean regarding identify patients at risk of suicide (*M*=3.77, High Extent). PSG No. 7 indicators obtained means were: conduct a pre-procedural verification process (*M*=4.44, High Extent) followed by mark the procedure site (*M*=3.82, High Extent) and time-out is performed before the procedure (*M*=4.34, High Extent).

Table 2 shows the mean distribution of the level of attainment in selected tertiary hospitals. PSG No. 1 indicators obtained high means include the use of at least two patient identifiers when providing care, treatment, and services (*M*=4.31, High Extent) and eliminate transfusion errors related to patient misidentification (*M*=4.38, High Extent). PSG No. 2 indicators obtained high means include reporting critical results of tests and diagnostic procedures on a timely basis (*M*=3.97, High Extent). PSG No. 3 indicators obtained high means include: label of all medications, medication containers, and other solutions on and off the sterile field in perioperative and other procedural settings (*M*=4.28, High Extent), reduce the likelihood of patient harm associated with the use of anticoagulant therapy (*M*=3.96, High Extent) and maintain and communicate accurate patient medication information (*M*=4.17, High Extent). PSG No. 4 obtained high means include: leaders establish alarm system safety as a hospital priority (*M*=4.17, High Extent), identify the most critical alarm signals to manage (*M*=3.81, High Extent), establish policies and procedures for managing the alarms (*M*=3.59, High Extent), and educate staff and licensed independent practitioners about the purpose and proper operation of alarm systems for which they are responsible (*M*=3.64, High Extent). PSG No. 5 indicate the following obtained means: comply with either the current CDC or the current WHO hand hygiene guidelines (*M*=3.80, High Extent), implement evidence-based practices to prevent HCAIs due to multidrug-resistant organisms in acute care hospitals (*M*=3.91, High Extent), implement evidence-based practices for preventing surgical site infections (*M*=3.85, High Extent) and implement evidence-based practices to prevent indwelling catheter-associated urinary tract infections (CAUTI) (*M*=4.13, High Extent). PSG No. 6 obtained a high mean regarding identify patients at risk of suicide (*M*=3.77, High Extent). PSG No. 7 indicators obtained means were: conduct a pre-procedural verification process (*M*=4.44, High Extent) followed by mark the procedure site (*M*=3.82, High Extent) and time-out is performed before the procedure (*M*=4.34, High Extent).

*Table 2. Patient safety goals' level of attainment*

| | | Indicators | Mean | Interpretation |
|---|---|---|---|---|
| PSG 1 | 1. | Use at least two patient identifiers when providing care, treatment, and services | 4.31 | High Extent |
| | 2. | Eliminate transfusion errors related to patient misidentification | 4.38 | High Extent |
| PSG 2 | 3. | Report critical results of tests and diagnostic procedures on a timely basis | 3.97 | High Extent |
| PSG 3 | 4. | Label all medications, medication containers, and other solutions on and off the sterile field in perioperative and other procedural settings | 4.28 | High Extent |

| | Indicators | Mean | Interpretation |
|---|---|---|---|
| | 5. Reduce the likelihood of patient harm associated with the use of anticoagulant therapy | 3.96 | High Extent |
| | 6. Maintain and communicate accurate patient medication information | 4.17 | High Extent |
| PSG 4 | 7. Leaders establish alarm system safety as a hospital priority. | 3.81 | High Extent |
| | 8. Identify the most critical alarm signals | 3.69 | High Extent |
| | 9. Establish policies and procedures for managing the alarms identified in No. 2. | 3.59 | High Extent |
| | 10. Educate staff and licensed independent practitioners about the purpose and proper operation of alarm systems for which they are responsible | 3.64 | High Extent |
| PSG 5 | 11. Comply with either the current Centers for Disease Control and Prevention (CDC) hand hygiene guidelines or the current World Health Organization (WHO) hand hygiene guidelines | 3.80 | High Extent |
| | 12. Implement evidence-based practices to prevent HCAIs due to multidrug-resistant organisms in acute care hospitals | 3.91 | High Extent |
| | 13. Implement evidence-based practices to prevent central line-associated bloodstream infections | 3.75 | High Extent |
| | 14. Implement evidence-based practices for preventing surgical site infections | 3.85 | High Extent |
| PSG 6 | 15. Conduct a risk assessment that identifies specific patient characteristics and environmental features that may increase or decrease the risk for suicide. | 3.73 | High Extent |
| | 16. Address the patient's immediate safety needs and most appropriate setting for treatment. | 3.95 | High Extent |
| | 17. Provision of suicide prevention information to the patient and his/her family. | 3.62 | High Extent |
| PSG 7 | 18. Conduct a pre-procedure verification process | 4.44 | High Extent |
| | 19. Mark the procedure site | 3.82 | High Extent |
| | 20. Time-out is performed before the procedure | 4.34 | High Extent |

### Overall Summary of PSGs Level of Attainment and Significant Differences

Table 3 shows the summary of the average mean and significant difference in the level of attainment of patient safety goals. All the indicators identified were considered strengths on the level of attainment among the tertiary hospitals (M>3.50). On the other hand, PSGs Nos. 3 and 4 with p values of 0.02 and 0.00 respectively have significant differences.

*Table 3. Significant differences in the assessment of PSGs level of attainment*

| PSGs | F | *p* | F |
|---|---|---|---|
| PSG No. 1 | 1.59 | 0.21 | 3.06 |
| PSG No. 2 | 0.86 | 0.42 | 3.06 |
| PSG No. 3 | 3.91 | 0.02 | 3.06 |
| PSG No. 4 | 7.37 | 0.00 | 3.06 |
| PSG No. 5 | 0.40 | 0.68 | 3.98 |

| PSGs | F | *p-value* | F |
|---|---|---|---|
| PSG No. 6 | 2.81 | 0.06 | 3.06 |
| PSG No. 7 | 0.22 | 0.81 | 3.21 |

$p < 0.05$

## DISCUSSION

The Institute of Medicine (IOM) detailed the multifaceted dimensions of systems and human errors leading to patient harm (Donaldson et al., 2000). The identification of patient harm facilitates the development of holistic perspective from the identified causes to the sustaining capacity of the organizations to embody patient safety core principles. Donaldson et al. (2000) posited a sizeable corpus of medical errors as a primary cause of death and injury among individuals and the direct and indirect financial losses due to preventable adverse events. Thus, to ensure a ‘no harm’ environment, patient safety has become a shared responsibility between and among the healthcare providers, patients, and other members of the organization.

The World Health Assembly in 2002 provided venues for many countries to address the status of patient safety provision. As such, in the Philippines through the Department of Health responded to this clamor by issuing the AO No. 2008-0023 to ensure that patient safety is integrated into the system of all the hospitals in various settings. Hence, many hospitals in the country have been mandated to develop a mechanism of the audit through quality improvement initiatives anchored in patient safety. However, there is no available existing information about these hospitals.

Based on the findings of this study, selected tertiary hospitals obtained a high level of attainment in PSG that comprised of seven goals. PSG No. 1 aims at improving the accuracy of patient identification that also accounts for the use at least two patient identifiers when providing care, treatment and the elimination of transfusion errors related to patient misidentification. Patient identification is the most basic but essential part of the process in the prevention of patient harm. Patient identifiers vary among institutions, but the most common being utilized are the patient’s ID band and the case number. However, Lemos and da Silva Cunha (2017) observed that the protocol of identification of patients is practiced with failures among nurses and an institutional challenge. Another issue that concerns patient safety is incidents during medications associated with misidentifications occur, and wrong-patient (Härkänen, Tiainen, & Haatainen, 2018) Medication errors are most likely prevented when all other rights of medication administration are observed (Chinn, 2014; Marquard et al., 2011). Apart from this, nurses need to follow the standard of counterchecking the blood component with another qualified individual before administration (Alter & Klein, 2008; Chan et al., 2004; Chinn, 2014). In the advent of technology, the use of facial recognition (McCleary, 2018), electronic wristband (De Souza Macedo et al., 2017) automated patient identification and record matching (Fernandes, Burke, & O'Connor, 2017) could offer a solution to prevent this further harm to patients.

PSG No. 2 aims to improve the effectiveness of communication among caregivers which can be achieved using well-understood daily patient care goal alignment, shared vision, and multidisciplinary involvement (Ainsworth, Pamplin, Rn, Linfoot, & Chung, 2013). Despite patient care varies on how it is delivered, or the differing perceptions among the members of the healthcare, communication becomes a mechanism towards openness and acceptance (Ainsworth et al., 2013). Furthermore, through open communication, it is easier to abrogate the feeling of uneasiness or fear in reporting critical results of tests and diagnostic procedures on a timely basis, managing the critical results of tests and diagnostic procedures, and using a two-person verification process. Any critical results or panic values require prompt treatment, rapid communication and intervention to avoid cumbersome effects (Fracica, Lafeer, Minnich, & Fabius, 2006; Singh & Vij, 2010).

PSG No. 3 aims to improve the safety in using medications along with using the label in all the medications, medication containers, and other solutions on and off the sterile field in perioperative and other procedural settings, reduce the likelihood of patient harm associated with the use of anticoagulant therapy, and maintain and communicate accurate patient medication information. Nurses are responsible for identifying not only the patients themselves but also medications and supplies belong to them. In this manner, ownership of the materials used in the care of the patients is secured. It implied that cross contaminations could be prevented. Nurses strictly observe the right in medication administration to check for the expiration date and label the medications. A non-punitive environment as suggested by Fracica et al. (2006) could help the organization in improving safety measures about errors and near misses. Another action is the computerized physician order entry (CPOE) that provides a real-time decision support input about drug selection, and eliminate problems of miscommunication (Fracica et al., 2006).

PSG No. 4 aims to improve the safety of clinical alarm systems. Safety is one of the priorities of the hospital where patients seek health services accompanied by the trust that they will not be harmed during treatment. Such patient trust can be strengthened using providing any mechanism such as clinical alarm system to anticipate foreseeable problems in patient care (Mascioli, 2016; Sue & Marjorie, 2013). Sue and Marjorie (2013) further asserted the use of daily electrocardiogram electrode changes, proper skin preparation, education, and customization of alarm parameters offer safety environment. On the contrary, clinician motivation, self-discipline and commitment have been coined as potential causes of alarm fatigue (Rayo & Moffatt-Bruce, 2015) that can be addressed through the clinical alarm management (CAM). This CAM adopts a pragmatic and rigorous approach to diagnose and treat the alarm-related issues (Rayo & Moffatt-Bruce, 2015)

PSG No. 5 aims to reduce the risk of HCAIs through compliance with either the CDC or the WHO hand hygiene guidelines. There is also a need to implement evidence-based practices to prevent healthcare-associated infections due to multidrug-resistant organisms in acute care hospitals and for preventing surgical site infections, and indwelling catheter-associated urinary tract infections (CAUTI). A practical implementation of policies based on the standards and regulatory requirements is needed as these changes over time and require the institutions to update their standard operating procedures. Steinberg et al. (2013) opined that hospital environment has the sole responsibility of preventing disease-causing, or pathogenic, microorganisms. If

HCAIs continue to proliferate, it would be a financial burden to healthcare organizations (Umscheid et al., 2011).

PSG No. 6 focuses on identifying the patients at risk of suicide. There are existing screening, referral systems, and appropriate settings for treatment among the institutions for a patient who is at risk for suicide through. Provision of suicide prevention information to the patient and family should be improved as well as the information needed to be either oral or written forms. The Institute of Medicine in 1999 (cited in Donaldson et al., 2000) advocated the development and implementation of patient safety programs based on safety principles to prevent any harms to patients, significant others, and healthcare team members. Through early identification of the associated factors and provision of information (e.g., crisis hotlines) to individuals and family members (Robst, 2015) risk can be prevented.

PSG No. 7 aims to prevent mistakes in surgery through the conduct of a preprocedural verification process, marking the procedure site, and time-out before the procedure. Patient misidentification can contribute to medication, surgical and charting errors (Campbell et al., 2015), thus, a strict compliance to proper patient identification prevent wrong-site surgery that "encompasses surgery performed on the wrong side or site of the body, the wrong surgical procedure carried out, and surgery performed on the wrong patient" (Mulloy & Hughes, 2008). Tichanow (2016) added that errors during surgery arise from a breakdown of communication between members of a multidisciplinary team or ineffective teamwork. Seiden and Barach (2006) revealed 5,940 cases of wrong-site surgery in 13 years accounted for 2,217 wrong side surgical procedures and 3,723 wrong-treatment/wrong procedure errors. This appalling issue prompted the World Health Organization (2009) to release the WHO Surgical Safety Checklist for use in any operating theatre environment for the relevant clinical teams to improve the safety of surgery by reducing deaths and complications.

The PSG level of attainment varied from one hospital to another that signifies variations in the implementation of patient safety culture. Though institutions have the same standards in ensuring safe and quality nursing care which are contributory factors of patient safety, there are variations on how it is observed and practiced. Although significant differences are noted, reinforcement of patient safety guidelines and protocols should be the topmost priority which requires involvement, commitment, and collaboration. Various studies conducted showing the effects of PSG implementation on patient, organization, and community outcomes that would further need validation within the parlance of nursing service management as one of this study's future direction (Figure 1).

## CONCLUSION

The selected hospitals in this study indicate a high level of attainment about patient safety goals. Nurses from different areas although shared different views and practices, patient safety remains at the core of service delivery. However, patients, family members, and other health allied practitioners should also be involved in its program implementation, monitoring, and evaluation. The hospital should further enhance the knowledge, skills, and attitudes towards a sustained patient safety culture through continuing education programs, benchmarking, institutionalization, and accreditation. Many efforts have been made to intensify the Department of Health's response to the patient safety administrative order, and yet there is dearth of evidence in evaluating the attainment of PSG within the Philippine context. Despite a limited number of hospitals included in this preliminary study, it offers preliminary findings and a new direction on how nurses viewed the patient safety goals in their current workplaces. With this, future studies will be conducted using a multidisciplinary inclusion. Further, the areas of nursing management will also be performed to explore how those areas can influence the sustenance of PSG implementation.

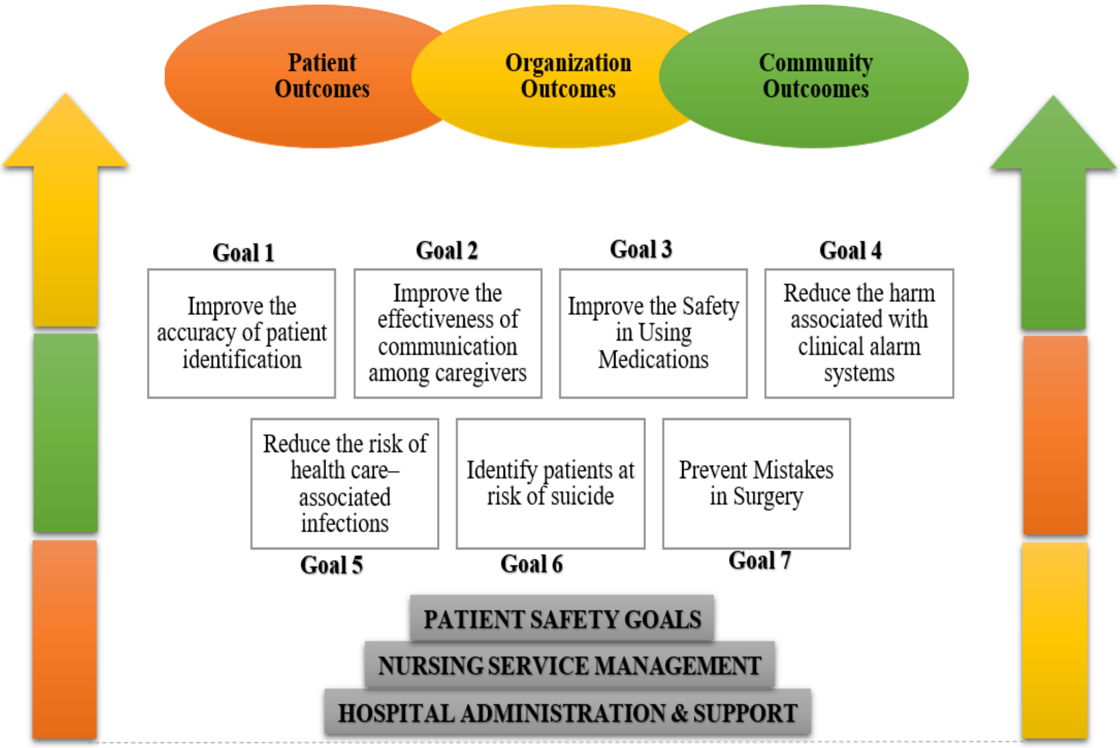

Figure 1. Future direction for PSG implementation in the Philippines

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# Quality of Life and Associated Factors in Indonesian Diabetic Patients with Foot Ulcers

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## ABSTRACT

**Background**: Diabetic foot ulcer will cause a reduction in quality of life (QOL), high care burden, and even mortality. An assessment of QOL and associated factors in patients with diabetic foot ulcer is important to provide evidence for establishing a care plan program for such patients. However, up to the present, there is no evidence of a published study that investigates the QOL and its associated factors in patients with diabetic foot ulcer in Indonesia.
**Purpose**: The purpose of this study was to investigate the QOL in patients with diabetic foot ulcer in each domain and investigate the factors associated with this condition.
**Methods**: The design of this study was a cross-sectional study. The total sample for this study was 55 patients. The QOL data were collected using a Diabetic Foot Ulcer Scale questionnaire. Statistical analyses were conducted using Mann-Whitney U-test and Kruskal-Wallis test.
**Results**: The result showed that the QOL in the domains of emotions, positive compliance, family life, and friend were high, while the QOL in the domains of daily activities, physical health, leisure, finances, positive attitude, and treatment ranged from low to average. Significant differences were found between income ($p$=0.004), grade of the wound ($p$=0.047), number of wounds ($p$=0.029), and blood glucose ($p$=0.013) with QOL of patients. Other variables did not have a significant relationship with QOL, but marital status had a significant correlation with the domain of leisure ($p$=0.004) and duration of the ulcer had a significant correlation with the domain of emotions ($p$=0.001)
**Conclusion**: There is a correlation between income, grade of the wound, the number of wounds, and blood glucose with QOL of patients with a diabetic foot ulcer. This study recommends to take into account economic status, grade and number of wound, and blood glucose level in order to improve the QOL of patients for an effective patient care plan.

**Keywords**: Diabetic; foot ulcer; quality of life

## BACKGROUND

Diabetes mellitus (DM) is a chronic disease that has become a global problem since its number is rapidly increasing. In 1980, 108 million people were diagnosed with DM, which increased to 422 million in 2014 (Deshpande, Harris-Hayes, & Schootman, 2008). It is predicted that there will be 592 million people with DM worldwide (1 in 10 persons) by 2035 (Leon & Maddox, 2015). The number of DM patients in Indonesia is also increasing. A previous study reported that the number of diabetic people in Indonesia reached 8.4 million in 1995, which then doubled in 2006. Indonesia was even included in the top ten countries with the largest number of DM patients (Shaw, Sicree, & Zimmet, 2010).

The increase in patients with DM will consequently increase the number of people with DM complications. One of the most severe complications associated with DM is diabetic foot ulcer. Previous studies reported that 15% of patients with DM would develop a foot ulcer during their lifetime (Mathur et al., 2017). Diabetic foot ulcer was also a causative factor for amputation. A previous study reported that 85% of lower limb amputations in the US are due to diabetic foot ulcer (Driver, Fabbi, Lavery, & Gibbons, 2010). A study by Yusuf et al. (2016) reported a prevalence of diabetic foot ulcer in Sulawesi of 12%. This number is higher compared to other countries, even China, which has only a prevalence of about 5.9% (Yusuf et al., 2016). Sulawesi’s prevalence might be higher since many cases of diabetic foot ulcer in Indonesia have been unreported. Moreover, several previous studies showed that many patients of DM in Indonesia are at risk of developing foot ulcers due to the lack of knowledge with regard to diet management for DM patients (Aklima, Kritpracha, & Thaniwattananon, 2012, 2013; Primanda, Kritpracha, & Thaniwattananon, 2011)

Previous studies reported that diabetic foot ulcer could reduce the mobility of patients (Al-Rubeaan et al., 2015; Tuttolomondo, Maida, & Pinto, 2015). The loss of mobility will affect the activities and everyday tasks of patients. This consequence has been reported to cause depression and increase budget, resulting in a reduction of QOL (de Jesus Pereira et al., 2014; Gilpin & Lagan, 2008; Salome, Blanes, & Ferreira, 2011). The presence of diabetic foot ulcer also affects the economic condition of patients. A previous study reported that about 50% of patients with diabetic foot ulcer lost their job due to their condition. The loss of job will diminish their self-esteem, especially for younger patients. Other studies showed that patients with diabetic foot ulcer feel more anger, frustration, depression, and powerlessness than diabetic patients without foot ulcer (de Jesus Pereira et al., 2014; Gilpin & Lagan, 2008). From these previous studies, it can be concluded that diabetic foot ulcer causes a reduction of QOL.

Unfortunately, most studies about the QOL of patients with diabetic foot ulcer were conducted in developed countries (Macioch et al., 2017; Prazeres & Figueiredo, 2014; Spanos et al., 2017). Until now, studies about QOL in patients with foot ulcer conducted in developing countries are very limited, and no studies exist that investigated the associated factors of QOL in patients with diabetic foot ulcer in Indonesia. A previous study reported that the difference in the region would affect many aspects of QOL (Sekhar, Thomas, Unnikrishnan, Vijayanarayana, & Rodrigues, 2015). The study about QOL in diabetic patients have been widely conducted in Indonesia, however up to present, the study about QOL in patients with diabetic foot ulcer in Indonesia is very few, and no study investigates the associated factors of QOL in patients with diabetic foot ulcer in Indonesia. Previous studies showed that patients with diabetic foot ulcers had significantly much poorer QOL compared with diabetic patients without foot ulcers (Almeida, Silviera, Santo, Pereira, & Salome, 2013; Ribu, Hanestad, Moum, Birkeland,

& Rustoen, 2007). Another previous study also showed that patients with diabetic foot ulcer had significantly lower QOL in all domains of QOL (Almeida et al., 2013). Based on the previous studies, it can be concluded that the QOL in diabetic patients with foot ulcer is different with QOL in diabetic patients without foot ulcer.

A previous study by Syarif investigated the QOL in patients with diabetic foot ulcers in Serang, Indonesia (Syarif, 2013). His study showed that 57.6 % of all patients with diabetic foot ulcer have low QOL. His study also showed that both the physical and environmental domains were low while the social and psychological domains were high. The study by Syarif (2013) only investigated the QOL of patients; however, the factors associated with QOL in patients with diabetic foot ulcer in Indonesia had not been studied yet. Moreover, his study only investigated three domains of QOL. Other previous studies revealed that the domains of QOL in patients with diabetic foot ulcer consisted of 11 domains including the domains of leisure activities, physical health, daily activities, emotions, noncompliance, family life, friends, foot and wound treatment, satisfaction toward medical care, positive attitude, and financial ability (Macioch et al., 2017; Prazeres & Figueiredo, 2014; Spanos et al., 2017). The assessment of the QOL and its associated factors is important for nurses since a previous study revealed that 85% of amputations were due to complication from diabetic foot ulcer and low QOL (Gilpin & Lagan, 2008). Such an assessment can be used as evidence for the best intervention program for patients with a diabetic foot ulcer. Therefore, it is needed to investigate the QOL in each domain and the factors associated with QOL in patients with diabetic foot ulcer in Indonesia. This study is the first study to investigate the associated factors of QOL of patients with diabetic foot ulcer in Indonesia.

## PURPOSE

This study aimed to investigate the QOL for each domain and the factors associated with QOL in diabetic patients with foot ulcer in Indonesia.

## METHODS

This study was conducted as a cross-sectional study, and a total of 55 patients were included in this study. The sampling method was purposive sampling. Patients attending two wound care centers and one hospital in Purwokerto, from January to August 2017, were consecutively recruited by the nurses.

The inclusion criteria of this study were the patients with a diabetic foot ulcer and older than 35 years. The exclusion criteria were patients with cardiovascular and pulmonary problems; patients with ulcers from causes other than diabetic ulcers, such as malignant ulcer or wound due to the accident; patients who were illiterate or patients who could not complete the questionnaire due to cognitive deficit, such as those with dementia or mental confusion.

Before participating in the study, all diabetic patients with foot ulcers who met inclusion and exclusion criteria were informed of the reason and the aim of the study. Patients were also informed of their right to decline for participating in this study. All patients who agreed to participate were given a consent form to participate. The identities of patients were also kept confidential. The ethical approval of this study was obtained from the ethical committee of the Faculty of Medicine, Jenderal Soedirman University, Purwokerto, Indonesia.

The severity of the foot ulcers was classified according to the classification of Meggitt-Wagner (Wagner, 1981). The wounds were classified as follows; grade 1: ulcer involves epidermis and dermis layer/superficial layer, grade 2: ulcer extends to deep layer of skin without abscess or osteomyelitis, grade 3: ulcer extends to deep layer of skin with abscess, and osteomyelitis, grade 4: a localized gangrene in portion of toes, forefoot or heel, grade 5: extensive gangrenous involves all the part of foot (Wagner, 1981).

The data about QOL were collected using the diabetic foot ulcer scale (DFS). The DFS was designed by Johnson and Johnson (ICOM Health Economics, US). The DFS questionnaire is an instrument, which was designed to assess the domain of QOL in diabetic patients with foot ulcers. The original DFS consists of 11 domains with a total of 58 items. The domains include the domain of daily activities, physical health, leisure activities, emotions, family life, noncompliance, friends, foot and wound treatment, satisfaction toward medical care, positive attitude, and financial ability (Abetz, Sutton, Brady, McNulty, & Gagnon, 2002).

The scoring method of DFS scale used five optional Likert scales. The DFS scores were calculated based on the sum of all items related to a particular domain. In each item, value 1 indicates the worst QOL, and value 5 indicates the best QOL. All of the DFS scales were scored from 0 to 100, with higher scores indicating better QOL (Abetz et al., 2002; Bann et al., 2003; Vymětalová & Zeleníková, 2016).

The DFS has been tested in various languages (Abetz et al., 2002). The result showed that DFS has high validity and reliability. The questionnaire has been translated into Indonesian and was then back-translated. The result of the validity test showed that all domains were valid, except for the domain of satisfaction. Therefore, the total domains after validity test were ten domains. The result of the reliability showed a Cronbach's coefficient alpha of 0,761 (Abetz et al., 2002; Bann et al., 2003; Vymětalová & Zeleníková, 2016).

Data analyses were performed using SPSS. Descriptive data were analyzed by using means, percentage, and standard deviation. After the normality of the data was analyzed, nonparametric tests such as Mann-Whitney U-test and Kruskal-Wallis test were used.

## RESULTS

### The demographic profile of respondents

The distribution of samples according to their age, education, employment status, gender, marital status, income, smoking, and type of treatment is shown in Table 1. Table 1 shows that most patients were at the age of 56-65 years (49.1%), had a background of secondary high school (38.2%), were employed (54.5%), were female (65.5%), were married (92.7%), had low income (43.6%), had normal body mass of index (67.3%), did not smoke (94.5%), and received oral diabetes treatment (63.6%).

*Table 1. Demographic data of respondents*

| Variables | f | % |
|---|---|---|
| Age | | |
| 36-45 | 1 | 1.8 |
| 46-55 | 13 | 23.6 |
| 56-65 | 27 | 49.1 |
| Above 65 | 14 | 25.5 |
| Education | | |
| No education | 3 | 5.5 |
| Secondary School | 21 | 38.2 |
| Junior High School | 8 | 14.5 |
| Senior High School | 12 | 21.8 |
| Bachelor | 11 | 20 |
| Employment status | | |
| Housewife | 14 | 25.5 |
| Employed | 30 | 54.5 |
| Unemployed | 5 | 9.1 |
| Retired | 6 | 10.9 |
| Gender | | |
| Male | 19 | 34.5 |
| Female | 36 | 65.5 |
| Marital Status | | |
| Married | 51 | 92.7 |
| Single | 1 | 1.8 |
| Widowed | 2 | 3.6 |
| Income | | |
| High | 20 | 36.4 |
| Moderate | 11 | 20 |
| Low | 24 | 43.6 |
| Body mass index | | |
| Slim | 2 | 3.6 |
| Normal | 37 | 67.3 |
| Excess weight | 16 | 29.1 |
| Smoking | | |
| Yes | 3 | 5.5 |
| No | 52 | 94.5 |
| Type of treatment | | |
| No Medication | 4 | 7.3 |
| Insulin | 16 | 29.1 |
| Oral | 35 | 63.6 |

**Characteristic of wounds**

The wound characteristics such as grade of the wound, number of ulcers, and duration of ulcers are shown in Table 2. Related with the grade, most of the patients were in grade 2 (60%), and had one ulcer (72.7%). Related with the duration of ulcers, most of the ulcer had been present for less than six months (87.3%).

*Table 2. Characteristics of wounds*

| Variables | f | % |
|---|---|---|
| Grade of wound | | |
| Grade 1 | 7 | 12.7 |
| Grade 2 | 33 | 60 |
| Grade 3 | 11 | 20 |
| Grade 4 | 4 | 7.3 |
| Number of ulcers | | |
| One | 40 | 72.7 |
| Two | 11 | 20 |
| Three | 4 | 7.3 |
| Duration of ulcer | | |
| Less than six months | 48 | 87.3 |
| Six months to one year | 4 | 7.3 |
| More than one year | 3 | 5.5 |

**Quality of life of patients and associated factors**

The data related to the QOL of patients in each domain with a diabetic foot ulcer is shown in Table 3. The mean scores for the DFS domains ranged from 40 in the domain of positive attitude to 89 in the domain of emotions. The domains of positive attitude, treatment, and daily activities had a mean score below 50, while the domains of leisure, physical health, financial, friends, noncompliance, family life, and emotions had a mean score above 50.

The data about factor associated with QOL and factor associated with each domain of QOL are shown in Table 4. There were significant differences between income ($p$=0.004), grade of the wound ($p$=0.047), number of the wound ($p$=0.029), and blood glucose ($p$=0.013) with QOL of patients. Although the QOL of other factors were not correlated with the QOL, the marital status has a significant correlation with the domain of leisure ($p$=0.004), and the duration of ulcer had a significant correlation with emotions ($p$=0.001).

*Table 3. Domains of QOL in patients with diabetic foot ulcer*

| Domain of QOL | Mean | *SD* |
|---|---|---|
| Leisure | 54 | 29.6 |
| Physical health | 56 | 9.5 |
| Daily activities | 47 | 26 |
| Emotions | 89 | 14 |
| Noncompliance | 80 | 25 |
| Family life | 80 | 16 |

| Domain of QOL | Mean | *SD* |
|---|---|---|
| Friends | 79 | 16 |
| Treatment | 46.5 | 26.3 |
| Positive attitude | 40 | 26.3 |
| Financial | 6 | 17 |

## DISCUSSION

The finding showed that the domains of emotions, noncompliance, family life, and friends were high. The mean domain of emotion in this study was 89. In this study, the mean score of the emotion domain was higher compared to previous studies (Valensi, Girod, Baron, Moreau-Defarges, & Guillon, 2005; Vymětalová & Zeleníková, 2016). This result is surprising since the previous studies were conducted in France (Valensi et al., 2005) and in Czech (Vymětalová & Zeleníková, 2016), which are considered as developed countries. It had been considered that the QOL in a developed country should be better than a developing country, such as Indonesia. The domain of emotion reflects the evaluation of emotional status due to foot problems, indicating that Indonesian people, in this study, could adapt to the presence of the foot ulcer.

The positive compliance in this study also has a high score. Noncompliance scale in DFS consisted of healthy behaviors (diet) and medical compliance. The high score of positive compliance in this study means that patients have more attention to manage the diet when there is foot ulcer than when patients did not have a foot ulcer. In addition, patients are also more compliant with medical advice related to her/his condition. The value of positive compliance in this study was higher than that in a previous study by Valensi et al. (2005). Based on previous studies, several factors can affect the compliance of the patients, such as severity of the condition, physical difficulties due to illness, and cost of treatment (Jin et al., 2008). These factors might be the reason why the positive compliance in this study is higher than in the previous study. In our study, most of the patients have grade 2 and 3 of diabetic foot ulcer, while in the study Valensi et al. (2005), most of the patients have grade 1 of diabetic foot ulcer. The more severe condition in our study might lead to more physical difficulties and higher cost of treatment, and therefore, the compliance with medical advice is higher.

On the other hand, the domains of daily activities, physical health, leisure, financial, positive attitude, and treatment domain had low to average QOL. Previous studies have reported that the presence of diabetic foot ulcer will affect the activity of daily living, physical health, social and family life, as well as partake in leisure activities (Bouhassira, Letanoux, & Hartemann, 2013; Gilpin & Lagan, 2008; Steel, Reece, & Daw, 2016). A previous study showed that foot ulcer significantly affected the person ability to perform daily activities (Gilpin & Lagan, 2008). The loss of the ability to move will affect patients in their activities and everyday tasks (Gilpin & Lagan, 2008). The loss of mobility also causes pressure in the working life of patients since patients cannot easily perform tasks in the workplace. Such inability of free movement will eventually cause anger, depression, powerlessness, and, an increased budget for treatment, resulting in a reduction of QOL (de Jesus Pereira et al., 2014; Steel et al., 2016). In this study, the QOL for the subdomains of positive attitude and treatment were also average. Positive attitude and treatment domains contain the patients' ability to manage the wound and to take care of their foot. The lower positive attitude and treatment in this study might be due to the low educational background. Thus, the knowledge of patients on how to manage the wound and to take measures to prevent the wound from occurring is low.

The result of this study indicated a significant relationship between QOL and income. This result is in agreement with a previous study that reported that diabetic foot ulcer also affects finances. Studies showed that people with diabetic foot ulcer face financial difficulties, indicating that 50% of patients with diabetic foot ulcer lost their work due to foot ulcers, and the remaining 50% reported that their career prospects were limited (Gilpin & Lagan, 2008). The lack of finances and employment will finally cause a feeling of insignificance and a sense of loss.

A significant relationship between QOL and the grade of the wound, number of wounds, and blood glucose level in this study might be caused by an effect of diabetic foot ulcer that can cause limitation of daily activities, causing of increase of financial and other dependence on the family. The grade of the wound and the number of wounds affected the QOL since a severe wound will take time longer to treat than a superficial wound, and the increased number of wounds will also cause the family or the nurse to require more time to treat the single wound. Both longer healing time and increased number of wounds will cause an increase a budget for treatment. The result of this study is supported by previous studies by Gonzalez de la Torre, Quintana-Lorenzo, Perdomo-Perez, & Verdu (2017) and Valensi et al. (2005) which reported that the number of ulcers and severity of chronic wound would affect QOL of patients.

In this study, the blood glucose also affects the QOL. This study is the first study to report that blood glucose level can affect the QOL of patients with a diabetic foot ulcer. The previous study revealed that blood glucose level would cause a reduction of QOL in patients with DM, but the effect of blood glucose level in the QOL of patients with diabetic foot ulcer is not investigated yet. The decrease of QOL due to high blood glucose in patients with diabetic foot ulcer might because high blood glucose will cause the wound to deteriorate into more severe foot ulcer. A previous study by Santos, Carvalho, Souza, & Albuquerque (2015) showed that high blood glucose would cause deterioration of wound to a more severe ulcer, and finally lead to foot amputation.

Although no significant difference was found between marital status and QOL in this study, a significant relationship was found between the domain of leisure with marital status and the duration of the ulcer with emotions. This might indicate that the presence of a spouse will enable diabetic patients with foot ulcer to relax and to participate in activities. This finding is in accordance with a previous study, reporting that a person who lives alone will feel lonely and more insecure (de Jesus Pereira et al., 2014). The duration of ulcer that will cause negative emotions might be due to the increase in the financial burden since patients or family has to treat the wound for a long time.

This study has some limitations. This study was conducted with small sample size. Variation in QOL between regions in Indonesia might occur. Next study using a large sample size is needed. In our study, we excluded all patients who had cardiovascular and pulmonary problems and patients who had an amputation above the toes. However, we did not exclude other comorbidities such as nephropathy and retinopathy since these comorbidities are usually present in patients with diabetes mellitus. However, in our study, we used questionnaires of QOL which is specific for foot ulcer in each domain and therefore eliminating the responses from other causes other than due to foot ulcers. This study also had strengths that were worth to note. This study has high originality since it is the first study to assess the QOL in diabetic foot ulcer in Indonesia. In addition, we also use DFS scale which was specifically designed to assess QOL in relation to diabetic foot ulcer, instead of general QOL scales which are not specific for a diabetic foot ulcer. In this study, we also found that DFS which was translated into Indonesian showed high validity and reliability, and therefore suitable for assessing QOL in diabetic foot ulcer in Indonesia.

## CONCLUSION

The study showed that QOL of patients with a diabetic ulcer in the domains of emotions, noncompliance, family life, and a friend were high, while the domains of daily activities, physical health, leisure, financial, positive attitude, and treatment domain were low. The factors that are associated with QOL in diabetic foot ulcer patients in Indonesia are income, grade of the wound, the number of the wound, and blood glucose. This study provides very important evidence for a clinical setting. The evidence obtained in this study could be used as data for nurses to provide the best preventive care that can improve QOL of patients with a diabetic foot ulcer. It is essential to consider factors such as income, grade of the ulcer, number of ulcer, and blood glucose level when making the care plan for patients.

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*Table 4. Association of demographic data and characteristics of the wound on QOL and its domains*

| Demographic and wound characteristics | Quality of life | Domain | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Leisure | Physical health | Daily activities | Emotion | Positive compliance | Family | Friends | Treatment | Positive Attitude | Financial |
| Age | 0.106 | 0.158 | 0.146 | 0.157 | 0.323 | 0.731 | 0.357 | 0.395 | 0.475 | 0.114 | 0.426 |
| Gender | 0.552 | 0.55 | 0.288 | 0.687 | 0.881 | 0.969 | 0.888 | 0.245 | 0.833 | 0.678 | 0.622 |
| Education | 0.266 | 0.147 | 0.528 | 0.283 | 0.604 | 0.261 | 0.592 | 0.444 | 0.835 | 0.812 | 0.179 |
| Job | 0.624 | 0.635 | 0.45 | 0.993 | 0.621 | 0.836 | 0.28 | 0.939 | 0.865 | 0.344 | 0.582 |
| Income | 0.004* | 0.305 | 0.02* | 0.003* | 0.82 | 0.326 | 0.055 | 0.246 | 0.02* | 0.074 | 0.209 |
| Marital status | 0.687 | 0.004* | 0.848 | 0.56 | 0.489 | 0.342 | 0.536 | 0.931 | 0.13 | 0.018* | 0.324 |
| Grade of wound | 0.047* | 0.395 | 0.01* | 0.011* | 0.421 | 0.029* | 0.022* | 0.228 | 0.005* | 0.087 | 0.4 |
| Duration of wound | 0.155 | 0.228 | 0.713 | 0.529 | 0.001* | 0.943 | 0.733 | 0.143 | 0.205 | 0.45 | 0.111 |
| Number of wound | 0.029* | 0.164 | 0.064 | 0.024* | 0.692 | 0.015* | 0.005* | 0.019* | 0.099 | 0.111 | 0.616 |
| Blood glucose level | 0.013* | 0.022* | 0.014* | 0.024* | 0.843 | 0.790 | 0.009* | 0.083 | 0.056 | 0.348 | 0.147 |
| Smoking | 0.687 | 0.931 | 0.687 | 0.467 | 0.793 | 0.61 | 0.256 | 0.489 | 0.766 | 0.661 | 0.61 |
| History of Wound | 0.097 | 0.499 | 0.014 | 0.106 | 0.819 | 0.808 | 0.18 | 0.296 | 0.082 | 0.679 | 0.439 |
| BMI | 0.902 | 0.813 | 0.141 | 0.917 | 0.132 | 0.827 | 0.491 | 0.937 | 0.252 | 0.214 | 0.814 |
| Type of treatment | 0.063 | 0.168 | 0.232 | 0.036 | 0.716 | 0.423 | 0.08 | 0.978 | 0.021 | 0.242 | 0.104 |

*$p<0.05$ (Mann-Whitney U-test and Kruskal-Wallis test)

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# Nursing Students’ Attitudes towards Caring for Dying Patients

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## ABSTRACT

**Background**: Dying is a normal human phenomenon that requires a holistic care approach. Nurses’ attitudes towards the care for dying patients need to be explored, understood, and analyzed to improve the quality of care in palliative setting, including in nursing students.
**Purpose**: This study explored the nursing students’ attitude and its relationship with the students’ demographic profile in caring for the dying patients in Indonesia.
**Methods**: This study used a quantitative descriptive cross-sectional research design. The samples were 192 nursing students from Universitas Jember, Indonesia, who were recruited by using simple random sampling. Data were collected using the Frommelt Attitudes towards the Care of the Dying Care Form B Indonesian version (FATCOD-BI). The reliability test of FATCOD-BI showed a Cronbach’s alpha of 0.68, and the result of validity test using correlation coefficient showed the range of -0.278 to 0.544. Data were analyzed using frequency distribution, and mean differences test using t-test and One-Way Analysis of Variance (ANOVA).
**Results**: Results showed that the mean of nursing students’ attitudes in caring for dying patients was 93.83±5.96 (range 30-120). Gender and training experiences had no relationship with students’ attitudes in caring for dying patients ($p$=0.22 and $p$=0.943). There was a relationship between the experiences and student academic level and the students’ attitudes in caring for dying patients ($p$=0.023 and $p$=0.036). The students’ experiences and academic level become a primary factor in the attitudes toward caring for dying patients.
**Conclusion**: Findings revealed that student nurses’ attitudes in caring for dying patients was in low category and there was no significant relationship between gender and training experience and students’ attitudes towards caring for the dying patients. In contrast, experiences in caring for dying patients and academic level were associated with students’ attitudes. Further studies in the development of curriculum on dying patient care emphasizing on socio-demographic status are recommended.

**Keywords:** Attitudes; caring; dying patients; nursing students

## BACKGROUND

Death is a natural human phenomenon. Death is the transformation of individuals’ existence in the world and conceived as a normal process (Arslan, Akca, Simsek, &

Zorba, 2014). Death is correlated with the biological, religions and psychological aspects of both the patients and the family (Ramadas, 2013). Furthermore, the death process also involves the family as a support system and the health providers. Especially in the hospital, death process needs special treatment.

Dying as a normal process is also considered as a painful experience for human beings and their family. Dying process can influence not only physical but also psychosocial aspects. Therefore, the end of life process needs a holistic approach for its treatment (Macleod, Vella-Brincat, & Macleod, 2012). For example, in the dying process, patients and their family need a comfortable environment to facilitate spiritual or religious rituals. This situation may disturb the treatment process, especially for the terminally ill patients. Hence, health care providers should have knowledge of dying process and its influencing factors for giving appropriate treatment.

Palliative care is an approach to deal with the end of life process. Palliative care improves the quality of life of both patients and families in the face of life-threatening diseases from the first diagnosis until death through psycho, socio, cultural and spiritual approach (Macleod et al., 2012). Previous studies agreed that one form of palliative nursing implementation is the care of dying persons (Barrere, Durkin, & Lacoursiere, 2008; Lynn, 2003). Higgs (2010) indicates that end of life care (EOLC) can be defined in caring for the patients in clinical setting and in strengthening the family support system. Over the two decades, the attention of the EOLC is raised (Payne et al. 2008). EOLC needs to be applied for the response of increasing of chronic diseases (Todaro-Franceschi & Spellmann, 2012). The goals of palliative nursing are increasing the patients' quality of life especially in patients with chronic diseases (Lynn, 2003). To increase the quality of life, strengthening the patients' physical and psychological aspect is needed. Positive attitudes in the caring process can bring more power to patients which can influence the patients' physical and psychological aspects (Gallagher et al., 2015). Thus, nurses should have positive attitudes toward caring activity, especially in the dying process.

Nurses are the health workers who stay nearly 24 hours with patients, and thus they know the patients' needs appropriately (Smeltzer & Bare, 2010). Patients with total care are usually very dependent on the care given by the health care team including nurses. The patients may observe the whole nursing activities so that nurses' attitudes become very important. A previous study reported that negative attitudes from nurses, such as the feeling of fear and anxiety in nursing care, could decrease the quality of care in dying patients (Grubb & Arthur, 2016). Furthermore, another previous study also reported that negative responses of nurses facing a dying process were evoked such as anxieties, fears, and the helplessness that influence the quality of care (Gillan, van der Riet, Jeong, Riet, & Jeong, 2014). Beck, Tornquist, Brostrom, and Edberg (2012) stated that nurses need to describe their feeling through pained expression when caring for the dying patients. These studies figure out that the patients may have an unmet need since nurses may not always deliver convenient care to dying patients.

Nursing students should have positive attitudes towards dying patients in order to give excellent care. However, recent studies reported that nursing students feel unprepared when they should face patients and family within dying care (Gillan et al., 2014; Wallace et al., 2009). Grubb and Arthur (2016) emphasized that positive students' attitudes in caring for dying patients can be used as an indicator of effective therapeutic relationship with dying patients. Positive attitudes towards dying patients become a central role in developing EOLC curricula (Jeffers, 2014), and thus should be explored for the development of appropriate curricula in EOLC education. Developing nursing students' attitudes in an academic setting is more convenient and more effective than that in a clinical setting (Mutto, Cantoni, Rabhansl, & Villar, 2012).

Recent studies showed that the attitudes towards caring for dying patients have been investigated in Asia, Europe, and US. All of these studies used the Frommelt Attitudes toward the Care of the Dying Care Form B (FATCOD-B) to explore the attitudes (Frommelt, 2003; Henoch et al., 2014; Iranmanesh, Savenstedt, & Abbaszadeh, 2008; Nakai, Miyashita, & Sasahara, 2006; Wang, Li, Yan, & Li, 2016). The Death Attitude Profile-Revised (DAP-R) was also added and utilized in one of the studies (Iranmanesh et al., 2008). Other studies added information about the correlation between the characteristics of nursing students and FATCOD-B Score in the aims of study (Arslan et al., 2014; Iranmanesh, Axelsson, Häggström, & Sävenstedt, 2010). However, there is no evidence of studies which explore attitudes toward caring in dying patients in Indonesia. Therefore, investigating attitudes toward caring for dying patients and its influencing factors is needed.

## PURPOSE

This study aimed to explore nursing students' attitude towards caring for dying patients using FATCOB-B of Indonesian version and its correlation with the characteristics of students which include gender, experience in caring for dying patients, experience in attending training programs, and academic levels.

## METHODS

This study utilized a quantitative descriptive cross-sectional research design. The samples were students of School of Nursing, Universitas Jember, who were recruited using simple random sampling. The inclusion criteria were the students who have completed basic nursing courses and willing to participate in this study. The number of respondents was calculated using G*power analysis. The result showed that the power was 0.80, the effect size was 0.30 and the significance level was 0.05. As a result, 84 respondents are required (Faul, Erdfelder, Lang, & Buchner, 2007). In this study, the number of participants was 192.

Questionnaires about the characteristics of respondents and the Frommelt Attitudes toward the Care of the Dying Care Form B of Indonesian version (FATCOD-BI) were administered. The questionnaire of respondent characteristics consisted of gender, experience in caring for dying patients, experience in training programs, and academic levels. The FATCOD-BI is the adoption of the questionnaire the Frommelt Attitudes toward the Care of the Dying Care Form B (FATCOD-B) developed in the United States (Frommelt, 2003). The FATCOD-B questionnaire of Indonesian version was adopted by A'la (2016). The back-translation for FATCOD-BI was done by two experts in medical-surgical nursing and palliative nursing from Universitas Jember and Universitas Gadjah mada.

The FATCOD-BI has been tested for its validity and reliability in 127 nursing students. All items in FATCOD-BI were valid in the range of -0.278 up to 0,544. The reliability test was 0.68, indicating that FATCOD-BI was valid and reliable for the study. The FATCOD-BI consisted of 30 items and statements using five Likert scales. This questionnaire aimed to identify the respondents' attitudes towards caring for dying patients and consists of favorable and unfavorable statements. The favorable statements were items 1, 2, 4, 16, 18, 20, 21, 22, 23, 24, 25, 27 and 30. They were given a score of 1 for strongly disagree and 5 for strongly agree, and vise versa for the unfavorable statements. The total score ranged from 30-150. Higher scores indicate more positive attitudes in caring for dying patients.

The data analysis in this study was performed using descriptive and analytical approach. The descriptive approach sought the frequency distribution with a mean and standard deviation of the attitudes toward caring for dying patients. Meanwhile, the analytical approach used an independent t-test and one way ANOVA to see the correlation between the characteristics of respondents and the FATCOD-BI score.

This study obtained approval from the Ethical Committee Review Board of the Division of Research Centers in Universitas Jember. This study was conducted in January-February 2016.

## RESULT

Table 1 shows the characteristics of respondents. The majority of respondents were women (76%). Students having no experience in caring for dying patients were higher in number than the experienced ones (54.7%). Furthermore, 84.9% of students did not have experience in the training of caring for dying patients. Based on the academic level, most respondents were students in the third year with 33.9%.

*Table 1. Socio-demographic characteristics of the nursing students (n=192)*

| Characteristics | *n* | % |
|---|---|---|
| Gender | 45 | 23.4 |
| Male | 147 | 76.6 |
| Female | | |
| Experience caring for dying patient | 87 | 45.3 |
| Yes | 105 | 54.7 |
| No | | |
| Experience in caring dying patient training program | 27 | 14.1 |
| Yes | 163 | 89 |
| No | | |
| Academic Level | | |
| Year II | 45 | 23.4 |
| Year III | 49 | 25.5 |
| Year IV | 65 | 33.9 |
| Nursing Profession Program | 33 | 17.2 |

Table 2 shows the mean and standard deviation in overall score and each of items of FATCOD-BI. The average of FATCOD-BI in the nursing student was 93.88±5.66. The item with the highest score was item 22 “Care should extend to the family of the dying person” with 4.32±0,58 (2-5). In contrast, the lowest score was item 16 “Families need emotional support to accept the behavior changes of the dying person” with 1.65±0.62 (1-5).

*Table 2. The overall and each item of mean value of the Frommelt Attitudes toward Care of the Dying Scale (n=192)*

| No | Item | Mean | *SD* |
|---|---|---|---|
| 1 | Giving care to the dying person is a worthwhile experience. | 4.24 | 0.75 |
| 2 | Death is not the worst thing that can happen to a person | 3.37 | 1.15 |
| 3 | I would be uncomfortable talking about impending death with the dying person. | 2.52 | 1.12 |
| 4 | Caring for the patient’s family should continue throughout the grief and bereavement. | 3.77 | 0.87 |
| 5 | I would not want to care for a dying person | 3.90 | 0.87 |
| 6 | The nonfamily caregivers should not be the one to talk about death with the dying person. | 2.78 | 1.09 |
| 7 | The length of time required giving care to a dying person would frustrate me. | 3.38 | 0.85 |
| 8 | I would be upset when the dying person I was caring for gave up hope of getting better | 2.01 | 0.94 |
| 9 | It is difficult to form a close relationship with the dying person. | 2.52 | 0.99 |
| 10 | There are times when the dying person welcomes death. | 3.92 | 0.67 |
| 11 | When a patient asks, “Am I dying?” I think it is best to change the subject to something cheerful. Strongly | 2.59 | 1.02 |
| 12 | The family should be involved in the physical care of the dying person. | 1.71 | 0.79 |
| 13 | I would hope the person I am caring for dies when I am not present. | 2.47 | 0.89 |
| 14 | I am afraid to become friends with a dying person. | 3.45 | 0.97 |
| 15 | I would feel like running away when the person died. | 2.32 | 0.80 |
| 16 | Families need emotional support to accept the behavior changes of the dying person | 1.65 | 0.63 |
| 17 | As a patient nears death, the nonfamily caregiver should withdraw from his/her involvement with the patient. | 2.84 | 0.99 |
| 18 | Families should be concerned about helping their dying member make the best of his/her remaining life | 3.97 | 0.85 |
| 19 | The dying person should not be allowed to make decisions about his/her physical care. | 2.72 | 1.08 |
| 20 | Families should maintain as healthy an environment as possible for their dying member. | 4.09 | 0.63 |
| 21 | It is beneficial for the dying person to verbalize his/her feelings. | 4.21 | 0.66 |
| 22 | Care should extend to the family of the dying person. | 4.32 | 0.58 |
| 23 | Caregivers should permit dying persons to have flexible visiting schedules. | 2.45 | 0.92 |

| No | Item | Mean | *SD* |
|---|---|---|---|
| 24 | The dying person and his/her family should be the in-charge decision-makers | 2.07 | 0.90 |
| 25 | Addiction to pain relieving medication should not be a concern when dealing with a dying person. | 3.60 | 0.84 |
| 26 | I would be uncomfortable if I entered the room of a terminally ill person and found him/her crying. | 2.94 | 1.10 |
| 27 | Dying persons should be given honest answers about their condition. | 3.90 | 0.86 |
| 28 | Educating families about death and dying is not a nonfamily caregiver responsibility | 3.29 | 1.01 |
| 29 | Family members who stay close to a dying person often interfere with the professional's job with the patient. | 3.07 | 0.86 |
| 30 | It is possible for nonfamily caregivers to help patients prepare for death. | 3.69 | 0.81 |
| Overall scores | | 93.88 | 5.66 |

Table 3 shows the correlation between the characteristics of respondents and FATCOD-B-I overall score. In gender, the score FATCOD-B-I did not contrast significantly between women and men (94.55±5.77 vs. 94.733±5.23; *p*=0.223). Moreover, the experience of training in caring for dying patients showed no significant difference (93.85±6.17 vs. 93.77±5.59; *p*=0.94). Meanwhile, the experience of caring for dying patients contrasted significantly (94.85±5.39 vs. 92.99±5.77; *p*= 0.022). The students' academic level also showed significant difference with *p*=0.036.

*Table 3. The correlation between the characteristics of nursing students and the mean scores of Frommelt Attitudes toward Care of the Dying Scale (n=192)*

| Demographic Characteristics | Mean scores *M±SD* | *p* |
|---|---|---|
| Frommelt Attitudes toward Care of the Dying Scale Total | 93.88±5.66 | |
| Gender | | |
| Female | 94.55±5.77 | 0.224[a] |
| Male | 94.73±5.23 | |
| Experience caring for dying patient | | |
| Yes | 94.85±5,39 | 0.023[a] |
| No | 92.99±5.77 | |
| Experience in training program for caring dying patient | | |
| Yes | 93.85±6.17 | 0.943[a] |
| No | 93.77±5.59 | |
| Academic Level | | |
| Year II | 92.04±6.50 | 0.036[b] |
| Year III | 95.06±5.21 | |
| Year IV | 93.53±5.21 | |
| Nursing Profession Program | 95.03±5.44 | |

[a]independent t-test, [b]One Way ANOVA

## DISCUSSION

The result showed that the FATCOD-BI score was 93.88±5.66. When compared with other countries, the score was in the low category. The score in this study is lower than that in the United States (126.75), in Palestine (96.96), and in Sweden (125.5) (Abu-El-Noor & Abu-El-Noor, 2015; Dobbins, 2011; Henoch et al., 2014). However, the result of this study is higher than that in the UK (80.86) (De Witt Jansen, Weckmann, Nguyen, Parsons, & Hughes, 2013). The attitudes toward the end of life care still low because in Indonesia, there has been no comprehensive curriculum regarding the end of life care.

The result of each item of FATCOD-BI showed that the item of "Care should extend to the family of the dying person" is higher than other items. It interprets that family involvement influences the students' perceptions and attitudes toward the end of life care. Sudore, Casarett, Smith, Richardson, and Ersek (2014) mention that family involvement in palliative care increases the patients' quality of life. Nevertheless, the lowest score is item "Families need emotional support to accept the behavior changes of the dying person". It describes that the curriculum also needs to emphasize the treatment for the family in palliative care settings.

In this study, it was indicated that there is no gender-related difference in attitudes in caring for dying patients. It is in accordance with the study of Abu Hasheesh, Al-Sayed AboZeid, Goda El-Said, and Alhujaili (2013) in Jordan. There is no difference between attitudes in caring dying patients and gender factor. Another study in Spain showed that there was no relationship between attitudes in caring dying patients and gender factor (Edo-Gual, Tomás-Sábado, Gómez-Benito, Monforte-Royo, & Aradilla-Herrero, 2017). However, Dunn, Otten, and Stephens (2005) explains that feminism influences the attitudes of caring for dying patients.

The results in this study also indicated no relationship between attitudes and previous training programs in caring dying patients. It is in contrast with Barrere, Durkin, and Lacoursiere (2008) who reported that the end of life training program affects the attitude in caring for dying patients. The training program explained in the previous study is a comprehensive program and formed in a formal curriculum, while in Indonesia according to Rochmawati, Wiechula, and Cameron (2016), there is no evidence about palliative care module for nursing education in Indonesia.

This present study shows a relationship between the students' experience and attitudes of caring dying person. This is in accordance with a study by Arslan et al. (2014) stating that the experience of college students in caring for dying patients affects the attitudes in caring for dying patients. The experience in caring for a patient before death can develop a positive attitude in caring for dying patients. This experience can influence students' perceptions and develop an attitude in caring for the dying patients (Lange, Thom, & Kline, 2008).

The academic level in this study is also indicated to have a relationship with the attitudes in caring for dying patients. The level of academic is related to student age. The results of studies in Jordan and Sweden also show that age affects the attitudes in caring for dying patients (Abu Hasheesh et al., 2013; Henoch et al., 2014). In contrast to a study in Turkey, there is no relationship between age and attitude of students in caring for dying patients (Arslan et al., 2014). Senior students in nursing have a better ability and high confidence in caring for dying patients (Colley, 2016). Understanding the knowledge of nursing will influence the formation of attitudes. The higher the academic level, the higher the attitude that the students have.

## CONCLUSION

The attitude of caring dying patient in nursing students in Indonesia is in a low category. The factors of the experience of caring for dying patients and level of academic affects the students' attitudes in caring for dying patients. Further studies need to explore the development of palliative care curriculum in nursing program in Indonesia

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# Self-Management Counseling and Physical Health Status among Patients with Pulmonary TB in Bogor, Indonesia

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## ABSTRACT

**Background**: Patients with pulmonary TB experience physical, psychological, social, and spiritual changes, affecting their physical health status. Self-management counseling is an intervention which enhances the physical health status of patients with pulmonary TB.
**Purpose**: This study aimed to identify the effects of self-management counseling on physical health status in patients with pulmonary TB.
**Methods**: This study used a pre and post-test quasi-experimental design with a control group and took place in a hospital in Bogor. The total respondents were 60 patients who were assigned into two groups and recruited using purposive sampling. The counseling was given for four sessions in two weeks for about 60-90 minutes each session. The data were collected using the functional assessment of chronic illness therapy-tuberculosis (FACIT-TB) and analyzed using paired t-test and independent t-test.
**Results**: The result showed that the physical health status in the intervention group increased significantly (*MD*=8.0, *p*=0.000) compared to the control group. However, there was no influence of self-management counseling on the improvement of physical health status (*MD*=3.24, *p*=0.314).
**Conclusion**: Self-management counseling did not significantly increase the physical health status of pulmonary TB patients. More rigorous studies are needed to investigate the effect of self-management counseling delivered at early treatment on the improvement of physical health status. It is expected that patients can manage their TB symptoms and able to improve their physical health status.

**Keywords**: Outpatients; physical health status; pulmonary TB; self-management

## BACKGROUND

Pulmonary tuberculosis (TB) has still become a community health problem in the worldwide although anti-TB drugs and the BCG vaccine has been prescribed. The global commitment to reducing morbidity and mortality of pulmonary TB was set in the 2015-2030 SDGs policy. The number of TB cases has been increasing every year worldwide. WHO reported that there were 10.4 million people diagnosed with pulmonary TB in 2015. Indonesia came as the second highest country with pulmonary TB cases in the world accounted for 330.910 cases of pulmonary TB (10% of cases in the world) (Ministry of Health RI, 2016). West Java became the province with the highest cases in Indonesia with 59.446 cases (38% of cases in Indonesia) (West Java Central Bureau of Statistic, 2016). Of these, 8.271 cases were found in Bogor regency, a regency with the highest cases of pulmonary TB in West Java. In 2016, there were also 2.107 cases reported in a hospital in Bogor (Bogor Health Office, 2016).

The increasing number of pulmonary TB cases is caused by many factors such as lower socioeconomic level, poor sanitation, population density, unemployment, malnutrition status, lower education level, no income or less than minimum regional wage, smoking, alcohol, and other diseases such as HIV/AIDS or diabetes mellitus. TB affects not only the patients but also their family and the government. The patients lost their working time 3-4 months during treatment; reduced monthly income to 20-30% per year, and the negative stigma from society (Ministry of Health RI, 2016). Besides, the patients perceived physical and psychological changes during treatment, especially in early treatment stage. The physical changes affected daily physical activities and health status related to the quality of life (Kim & Youn, 2015). Furthermore, physical status was also affected by occupation, education, clinical factors, nutrition status, and smoking (Masumoto et al., 2014). This condition will influence TB patients in fighting for their illness. The families beard psychological burden, and there was a change of family health status. The state or government should be able to provide funding to run the disease control program (Ministry of Health RI, 2016).

Recently, most of the patients in the hospital are provided the health education solely by nurses. To date with the development of nursing science and practice, it is important for nurses to provide an innovative intervention which is more effective, efficient, and feasible to be conducted in all health care facilities that may improve the physical health status of TB patients. Previous studies reported that self-management intervention could reduce the physical complaints and increase physical activity in patients with chronic disease (Lorig, Ritter, Pifer, & Werner, 2014; Kim & Youn, 2015). The form of self-management interventions which can be applied is self-management counseling. However, there is limited evidence of self-management in the form of counseling to increase physical health status among patients with pulmonary TB in Indonesia. Therefore, this study is important to investigate the effects of self-management counseling on the physical health status of patients with pulmonary TB.

## PURPOSE

This study aimed to identify the effects of self-management counseling on physical health status in pulmonary TB patients.

## METHODS

This study used a pre-test and post-test quasi-experimental design with the control group. The respondents were pulmonary TB outpatients in a hospital in Bogor, who were assigned to the intervention and control group based on their medical check-up schedule and home addresses. The sampling technique was purposive sampling with the inclusion criteria: (1) early treatment phase (1-2 months); (2) TB confirmed by clinical and or sputum smear (+); (3) aged 18-60 years old; (4) primary education level; (5) able to read and write; and (6) able to communicate in Bahasa Indonesia. The number of the sample had been calculated by a hypothesis test using two paired population formula plus the possibility of drop-out and resulted in 32 patients for each group. In the end, the number of respondents in the intervention group was 30 patients. As many as 37 patients were allocated in the control group, but seven patients were lost to follow up, so only 30 respondents were included in the analysis.

Data collection was performed using Functional Assessment of Chronic Illness Therapy-Tuberculosis (FACIT-TB) instrument that had been developed by Abdulelah et al. (2015) with validity score of 0.376-0.737 and reliability score of 0.787. This questionnaire was filled in by respondents at the beginning and the end of the intervention. The intervention was self-management counseling that was given in four sessions within two weeks for about 60-90 minutes each session. The topic consisted of disease introduction, psychosocial and symptom management, nutrition and treatment management, and communication skills. The intervention began with the feedback and ended with a daily activity plan facilitated by facilitators.

The univariate and bivariate analyses were applied. The univariate data were presented in frequency and percentage for categorical data, mean and SD for numerical data. The normality test used Kolmogorov-Smirnov while the homogeneity test used the chi-square test. Paired t-test and independent t-test were used as the bivariate analysis (Dharma, 2011). This study had received approval from the Ethics Committee of Faculty of Nursing University of Indonesia (No. 135/UN2.F12.D/HKP.02.04/2017).

## RESULTS

### Demographic characteristics

Table 1 provides information about the characteristics of TB patients. About 73.3% of respondents in the intervention group and 70% in control group were aged 18-40 years. The majority of TB patients were female, 63.3% and 50% for the intervention group and control group respectively. Regarding marital status, 63.3% of TB patients were married in both groups. Moreover, the respondents who had a high school education level were 50% for the intervention group and 60% for the control group. Most of the TB patients were unemployed accounted for 73.3% (intervention group) and 53.3% (control group). The majority of TB patients had no monthly income as many as 70% (intervention group) and 46.7% (control group). As many as 73.3% of TB patients in the intervention group and 56.7% of TB patients in the control group were not exposed to cigarettes.

*Table 1. Characteristics of respondents (n=60)*

| Characteristics | Intervention | | Control | |
|---|---|---|---|---|
| | f | % | f | % |
| Age | | | | |
| Young adult (18-40) | 22 | 73.3 | 21 | 70 |
| Middle adult (41-60) | 8 | 26.7 | 9 | 30 |
| Gender | | | | |
| Men | 11 | 36.7 | 15 | 50 |
| Women | 19 | 63.3 | 15 | 50 |
| Marital Status | | | | |
| Single | 9 | 30 | 6 | 20 |
| Married | 19 | 63.3 | 19 | 63.3 |

| Characteristics | Intervention |  | Control |  |
|---|---|---|---|---|
|  | f | % | f | % |
| Widow/Widower | 2 | 6.7 | 5 | 16.7 |
| Education Level |  |  |  |  |
| Elementary | 14 | 46.7 | 11 | 36.7 |
| High school | 15 | 50 | 18 | 60 |
| College | 1 | 3.3 | 1 | 3.3 |
| Occupation |  |  |  |  |
| Unemployment | 22 | 73.3 | 16 | 53.3 |
| Employee | 8 | 26.7 | 14 | 46.7 |
| Income |  |  |  |  |
| Had no income | 21 | 70 | 14 | 46.7 |
| < 3.205.441 IDR | 6 | 20 | 14 | 46.7 |
| ≥ 3.205.441 IDR | 3 | 10 | 2 | 6.7 |
| Cigarette exposure |  |  |  |  |
| Not exposure | 22 | 73.3 | 17 | 56.7 |
| Exposure | 8 | 26.7 | 13 | 43.3 |

**Physical health status**

Table 2 shows the means of the physical health status of TB patients in the intervention group before the intervention (*M*=36.27, *SD*=14.35) and after the intervention (*M*=44.27, *SD*=12.09). The mean of physical health status among TB patients in the control group before the intervention was 37.83 (*SD*=12.07) and after the intervention was 41.03 (*SD*=12.56). Table 3 shows that there was a significant increase on the means of the physical health status of TB patients before and after self-management counseling in the intervention group (*MD*=8.0, *p*=0.000). The mean of physical health status before and after self-management counseling in the control group also increased (*MD*=3.2), but the increase was not statistically significant (*p*=0.061).

*Table 2. The description of physical health status before and after intervention (n=60)*

| Physical Health Status | Intervention |  |  | Control |  |  |
|---|---|---|---|---|---|---|
|  | Mean | *SD* | 95% CI | Mean | *SD* | 95% CI |
| Pre-test | 36.27 | 14.35 | 28.91-39.62 | 37.83 | 12.069 | 33.33-42.34 |
| Post-test | 44.27 | 12.09 | 39.75-48.78 | 41.03 | 12.560 | 36.34-45.72 |

*Table 3. The difference of physical health status before and after intervention (n=60)*

| Group | Mean | *SD* | *MD* | *p* |
|---|---|---|---|---|
| Intervention |  |  |  |  |
| Pre-test | 36.27 | 14.35 | 8.0 | 0.000 |
| Post-test | 44.27 | 12.09 |  |  |
| Control |  |  |  |  |
| Pre-test | 37.83 | 12.07 | 3.2 | 0.061 |
| Post-test | 41.03 | 12.56 |  |  |

Table 4 shows the mean of the physical health status of TB patients after self-management counseling. In the intervention group, the mean was 44.27 with *SD*=12.09

while in the control group, the mean was 41.03 with *SD*=12.56. There was no definite effect of self-management counseling on physical health status in the intervention group compared with the control group (*MD*=3.24, *p*=0.314).

*Table 4. The effects of self-management counseling on physical health status (n=60)*

| Group | Mean | *SD* | *p* |
|---|---|---|---|
| Intervention | 44.27 | 12.09 | 0.314 |
| Control | 41.03 | 12.56 | |
| Difference | 3.24 | -0.53 | |

## DISCUSSION

Based on the result of the study, the majority of TB patients were aged 18-40 years old (early adults). This is in line with the previous studies which suggested that most of the pulmonary TB patients were in the productive age. The mean of pulmonary TB patients' age was between 18-55 years old (Bauer et al., 2015; Louw, Mabaso & Peltzer, 2016; Noorratri, Margawati & Dwidiyanti, 2016). Based on the Bogor health profile, most of the population (50.39%) in 2015 is in the range of 15-40 years (Bogor Health Office, 2016). It can be concluded that the number of the TB cases number in Bogor is influenced by age. The early adulthood groups are at productive age so they must work to meet daily needs. They may have greater mobility and social interaction than other age groups. It causes the early adulthood group to be at risk of TB disease from others who have been infected with TB.

The majority of TB patients were females. This result was different from a previous study which reported that the majority of pulmonary TB patients were males (Louw, Mabaso & Peltzer, 2016). This result occurs may due to the immunity level in females is lower than males. The females usually perform routine health checks which can provide early identification of TB cases (Bauer et al., 2015). Based on WHO report in 2016, TB disease was one of the highest causes of death in females in the world in 2015. It can be concluded that females are at risk of exposure to pulmonary TB.

The majority of TB patients were married. This result is in line with the previous study which reported that majority of pulmonary TB patients are married (Atif et al., 2014; Masumoto et al., 2014; Nooratri, Margawati & Dwidiyanti, 2016; Prasetyo, Preechawong & Yunibhand, 2015; Rashmi, Prasad & Chand, 2014). Most of the pulmonary TB patients are married because they were included in adulthood aged groups. Both married and unmarried patients have the same risk of exposure to TB.

A half of TB patients graduated from high school. It is in line with the previous study which reported that a half of the pulmonary TB patients had completed high school level (Louw, Mabasso & Peltzer, 2016; Prasetyo, Preechawing & Yunibhand, 2015). People with secondary education backgrounds find it harder to understand information about TB transmission completely. The education background of pulmonary TB patients in Bogor Regency is also affected by the level of education among the population in Bogor which is equivalent to junior and senior high school (Bogor Central Bureau of Statistic, 2016).

The majority of TB patients were unemployed so that they had no monthly income. This finding is supported by previous studies which revealed that half of the pulmonary TB patients were not working; as a result, TB patients get income from their families during treatment (Louw, Mabasso & Peltzer, 2016; Noorartri, Margawati & Dwidiyanti, 2016; Prasetyo, Preechawong & Yunibhand, 2015). Based on the report of the Ministry of Health in 2013, the prevalence of pulmonary TB tended to increase in patients who were unemployed. TB patients who are undergoing treatment decide to stop working because they have to perform routine health checks and take medication in health service facilities. Also, TB patients must adapt to the symptoms of illness and drug side effects that affect their physical health (Ministry of Health RI, 2013). Socioeconomic status is also associated with access to information and healthcare facilities. The difficulty of accessing information about pulmonary TB disease makes people less aware of the danger of the disease transmission.

Most TB patients were not exposed to cigarettes. However, some of them had cigarette exposure either as active smokers or passive smokers. Cigarettes contain nicotine and tar which can damage the mechanism of pulmonary defense against bacteria so that the risk of exposure to Mycobacterium tuberculosis increases. This is congruent with previous studies which explained that most of the pulmonary TB patients had smoking habits or second-hand smoke exposure (Atif et al., 2014; Bauer et al., 2015; Masumoto et al., 2014). Smoking behavior in the population aged more than 15 years in Indonesia increased to 36.3% in 2013, in which 25.5% of active smokers lived in rural areas, and 32.3% of smokers come from low economic levels (Ministry of Health RI, 2013). This is in accordance with the characteristics of pulmonary TB patients in Bogor.

Before the implementation of self-management counseling, the physical health status in the intervention group was lower than that in the control group. After the implementation, the physical health status in the intervention group was higher than the control group. The physical health status of pulmonary TB patients changed not only due to the impact of illness but also the anti-TB drugs side effects. The physical health status is influenced by the characteristics of the patients. Women are more susceptible to diseases because they have lower immunities, so the progress of the disease is more progressive (WHO, 2016). Low education level, cigarette exposure, BTA (+) examination results, and drug side effects were associated with low physical health status that affects the quality of life (Masumoto et al., 2014). Work is also related to physical health aspects of the quality of life of TB patients (Masumoto et al., 2014).

Based on the finding, the difference of physical health status was not significant before and after self-management counseling in the intervention and the control group. This is in accordance with a previous study by Kazawa, Takeshita, Yorioka, and Moriyama (2015) which reported that disease management programs during 12 months are unable to improve the health status of diabetic nephropathy patients. However, there were several previous studies showing different results. Lorig et al. (2014) explained that a self-management program of chronic diseases given for six weeks could reduce the physical complaints of patients with chronic mental illness. Kim and Youn (2015) also reported that a self-management program of chronic diseases could increase physical activity in patients with chronic diseases. The difference in the result of these studies was influenced by differences in the client characteristics, symptoms of illness and time duration of the intervention. Physiologically, pulmonary TB patients experienced a decrease in health status from the early stages of treatment (1-2 months) and gradually increased during one month of treatment and stabilized at the end of the continues stage of treatment, thus affecting the results of the study (Atif et al., 2014; Bauer et al., 2015; Jaber et al., 2016). This can be a consideration for nurses in providing self-management counseling to pulmonary TB patients especially regarding the intervention duration.

Self-management counseling can be given in health care facilities such as public health centers and hospitals as one of integrated discharge planning with Directly Observed Treatment Shortcourse (DOTS) program with family and community approach. The implementation of this intervention focuses on promotive, preventive, and rehabilitative efforts. Nurses should be able to identify the physical health status of pulmonary TB patients during treatment and are required to be innovative in providing interventions. Therefore, changes in physical complaints that occur due to the body's responses to diseases and side effects of treatments can be minimized. Stable physical health status is expected to ensure the completeness and success of treatment.

## CONCLUSION

Based on the result of this study, it can be concluded that self-management counseling did not significantly increase the physical health status of pulmonary TB patients. This probably happens because the counseling was given in a short period of time. Therefore, it is suggested that the intervention is conducted in longer duration and various intervention. This study recommends that community health nurses be able to conduct promotive and preventive efforts to minimize the risk of treatment dropped out. Also, the hospital or public health center could develop this intervention by integrating it with DOTS program.

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# Relating Factors of Insomnia among Haemodialysis Patients

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## ABSTRACT

**Background**: Insomnia is a sleep disturbance which commonly occurs in haemodialysis patients. Some factors contribute to insomnia in dialysis patients such as demographic, biological, psychological, lifestyle, and dialysis factors. However, there are limited studies which investigate the relating factors of insomnia in haemodialysis patients in Indonesia.
**Purpose**: This study aimed to analyze the relating factors of insomnia in haemodialysis patients in Semarang, Central Java, Indonesia.
**Methods**: This study was a cross-sectional study which involved 102 samples recruited by consecutive sampling technique from two dialysis units in Semarang, Central Java. Data were collected by questionnaires and analyzed using Chi-square and multiple logistic regression to know the most relating factors of insomnia.
**Results**: The result showed that insomnia occurred in 63 respondents (61.8%). Further analysis indicated that insomnia was related to anxiety ($p$=0.034, $OR$=2.36) and age ($p$=0.049; $OR$=1.75). There was no relationship between insomnia and the other factors such as gender, education level, occupation status, marital status, haemoglobin level, smoking and coffee consumption habit, and dialysis factor (period of dialysis). Moreover, anxiety was the most relating factors of insomnia among haemodyalsis patients.
**Conclusion**: This study concluded that anxiety and age were independent factors related to insomnia. This study recommends that anxiety screening should be performed on haemodialysis patients. Anxiety in haemodialysis patients needs to be treated properly so that it will not develop into insomnia.

**Keywords**: Chronic kidney disease; haemodialysis; insomnia

## BACKGROUND

Patients with End-Stage Renal Disease (ESRD) will lose 85% of kidney function or more, and therefore, the body's function to maintain fluid and electrolyte balances will be altered. The function of excretion will not be adequate, hormonal function will be altered as well, and this will lead to uremic and azotemia (Smeltzer & Bare, 2002). Patients with ESRD need to follow kidney replacement therapies. One of the most common kidney replacement therapies is haemodialysis.

Dialysis is a process to filter metabolism waste in the body using a semi-permeable membrane (dialyzer) which functions as an artificial kidney (Thomas, 2002). The therapy is to promote alteration of fluid and electrolyte, and also to eliminate metabolism waste. However, dialysis only maintains metabolic activities as well as an endocrine function which are performed by the kidney. Thus, patients will continue to experience disease complication and side effects of the therapy (Mollaoglu, 2006). One of the complications mostly experienced by dialysis patients is sleep disturbance or insomnia.

Sleep disturbance was experienced by at least 50% of patients undergoing dialysis (Ahmed & Gehan, 2014; Danielle, Mahamat, Franchois, Patrice, & Gloria, 2017; Kosmadakis & Medcalf, 2008; Pai et al., 2007; Perl, Unruh, & Chan, 2006; Rosdiana, 2011). Moreover, insomnia had been reported as the highest sleep disturbance that occurred among patients with dialysis (Merlino et al., 2006; Mucsi, Molnar, & Rethelyi, 2004; Chen et al., 2006; Sabry et al., 2010; Novak, Shapiro, Mendelssohn, Mucsi, 2006; Sabbatini et al., 2002). Being unable to maintain sleep and inadequate sleep will cause dialysis patients to wake up early before having enough sleep. This condition will cause patients to get some consequences such as sleepy feeling during the day, depression, lack of energy, cognitive disturbance, memory disturbance, cranky, psychomotor disturbance, alert and concentration decrease (Szentkiralyi, Madarasz, & Novak, 2009; Unruh et al., 2011). Therefore, the quality of life among ESRD patients with insomnia will decrease (Elder et al., 2008; Unruh et al., 2011; Ishak et al., 2012; Szentkiralyi et al., 2009).

Haemodialysis patients not only experience insomnia but also other physical as well as psychological problems. Patients undergoing dialysis experience anxiety regarding dialysis therapy procedures, cannula initiation, dialysis complication, and therapy effectiveness (Coccossis, Theofilou, Synodinou, Tomaras, & Soldatos, 2008; Kosmadakis & Medcalf, 2008; Lee, Kim, Cho, & Kim, 2013; Vasilopoulou et al., 2015). Stress or anxiety in patients with dialysis would initiate the sympathetic nervous system to release catecholamine, glucagon, and cortisol-steroid hormones (Feroze, Martin, Reina-Patton, Kalantar-Zadeh, & Kopple, 2010). These hormones would alter center nervous system and can cause frustration, shortness of breath, hypertension, and muscle strain. Furthermore, those hormones would stimulate reticular activating system (RAS) function which manages all body cycles, i.e., sleep pattern, sleep latency, and sleep efficiency (Krystal, 2012; Paparrigopoulos et al., 2010). Some studies found that anxiety as a psychological problem can cause insomnia among haemodialysis patients (Elder et al., 2008; Rosdiana, 2011; Sabry et al., 2010). Unfortunately, only one study (Rosdiana, 2011) which was indicated to investigate anxiety as a psychological problem causing insomnia in haemodialysis patients in Indonesia.

The normal sleeping pattern will also change individuals who get older (Merlino et al., 2006; Ohayon & Roth, 2003). This condition happens because there is a reduction of central nervous system function which cause the loss of reaction towards extrinsic, bio-rhythm, and decrease of relation substance (Ohayon & Roth, 2003). However, some previous studies showed that age was not related to insomnia (Al-Jahdali et al., 2010; Chen et al., 2006; Mucsi et al., 2004; Rosdiana, 2011). Furthermore, gender can also be a factor that contributes to insomnia (Al-Jahdali et al., 2010; Elder et al., 2008; Pai et al., 2007; Paparigopoulus et al., 2010). Female patients usually have multi-roles in their lives. When they are diagnosed with ESRD and have to undergo dialysis, their functional status decreases significantly causing insomnia (Al-Jahdali et al., 2010; Elder et al., 2008; Pai et al., 2007). On the other hand, the other studies showed different results (Mucsi et al., 2004; Rosdiana, 2011; Sabry et al., 2010). Another demographic factor such as education level was also generally related to insomnia but it was not in dialysis patients (Paparrigopoulos et al., 2010; Rosdiana, 2011). Such demographic factors which were not related to insomnia in dialysis patients are marital status and occupation (Rosdiana, 2011). Overall, there were different results related to the correlation between demographic factors and insomnia among haemodialysis patients.

Insomnia also mostly occurrs in patients with smoking and coffee consumption habit (Merlino et al., 2006). Smoke in cigarette contains nicotine which is a stimulant to keep the smokers awake and alert. Moreover, caffeine is related to prevent the release of adenosine. Caffeine causes an increase in norepinephrine, epinephrine, dopamine, and serotonin which keep individuals alert (Chen et al., 2006). However, some studies showed that these habits were not related to insomnia (Al-Jahdali et al., 2010; Rosdiana, 2011; Sabbatini et al., 2002; Sabry et al., 2010). Moreover, anemia is a possible condition that will cause patients to get sleepy feeling and fatigue during the day (Danielle et al., 2017; Pai, et al., 2007; Sabry et al., 2010) though some studies showed different results (Al-Jahdali et al., 2010; Mucsi et al., 2004; Rosdiana, 2011). Period of dialysis also contributed to insomnia among dialysis patients (Ahmed & Gehan, 2014; Rosdiana, 2011; Sabbatini et al., 2002). These studies showed that patients with more than 12 months on dialysis were at risk to have sleep disturbance such as insomnia. Other studies showed that period of dialysis was not related to insomnia (Chen et al., 2006; Mucsi et al., 2004). From the various findings above, it can be concluded that the correlation between lifestyle, anemia, a period of dialysis, and insomnia still lacks of evidence.

Nurses' understanding regarding insomnia in patients undergoing haemodialysis is an important factor for effective nursing care. Unluckily, some contributing factors such as demographic factors (age, gender, education level, occupation status, marital status), biological factor (haemoglobin level), psychological factor (anxiety), lifestyle factors (smoking and coffee consumption habit), and dialysis factor (dialysis period) are lack of evidence to be related to insomnia. Nurses need to asses other factors as a routine screening of nursing care in dialysis patients. Therefore, it is important to investigate the relating factors of insomnia among patients with dialysis in Semarang, Central Java. The results of this study will help the health professionals provide the best nursing care to reduce insomnia.

## PURPOSE

This study aimed to analyze the relating factors of insomnia among dialysis patients. In particular, the study aimed to: (1) identify insomnia in haemodialysis patient, (2) analyze the correlation between such potential factors as demographic factors (age, gender, education level, occupation status, and marital status), biological factor (haemoglobin level), psychological factor (anxiety), lifestyle factors (smoking and coffee consumption habit), and dialysis factor (period of dialysis) and insomnia, and (3) analyze the most relating factors of insomnia among haemodialysis patients.

## METHODS

This research was conducted from June to November 2015 in two dialysis units in Semarang, Central Java. The average number of patients undergoing haemodialysis every month was about 70-80 patients. This study involved 102 respondents recruited using consecutive sampling. The inclusion criteria in this study were patients with full consciousness, undergoing dialysis for more than one month, and able to communicate normally. Patients would be excluded when they had motoric, sensory, and global aphasia and experienced intradialysis complication. The measurement tools of this study consist of demographic data, smoking habit, coffee consumption, period of dialysis, hemoglobin level, Tailor Manifest Anxiety Scale (TMAS) for psychological factor, and insomnia level according to International Classification of Sleep Disorder version 2 (ICSD-2). The TMAS questionnaire was a valid and reliable instrument with r-value of 0.444 (r table=0.361) and Cronbach’s alpha coefficient of 0.915 respectively. ICSD-2 questionnaire was also valid and reliable with r-value of 0.654 (r table=0.444) and Cronbach’s alpha coefficient of 0.73. Distribution of frequency was used to analyze univariate data, and Chi-Square was utilized to test the correlation between independent and dependent variables (CI 95%). Multiple logistic regression was used to analyze the most relating factors of insomnia among patients with haemodialysis .

This research had obtained approval from the Ethics Committee of Dr. Kariadi Hospital and Faculty of Medicine, Diponegoro University. All respondents had signed an informed consent after receiving a clear explanation regarding this study.

## RESULTS

### The demographic profile of respondents

The results of this study showed that the majority of respondents were female (51%), in late adulthood (41.1%), having high educational level (56.9%), unemployment (73.5%), married (86.3%), not smoking (92.5%), having no coffee consumption habit (86.3%), undergoing dialysis for more than twelve months (67.6%), having anemia (82.4%), and were in mild anxiety (55.9%) as shown in Table 1. Furthermore, Table 2 showed that more than half of the total respondents experienced insomnia (61.8%).

*Table 1. Demographic characteristics of respondents and anemia occurence (n=102)*

| Variables | f | % |
|---|---|---|
| Gender | | |
| Female | 52 | 51 |
| Male | 50 | 49 |
| Age | | |
| Early Adulthood | 7 | 6.9 |
| Middle Adulthood | 26 | 25.5 |
| Late Adulthood | 42 | 41.1 |
| Elderly | 27 | 26.5 |

| Variables | f | % |
|---|---|---|
| Education Level | | |
| High | 58 | 56.9 |
| Low | 44 | 43.1 |
| Occupation | | |
| Employed | 27 | 26.5 |
| Unemployed | 75 | 73.5 |
| Marital Status | | |
| Married | 88 | 86.3 |
| Single/Widow/Widower | 14 | 13.7 |
| Smoking Habit | | |
| Smoking | 11 | 7.5 |
| Not Smoking | 91 | 92.5 |
| Coffee Consumption Habit | | |
| Yes | 14 | 86.3 |
| No | 88 | 13.7 |
| Period of dialysis | | |
| Recent Period (< 12 months) | 33 | 32.4 |
| Long Term Period (≥ 12 months) | 69 | 67.6 |
| Hemoglobin level | | |
| Anemia (≤ 11 gr%) | 84 | 82.4 |
| Not Anemia (>11 gr%) | 18 | 17.6 |
| Anxiety level | | |
| Mild anxiety | 57 | 55.9 |
| Severe anxiety | 45 | 44.1 |
| Insomnia occurence | | |
| Insomnia | 63 | 61.8 |
| Not insomnia | 39 | 38.2 |

## Relating factors of insomnia

Table 2 shows that only two factors have a significant correlation with insomnia among haemodialysis patients. The factors were anxiety with *p*=0.022 and age with *p*=0.041. There were 32 respondents (71.1%) with severe anxiety and 30 respondents (71.4%) of late adulthood respondents who experienced insomnia. It was also shown that other factors did not have correlations with insomnia (*p*>0.05).

*Table 2. Correlation between the relating factors and insomnia (n=102)*

| Relating factors | Insomnia | | Not Insomnia | | *p* |
|---|---|---|---|---|---|
| | f | % | f | % | |
| Anxiety | | | | | |
| Mild Anxiety | 31 | 54.4 | 26 | 45.6 | 0.022* |
| Severe Anxiety | 32 | 71.1 | 13 | 29.9 | |
| Gender | | | | | |
| Female | 29 | 55.8 | 23 | 44.2 | 0.286 |
| Male | 34 | 68 | 16 | 32 | |

| Relating factors | Insomnia | | Not Insomnia | | p |
|---|---|---|---|---|---|
| | f | % | f | % | |
| Age | | | | | |
| Early Adulthood | 4 | 57.1 | 3 | 42.9 | 0.041* |
| Middle Adulthood | 11 | 42.3 | 15 | 57.7 | |
| Late Adulthood | 30 | 71.4 | 12 | 29.6 | |
| Elderly | 18 | 66.7 | 9 | 43.3 | |
| Education Level | | | | | |
| High | 37 | 63.8 | 21 | 36.2 | 0.781 |
| Low | 26 | 59.1 | 18 | 40.9 | |
| Occupation | | | | | |
| Employed | 13 | 48.1 | 14 | 51.9 | 0.142 |
| Unemployed | 50 | 66.7 | 25 | 43.3 | |
| Marital Status | | | | | |
| Married | 55 | 62.5 | 33 | 37.5 | 0.931 |
| Single/Widow/Widower | 8 | 57.1 | 6 | 42.9 | |
| Smoking Habit | | | | | |
| Smoking | 5 | 45.5 | 6 | 54.5 | 0.326 |
| Not Smoking | 58 | 63.7 | 33 | 36.3 | |
| Coffee Consumption Habit | | | | | |
| Yes | 6 | 42.9 | 8 | 57.1 | 0.204 |
| No | 57 | 64.8 | 31 | 35.2 | |
| Haemoglobin Level | | | | | |
| Anemia | 53 | 63.1 | 31 | 36.9 | 0.741 |
| Not Anemia | 10 | 55.6 | 8 | 44.4 | |
| Haemodialysis Period | | | | | |
| Recent Period | 19 | 57.6 | 14 | 42.4 | 0.701 |
| Long Term Period | 44 | 63.8 | 25 | 36.2 | |

*Correlation is statistically significant at the 0.05 level

### The most relating factors of insomnia among haemodialysis patients

The results of this study showed that anxiety was more significant to yield insomnia than age in haemodialysis patients. Table 3 describes that anxiety was a dominant factor related to insomnia (*OR*=2.363) compared to age (*OR*=1.75). This meant that haemodialysis patients who suffered from severe anxiety had 2.36 times of risk to get insomnia compared to patients suffering from mild anxiety. Also, haemodialysis patients in the late adulthood had 1.75 times higher risk to get insomnia than patients in the other age groups.

*Tabel 4. Multivariate Analysis of the most relating factors of Insomnia*

| Variable | B | Wald | *p* | OR | 95% CI |
|---|---|---|---|---|---|
| Anxiety | 1.197 | 7.173 | 0.034 | 2.363 | 0.970-5.756 |
| Age | 0.624 | 0.584 | 0.049 | 1.755 | 0.307-14.722 |

## DISCUSSION

The result of this study showed that more than a half of total respondents experienced insomnia (61.8%). It was similar with some previous studies which reported that the occurrence of insomnia among ESRD patients was high such as Sabry et al. (2010) and

Al-Jahdali et al. (2010) who found that about 65.9% and 60.8% of patients with kidney failure respectively experienced insomnia. The incident of insomnia in this study was higher than the previous studies (Rosdiana, 2011; Sabbatini et al., 2001). The high incidence rates of insomnia in this study are likely to be associated with nearly half of respondents experiencing severe anxiety and in late adulthood, where these conditions were reported to have a significant association with incidence of insomnia (Merlino et al., 2006; Ohayon & Roth, 2003; Paparrigopoulos et al., 2010; Rosdiana, 2011; Sabry et al., 2010).

Sleep disturbance was experienced by at least 50% of patients undergoing dialysis (Kosmadakis & Medcalf, 2008; Merlino et al., 2006; Mucsi et al., 2004; Novak et al., 2006; Pai, et al., 2007; Perl et al., 2006; Rosdiana, 2011; Sabry et al., 2010). Moreover, Elder et al. (2008) reported that nearly half of haemodialysis patients experienced poor sleep quality (49%). In another study conducted by Ahmed and Gehan (2014), it was reported that all studied samples (ESRD patients undergoing haemodialysis in Egypt) had a poor quality of sleep (subjective sleep quality, sleep latency, sleep duration, habitual sleep efficacy, sleep disturbances, and day time dysfunction). Danielle et al. (2017) also reported that the majority of haemodialysis patients in Cameroon had poor sleep quality. Insomnia has been reported as the highest factor of sleep disturbance conditions that occurred among patients with dialysis (Chen et al., 2006; Merlino et al., 2006; Mucsi et al., 2004; Novak et al., 2006; Sabbatini et al., 2002 Sabry et al., 2010).

Insomnia highly occurred among dialysis patients because most patients have some syndromes of sleep disturbance related to their health conditions (uremia, excessive fluid intake, imbalanced electrolytes, and hypoalbuminemia) such as restless leg syndrome, obstructive sleep apnea syndrome, and shift-wake sleep disorder (Szentkiralyi et al., 2009). Being unable to maintain sleep and inadequate sleep will cause dialysis patients to wake up early before having enough sleep. This condition will cause patients to get some consequences such as sleepy feeling during the day, depression, lack of energy, cognitive disturbance, memory disturbance, cranky, psychomotor disturbance, alert and decreased concentration (Szentkiralyi et al., 2009; Unruh et al., 2011). Therefore, the quality of life among ESRD patients with insomnia will also decrease (Elder et al., 2008; Ishak et al., 2012; Novak et al., 2006; Szentkiralyi et al., 2009; Unruh et al., 2011). However, assessment of sleep quality, preferably with polysomnography, is necessary to confirm our results. Interventional studies for the management of sleep disorders in haemodialysis patients are recommended to do in the next study. This result also implies that routine screening of insomnia in nursing care in haemodialysis patients need to be regularly applied so that nurses can provide appropriate interventions directly to patients.

The results indicated that anxiety and age were related to insomnia while the other factors such as gender, education, occupation, marital status, life Style, hemoglobin level, and period of dialysis were not related to insomnia. Furthermore, anxiety was the most significant factor relating to insomnia.

This study found that almost half of respondents experienced severe anxiety. This result was a little higher than Lee et al. (2013) which reported that 27.6% of patients with dialysis felt anxious. However, this result was lower than Vasilopoulou et al. (2015) which reported that 47.8% of patients with haemodialysis had high anxiety levels. Stress and anxiety are parts of daily life. According to Reinhardt (2001), well adaptation towards stress would decrease anxiety. On the contrary, patients who are not able to manage their stress would find difficulty in their daily function. Patients with long term dialysis used to feel worried regarding the uncertainty of their condition in the future. They also face a financial problem, unable to maintain their job, loss of sexual desire, impotence, depression, and fear of death (Coccossis et al., 2008).

Feroze et al (2010) reported that more than 70% of patients with dialysis experienced depression or anxiety. However, they were not aware to seek for medical help for their condition. Physicians and nurses in the dialysis unit, who are not experts in mental health, often failed to recognize the signs and symptoms, including somatic complaints related to psychological distress (anxiety and depression). Thus, those conditions went undiagnosed. A study reported that anxiety is one of the factors which causes suicide attempt in patients with dialysis and is closely related to physical comorbidity such as low quality of life and weakness (Lee et al., 2013). Stress or anxiety in patients with dialysis would initiate the sympathetic nervous system to release catecholamine, glucagon, and cortisol-steroid hormones (Feroze et al., 2010). These hormones would alter center nervous system and can cause frustration, shortness of breath, hypertension, and muscle strain. Furthermore, those hormones would stimulate reticular activating system (RAS) function which manages all body cycles, i.e., sleep pattern, sleep latency, and sleep efficiency (Krystal, 2012; Paparrigopoulos et al., 2010).

This study also indicated that anxiety was the most significant factor relating to insomnia in which haemodialysis patients who suffered from severe anxiety had 2.36 times of risk to get insomnia compared to patients suffering from mild anxiety. This result is in accordance with many studies showing that anxiety as a psychological problem which can cause insomnia in haemodialysis patients (Elder et al., 2008; Rosdiana, 2011; Sabry et al., 2010). The relationship between anxiety and insomnia is reciprocal, in which patients who have insomnia would have anxiety. On the other hand, those who feel anxious would get insomnia or sleep disturbance. Krisytal (2012) supported this result, saying that the increase in anxiety is two times higher than those who obtain enough sleep. On the other hand, it was reported that a sleep disturbance (difficulty of sleeping or staying asleep) affected over half of those with generalized anxiety disorder (Krisytal, 2012).

Anxiety is a trigger of chronic insomnia. There are many patients who feel anxious before they get to sleep since they are afraid of being unable to sleep. They will get the consequence in the following day when they do not get enough sleep. The increase of anxiety will decrease “arousal” when “arousal state” should have decreased, and this will decrease the chance to sleep, hence it will create a loop or cycle of insomnia-anxiety (Nutt, Wilson, & Paterson, 2008). Based on the phenomena, it is very crucial for nurses in the dialysis unit and medical team to perform a screening regarding anxiety and insomnia, because these two things influence each other and will decrease patients’ quality of life in general. Nurses can detect anxiety and insomnia by performing a comprehensive assessment, not only covering the patients' biological factor, but also the psychological, social, and spiritual aspects. After a diagnosis is determined, professional nurses should be able to perform anxiety management and constructive coping development to prevent psychological disturbance and to prevent insomnia.

The result showed that insomnia highly occurred in late adulthood patients. This finding is in line with some previous studies which reported that insomnia was experienced by elderly patients (Merlino et al., 2006; Ohayon & Roth, 2003). This study also reported that age was related to insomnia. This result is in line with a study by Merlino et al. (2006) which reported that age was a significant independent predictor for patients with ESRD who have insomnia condition ($p$=0.001). However, some previous studies showed that age was not related to insomnia among haemodialysis patients (Al-Jahdali et al., 2010; Chen et al., 2006; Mucsi, et al., 2004; Rosdiana, 2011). Normal sleep pattern would also change especially in individuals who get older (Merlino et al., 2006; Ohayon & Roth, 2003). This condition happens because there is a reduction of central nervous system function which is caused by the loss of reaction towards extrinsic, bio-rhythm, and decrease of relation substance (Ohayon & Roth, 2003).

Late adulthood is generally considered to begin at about old age. Furthermore, National Sleep Foundation (2005) found that the majority of older people reported that they wake up a lot during the night and feeling fatigue in the morning. It becomes harder for men and women with ages more than 50 years to stay asleep throughout the night. In other words, aging seems to make certain aspects of sleep more difficult. There are certain biological changes that make sleep more difficult as getting older. For example, older adults can experience a shift in the circadian rhythm that causes them to become sleepy in the early evening and to wake up too early in the morning. Indeed, the 2005 NSF poll found that 64% of adults over 65 consider themselves a "morning person." Medical conditions and other sleep disorders can also cause insomnia such as gastrointestinal and respiratory problems. Patients ESRD with ascites mostly feel heavy breath when they sleep (Merlino et al., 2006). Sleep apnea in which a person briefly but repeatedly stops breathing during sleep can also cause insomnia.

The result of this study showed that insomnia occurred among the majority of female respondents. Al-Jahdali (2010) reported that female patients have a higher risk (1.5 times) to get insomnia compared to male patients. This probably happens because female patients have more emotions in dealing with situations. Female patients also usually have multi-roles in their lives. Therefore, when they are diagnosed with ESRD, physical alteration and have to undergo dialysis, their functional status decrease significantly (Elder et al., 2008; Pai et al., 2007). Guilt and threaten in self-esteem could be the results of the alteration in roles and responsibility in female patients with ESRD (Elder et al., 2008; Paparigopoulus et al., 2010). Female patients usually have multi-roles in their lives, and when they are diagnosed with ESRD, physical alteration and have to undergo dialysis, their functional status decrease significantly and can cause insomnia. These conditions lead to anxiety and moreover to depression. Thus, it is understandable that almost half of female respondents suffered from severe anxiety (Al-Jahdali et al., 2010; Elder et al., 2008; Pai et al., 2007; Sabry et al., 2010). Although the early test showed that insomnia often happened in female patients, a further statistical test yielded that there was no relationship between insomnia and gender. This result was supported by two previous studies which found no significant relationship between gender and insomnia (Mucsi, et al., 2004; Sabry et al., 2010; Rosdiana, 2011;). In this study, there was evidence that anxiety was the most significant factor related to insomnia. Not only women but also men can have a bad feeling caused by their health condition and maybe change their lives a lot, such as loss of job, divorce, etc.

The result showed that insomnia occurred in more than a half of respondents with high education level. However, this factor was not related to insomnia in dialysis patients. Education level is generally related to insomnia as a coping source and possible condition but it was not in dialysis patients (Paparrigopoulos et al., 2010; Rosdiana, 2011). It is in contrast with the health behaviors in which patients with high education level can obtain information for self-care management to prevent insomnia (Notoatmojo, 2014). This phenomenon happens because it is not only education level which supports capability of health care behaviors but also motivation (Lee et al., 2013). Patients with chronic kidney disease can be getting bored to manage their self-care even they have high education level. As a result, they can experience insomnia. Furthermore, insomnia may also due to the complexity of life in people with high education level, and sometimes it can cause stress and not enough time for sleep. The quality of their activities might be lower than they usually expect. Many patients with high education level have to cease their job since they experience much physical distress and have to adapt with dialysis schedule. The situation will make them bored, helpless, feel useless and then lead to anxiety and insomnia.

The result of this study showed that insomnia mostly occurred in unemployed respondents. In other words, occupation was not related to insomnia among dialysis patients in this study. It is congruent with the result of a previous study which found no significant correlation between occupation and insomnia (Rosdiana, 2011). If ESRD patients are still doing their work, it can make them exhausted and have a high risk to get insomnia. Also, insomnia may be caused by the complexity of life among employed people which can lead to stress and inadequate sleep. However, if haemodialysis patients are not doing some work for their lives, it also can also make them frustrated and have high risk to get insomnia (Ahmed & Gehan, 2014; Elder et al., 2008; Vasilopoulou et al., 2015).

The result showed that insomnia occurred more often in respondents who were married compared to those who were not. This result is on the opposite with Paparrigopoulos et al. (2010) which reported that Odd Ratio for insomnia in unmarried patients was high. A spouse will help a patient, and a spouse can be a coping resource in dealing with the stressor. However if the support from a spouse is not adequate and the family initiates conflict related to patient’s health problem, anxiety will increase (Xhulia et al., 2015; Reinhardt, 2010). Further analysis revealed that there was no relationship between marriage and insomnia. This result was in line with Al-Jahdali et al. (2010) and Rosdiana, (2011) which reported that insomnia in patients was not related to marital status. Married person may also have problems that can cause them to have insomnia (Al-Jahdali et al., 2010; Rosdiana, 2011)

In this study, respondents who did not smoke and have coffee consumption habit experienced severe insomnia higher than those who had those habits. This result was supported by Al-Jahdali et al. (2010) who reported that there was no relationship between smoking-coffee consumption habit and insomnia. This finding was quite surprising because of some previous studies reported differently (Merlino et al., 2006). Insomnia mostly occurred in patients with smoking and coffee consumption habit. Smoke in cigarette contains nicotine which is a stimulant to keep the smokers awake and alert. Moreover, caffeine is related to prevent the release of adenosine. Caffeine causes the increase of norepinephrine, epinephrine, dopamine, and serotonin which keep individuals alert (Mucsi et al., 2014). Merlino et al. (2006) reported that smoking habit has a significant relationship with and an independent predictor of insomnia. However, this study concluded that there were no relationships between smoking habit and coffee consumption with insomnia. This result might be caused by the low sample size of respondents who had smoking and coffee consumption habits.

The number of respondents with anemia in this study was far more than those without anemia. This result is almost the same with a study by Ishak et al. (2012) which reported the number of patients with dialysis who suffered from anemia (Hb<11gr/100ml) was 88.7%. Similar result was also identified in some other studies (Chen et al., 2006; Danielle et al., 2017; Pai et al., 2007; Sabry et al., 2010). Anemia in patients with chronic kidney failure has started since the beginning of the disease process. Anemia is always found in patients with ESRD (80-95%), except in patients with chronic kidney disease because of polycystic. The main factor which causes anemia in patients with ESRD is the deficiency of erythropoietin (EPO). This happens because of the alteration of cells producer of EPO (peritubular cells) in the kidney (Smeltzer & Bare, 2002). However, in further analysis in this study, it was revealed that there was no relationship between hemoglobin level and insomnia. The sample size which was small might be the reason of this insignificant relationship. Although statistically insignificant, the condition might be clinically significant.

The result showed that insomnia mostly occurred in patients who had undergone long-term dialysis than in those who just recently had dialysis. This result is in line with some previous studies (Ahmed and Gehan, 2014; Pai et al., 2007; Sabbatini et al., 2002; Rosdiana, 2011). Sabbatini et al. (2002) reported that the increase of insomnia in patients with long-term dialysis is due to the progressive nature of ESRD's symptoms, disease complications and suffering from other diseases related to the kidney. Patients with long-term dialysis often experience complications from ESRD, for example, cardiovascular and neurological problems. According to Coccossis et al. (2008), patients with long-term dialysis often suffer from insomnia due to increased physical and social deficits. The patients' QoL also decreases along with the alteration of their psychological or mental aspect. Sabbatini et al. (2002) reported that there was a significant increase in insomnia occurrence in patients with long-term dialysis ($p<.005$). However, this study reported different finding that there was no relationship between insomnia occurrence and the period of dialysis. The sample size which was small might be the reason of this insignificant relationship. Although statistically insignificant, the condition might be clinically significant. The phenomenon showed that the longer the patients undergoing dialysis, the higher the complications and insomnia occurrence would be.

## CONCLUSION

Insomnia occurred in many patients undergoing dialysis. Anxiety was a factor which was associated with insomnia. Patients who had severe anxiety had 2.63 times higher risk to get insomnia rather than those with mild anxiety. The age was also related to insomnia occurrence in which patients in late adulthood had 1.75 times higher risk to get insomnia than patients in the other age. Such other factors as gender, education level, occupational status, marital status, lifestyle (smoking and coffee consumption habit), hemoglobin level, and dialysis period were not related to insomnia occurrence. This study recommends that anxiety screening should be performed to patients with dialysis. Anxiety in dialysis patients need to be treated properly so that it will not develop into insomnia.

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