

Nepalese Critical Care Nurses' Competency Towards Pressure Ulcer Prevention

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Abstract - Objectives: To examine the level of Nepalese critical care nurses' competency including knowledge, attitude, and practice towards PU prevention.

Methods: Data were collected from 98 eligible nurses working in intensive care unit/critical care unit (ICU/CCU) of three hospitals in Nepal from February to April 2017, using Nurses' Competency Towards Pressure Ulcer (PU) Prevention

Questionnaire. Data were analyzed using descriptive statistics.

Results: The level of nurses' competency was categorized into 5 levels. The Nepalese critical care nurses' competency towards PU prevention was at a low level. The knowledge and attitude of Nepalese critical care nurses' towards PU prevention were at a low and moderate level, respectively. While the practice of Nepalese critical care nurses was at a very low level.

Conclusion: Nursing competence is an integral part of positive health outcomes of patients. The low level of competence towards PU prevention among Nepalese critical care nurse, therefore, raises the nation concern to increase their competency in order to increase the quality of PU prevention.

Keywords- critical care; nurses' competency; pressure ulcer

I. INTRODUCTION

A. Background and Significance of the problem

Pressure ulcer (PU) is a major health-related problem causing mortality among hospitalized patients, worldwide (1). Additionally, PU becomes one of the devastating and common conditions among critically ill patients (2, 3) with the higher incidence and prevalence of PU from a number of hospitals across the world such as Jordan (4), Turkey (5), Brazil (6), and Greece (2). In Nepal, 66% of intensive care units (ICUs) patients developed PU (7). Critically ill patients in all age group are in an inextricable condition to develop PU (8) due to ventilated, immobilized, and sedated (1, 8). PU results in a financial burden for patients, family

members, and healthcare settings (1). In addition, PU causes pain, distress, psychological problem, delay recovery, increase the length of hospital stay, and increase the hospital care cost (8, 9). Thus, PU could reflect a quality of care. Though PU prevention is a responsibility of the multidisciplinary team, nurses play a major role (10). Here, in order to achieve quality PU prevention, a competent nurse is required (8). According to the AACN (11, 23), nurses' competency in critical care arena includes the nurses' knowledge, attitude, and practice in order to meet the patients and families' needs, for positive patient's outcome. Hence, the whole component of competence of critical care nurse is crucial to prevent the development of PU in ICU settings (2, 4, 5, & 6).

Currently, there is still a lack of published evidence exploring the nurses' competency towards the PU prevention in critically ill patients, in particular for all components, including in the critical care context of Nepal (12, 13, 14). The major purpose of this study was therefore to examine the level of Nepalese critical care nurses' competency towards the prevention of PUs.

B. Conceptual Framework of the Study

The AACN critical care nurse competency (11) and PU prevention guideline were mainly used to underpin this study (8). According to the AACN (11), nurses' competency is an integral component of knowledge, attitude, and practice in their clinical practice required to fulfill the needs of patients and their families. Here, critical care nurses' competency towards PU prevention includes the integration of nurses' knowledge, attitude, and practice towards 1) risk factors of PU development, 2) risk assessment of PU development, 3) skin care, 4) nutrition to prevent PUs,

- 5) reducing the amount of pressure and shearing forces, and 6) education for staff personnel (8).

II. METHODOLOGY

A. Design

A descriptive cross-sectional research design was used to examine the level of Nepalese critical care nurses' competency towards PU prevention.

B. Participants

The participants were the nurses from the critical care of top three major hospitals in Kathmandu, Nepal. The inclusion criteria were: 1) currently works as a registered nurse in ICU/CCU, 2) holds an education level of at least a three-year diploma nursing course, 3) has more than or at least one year of work experience, and 4) willing to participate in this study. The sample size was calculated from the effect size of .28 derived from a previous study (15). Using the effect size (r) of .30 with the significant criterion of (α) .05 and the power of .80, the sample size was 85 (16). In order to increase the power of the study, since the total number of nurses working in ICU/CCU in the hospital settings was 137, 98 eligible nurses who met the inclusion criteria and who were willing to participate in this study were included (16).

C. Research Instruments

The research instruments consisted of demographics and characteristics questionnaire and a self-report nurses' competency (knowledge, attitude, and practice) towards PU prevention questionnaire developed by the researcher based on the updated guidelines developed by the National Pressure Ulcer Advisory Panel and groups (8). The Scale Content Validity Index (S-CVI) of the questionnaire was assessed by the three experts in the area of wound care and critical care nursing. All questionnaire of S-CVI was 1.0. The Kuder-Richardson (KR-20) coefficient was used to determine the internal consistency reliability of knowledge questionnaire and yielded .70. The Cronbach's alpha coefficient was used to determine the internal consistency reliability of attitude and practice questionnaire and yielded .70 and .73 respectively.

The tool measures 6 domains of knowledge, attitude, and practice on PU prevention: 1) risk factors of PU development, 2) risk assessment of PU development, 3) skin care, 4) nutrition to prevent PUs, 5) reducing the amount of pressure and shearing forces, and 6) education for staff personnel. The nurses' knowledge on PU prevention questionnaire consists of 20 multiple choice questions with correct and incorrect answers. The score 1 indicates a correct answer and 0 for an incorrect answer. The nurses' attitude on PU prevention questionnaire consists of 20 items rated on a five-point Likert scale with the values: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree (16). The possible total score ranges from 20 to 100. The scores of

negative responses were reversed. Similarly, the nurses' practice on PU prevention questionnaire comprises of 20 items with a 3-point numerical rating scale. The score ranges from 1 to 3; 1 = never, 2 = sometimes, and 3 = always (17). The possible score ranges from 20 to 60. The higher score indicates a higher level of knowledge, attitude, and practice towards PU prevention in critically ill patients.

The scores were transformed into a percentage to measure the same category since the number of items in each component of nurses' competency towards PU prevention questionnaire are not equal, the level of each component was categorized into five levels (18).

| Level of knowledge/Attitude/ Practice score | Total percentage (%) |
|--|----------------------|
| Very low | <60.00 |
| Low | 60.00-69.99 |
| Moderate | 70.00-79.99 |
| High | 80.00-89.99 |
| Very high | >90.00 |

Finally, the nurses' competency towards PU prevention was measured by the sum of the percentage scores of knowledge, attitude, and practices and was further divided by three. The level of nurses' competency towards PU prevention was categorized into five levels, similar to the level of knowledge, attitude, and practice.

D. Ethical Considerations

The study was approved by the Institutional Research Board (IRB) of the Faculty of Nursing, Prince of Songkla University, Thailand, National Health Research Council (NHRC), Nepal, and three hospital settings. Informed consent was obtained from all critical care nurse participants. The anonymity of the participants was maintained by using the coding system.

E. Data Analysis

Descriptive statistics were used to analyze the demographic and characteristics data and the level of competency. The level of competency was categorized and explained as a mean and standard deviation.

III. RESULTS

A. Participants' Demographics and Characteristics

The majority of the participants (81.60%) were 21 to 30 years of age with the mean age of 28.7 years old ($SD = 6.72$). The majority (93.90%) of participants was Hindu, married (66.30%), and had no children (64.30%). Around two-thirds (68.40%) of the participants hold the baccalaureate degree. A small number of the participants (6.10%) had attended PU-related training. 34% and 23% of the participants had work experience in hospitals of one to three and three to six years, respectively. The majority of the participants (79.60%) had work experience in ICU of one to three years. The three topmost work experiences of clinical settings in ICU were surgical ICU (19.40%),

pediatric ICU (16.30%), and neurosurgical ICU (14.30%) as shown in Table I.

Table I. PARTICIPANTS' DEMOGRAPHICS AND CHARACTERISTICS (N = 98)

| Characteristics | n | % |
|--|----|-------|
| Age (years) ($M = 28.7, SD = 6.72,$ Min-Max = 21-58) | | |
| 21 – 30 | 80 | 81.60 |
| 31 – 40 | 12 | 12.20 |
| 41 – 50 | 2 | 2.00 |
| 51 – 60 | 4 | 4.10 |
| Religion | | |
| Hindu | 92 | 93.90 |
| Buddhist | 5 | 5.10 |
| Christian | 1 | 1.00 |
| Marital status | | |
| Married | 65 | 66.30 |
| Single | 33 | 33.70 |
| Children | | |
| Yes | 35 | 35.70 |
| No | 63 | 64.30 |
| Age of children (years) | | |
| 0 – 3 | 16 | 45.70 |
| 3 – 5 | 11 | 31.40 |
| 5 – 8 | 1 | 2.90 |
| > 8 | 7 | 20.00 |
| Educational level | | |
| Diploma of Nursing | 31 | 31.60 |
| Bachelor of Nursing | 67 | 68.40 |
| Attending PU-related training | | |
| Yes | 6 | 6.10 |
| No | 92 | 93.90 |
| Type of clinical setting | | |
| Surgical ICU | 19 | 19.40 |
| Pediatric ICU | 16 | 16.30 |
| Neurosurgical ICU | 14 | 14.30 |
| Old ICU | 12 | 12.20 |
| Critical care unit | 9 | 9.20 |
| New ICU | 9 | 9.20 |
| Medical ICU | 5 | 5.10 |
| Trauma ICU | 8 | 8.20 |
| Cardio-thoracic vascular surgery ICU | 6 | 6.10 |
| Working experience (years) | | |
| 1 - 3 | 34 | 35.80 |
| 3 - 6 | 23 | 24.20 |
| 6 - 9 | 26 | 27.40 |
| 9 -12 | 6 | 6.30 |
| >12 | 6 | 6.30 |
| Time working in intensive care unit (years) | | |
| 1 - 3 | 78 | 79.60 |
| 3 - 6 | 11 | 11.20 |
| 6 – 9 | 6 | 6.10 |
| >12 | 3 | 3.10 |
| ($M = 2.80, SD = 3.31, Min-Max = 1-22$) | | |

B. Level of Nurses' Competency Towards PU Prevention

The overall competency of critical care nurse participants' towards PU prevention was at a low level ($M = 63.28, SD = 6.59$). With regard to critical care nurses' competency in each component, the knowledge of critical care nurse participants towards PU prevention was also at a low level ($M = 65.66, SD = 11.20$). The attitude of critical care nurse participants' towards PU prevention was at a moderate level ($M = 77.74, SD = 10.57$). However, the PU prevention practices of critical care nurse participants was at a very low level with a mean of 46.45 ($SD = 7.08$). Table II illustrates the level of overall competency and competency in each component.

Table II. CRITICAL CARE NURSES' COMPETENCY TOWARDS PU PREVENTION (N = 98)

| Variables | M | SD | Level |
|------------|-------|-------|----------|
| Overall | | | |
| competency | 63.28 | 6.59 | Low |
| Knowledge | 65.66 | 11.20 | Low |
| Attitude | 77.74 | 10.57 | Moderate |
| Practice | 46.45 | 7.08 | Very low |

IV. DISCUSSION

In this study, the overall competency of Nepalese critical care nurse participants towards PU prevention was at a low level. Accordingly, the level of knowledge and the level of practice of the Nepalese critical care nurse participants were at a low and very low level, respectively. While the level of attitude of the Nepalese critical care nurse participants towards PU prevention was at a moderate level. This is congruence with the previous studies which were conducted among either general or critically ill patients and revealed a low level of practice on PU prevention (19, 14, 19, 21).

According to Curley (22), the competencies of a nurse reflect an integration of knowledge, attitudes, skills, and experience which are required to meet the patient's need and achieve optimum health outcomes. Accordingly, a previous study revealed that a low level of knowledge on PU prevention contributed to inadequate PU preventive practices (21). Here, inadequate competency could lead to poor patients' outcomes with no exception to PU prevention allocated by critical care nurses.

Nurses develop their abilities, knowledge, attitude, and skills in an ongoing process and succeed from basic competencies of novices to be expert practitioners (23, 22). According to the AACN (24), clinical experiences become one of the vital factors contributing to nurses' competency. Previous studies revealed the relationship between working experience and nurse competency (14, 24, 20). In this study, the majority of the Nepalese critical care nurse participants had clinical experience within a three year period. Similarly, a study conducted by Dilie and Mengistu (26) showed less clinical experiences among nurses in Ethiopia.

The career ladder, according to Benner's model of skill acquisition, shows that skilled performance was based upon

experience as well as education. Expert nurses develop skills and understanding of patient care over time through a sound educational-based as well as a multitude of experience (27). A competent nurse has the ability to apply his/her acquired knowledge constructed from either previous experience or education, into clinical practice to meet the patients' demand (27). The extension of practical knowledge could be developed through clinical experiences (27). Different levels of clinical experiences, therefore, affect different skilled performances. The AACN Certification Corporation (23) developed the synergy model to categorize a nurses' competency into three levels. The majority of Nepalese critical care nurse participants in this study, according to competencies of nurses in the synergy model, could be categorized as level 1 which is still working by following the rules or routine tasks and coaching or supervision is still needed. Here, clinical experience may be the determinant of the low level of Nepalese critical care nurse participants' competency towards PU prevention, in this study.

The level and proficiency of clinical nursing skills, as well as competency, develop along a trajectory. Expertise in nursing is influenced by relevant experience as well as associated factors, such as educational opportunities (28). An official training, such as the analysis of policies and procedures and the presence of educational programs also become one of the significant resources enhancing nurses' competency (29). Previous studies conducted in Nigeria and Ethiopia revealed the relationship between less participation in PU training and low competency in PU prevention practices (14, 21). The low number of participants who attended PU-related training aligned with the low level of overall competency of Nepalese critical care nurse participants towards PU prevention, in this study could also be supported by this evidence.

Continuing Nursing Education is a paramount importance for the knowledge and skills development of nurse practitioners to acquire knowledge, skills, and attitudes contributing to quality nursing practice (30). Previous studies also supported that formal training contributed to nurses' levels of knowledge and competency (14, 25, 21). The PU-related training provides a high possibility to update information regarding PU prevention (14). As mentioned above, most of the Nepalese critical care nurse participants in this study rarely attended PU-related training. Here, lack of attending PU-related training could be one of the major reasons impeding the competence of Nepalese critical care nurse participants toward PU prevention in this study.

Nowadays, the capacity enhancement of practitioners of nursing in Nepal is allocated in terms of in-service training, however; there is insufficient Center for Continuing Nursing Education (CCNE) (31). Generally, a three-month short training course has been allocated for ICU nurses by the Nursing In-Service Education Unit at Tribhuvan University Teaching Hospital, Maharajgunj, in Kathmandu, Nepal (32).

The in-service training in the Nepalese critical care setting is mainly focused on caring for patients with critical

conditions such as nursing patients with mechanical ventilation, the management of shock patients, advanced cardiac life support, high alert drugs administration, and infection prevention (33) but not included a workshop or training relating to PU prevention for critical care nurses. For this reason, the number of critical care nurse participants who attended PU-related training is still rare which further affects their competency towards PU prevention. Consequently, the low level of overall competency and knowledge, including a very low level of practices toward PU prevention were evidenced in Nepalese critical care nurse participants in this study.

The absence of PU prevention guidelines in the Nepalese critical care setting might become another reason underpinning the low level of Nepalese critical care nurse participants' competency. Currently, day-to-day nursing practices regarding PU prevention in Nepalese critical care settings include repositioning a patient every two hours, using PU preventive devices, and assess the major sites of PU development and stages of PU (34, 35). According to NPUAP and groups (8), PU prevention practices consist of a risk assessment of PU development, skin care, nutritional management to maintain skin integrity, reducing the amount of pressure and shear, and education for staff personnel. In comparison, the current PU prevention practices in Nepalese critical care setting may not align with the best currently available evidence as proposed by NPUAP (8). The lack of PU prevention guidelines utilization in Nepalese critical care settings could, therefore, have impeded the competency of Nepalese critical care nurse participants in this study.

Insufficient clinical experience and lack of PU prevention training also affected the level of attitude (36). A study conducted by Aslan and Giersbergen (37) to examine the attitude of nurses regarding PU prevention in Turkey revealed significant differences between nurses who attended and those who did not attend PU prevention training. Nurses who attended PU prevention training significantly reported higher PU prevention attitudes than those who did not attend PU prevention training (37).

In addition, less clinical experience and lack of PU prevention training of Nepalese critical care nurse participants in this study, therefore, could result in a moderate level of attitude towards PU prevention of participants. Unsatisfactory attitudes towards PU prevention further impede nurses' practice on PU prevention (38). Previous studies revealed nurses' attitude towards PU prevention could attribute to nurses' practice or performance (12, 39, 40). Accordingly, Nepalese critical care nurse participants in this study had a moderate level of attitude with a very low level of practices towards PU prevention.

Under the critical care setting, prioritized care is given to seriously ill and unstable patients to manage life-threatening situations, with no exception to the Nepalese critical care context (32). Even though PU prevention practices such as regular repositioning and off-loading of heels or early mobilization (8) are simple low-tech methods, a variety and inconsistency of practices were evidenced in the Nepalese

critical care context based on the decision of the attending staff.

The organizational context of nursing care plays a crucial role in nurses' decision on their practice (41, 40).

Organizational culture controls the way members make decisions, the way they interpret and manage the environment of the organization, the way they use available information, and the way they act (42). Here, the organizational culture of PU prevention practice in a particular context should be considered as one of the vital factors underpinning a very low level of critical care nurses' practice towards PU prevention.

Furthermore, the values in an organizational culture are important shapers of members' behavior. An organizational culture is also one of the potential barriers to the implementation of evidence-based practice (43). From these reasons, the organizational culture of PU prevention practices in a particular Nepalese context could be another vital reason underpinning the low level of Nepalese critical care nurse participants' competency towards PU prevention.

V. CONCLUSION AND RECOMMENDATIONS

The overall Nepalese critical care nurses' competency towards PU prevention was at a low level. The study result of the very low level of practices of Nepalese critical care nurse participants towards PU prevention in this study raises an awareness and concern of the quality of the current PU prevention practices and management. The study findings and the discussions also suggest strategies to improve the quality of PU prevention practices among Nepalese critical care nurse practitioners. These include attending PU-related formal training and education, utilizing of PU prevention guideline, as well as changing the day-to-day PU prevention practice to adhere to the latest updated guideline.

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REFERENCES

- [1] National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance. (2014a). *Prevention and treatment of pressure ulcers: Technical documents: Data extraction tables*. Retrieved from <http://www.internationalguideline.com/static/pdfs/NPUAP-EPUAP-PPPIA-PUGuideline-TechDoc-DataExtract-2014.pdf>
- [2] Apostolopoulou, E., Tselebis, A., Terzis, K., Kamarinou, E., Lambropoulos, I., & Kalliakmanis, A. (2014). Pressure ulcer incidence and risk factors in ventilated intensive care patients. *Health Science Journal*, 8(3), 333-342 310. Retrieved from <http://tinyurl.com/zlbnl2r>
- [3] Manzano, F., Navarro, M. J., Roldan, D., Moral, M. A., Leyva, I., Guerrero, C., . . . Granada, U. P. P. G. (2010). Pressure ulcer incidence and risk factors in ventilated intensive care patients. *Journal of Critical Care*, 25, 469-476. doi:10.1016/j.jcrrc.2009.09.002
- [4] Tubaishata, A., Anthony, D., & Saleh, M. (2011). Pressure ulcers in Jordan: A point prevalence study. *Journal of Tissue Viability*, 20, 14-19. doi:10.1016/j.jtv.2010.08.001
- [5] Ozyurek, P., & Yavuz, M. (2015). Prevention of pressure ulcers in the intensive care unit: A randomized trial of 2 viscoelastic foam support surfaces. *Clinical Nurse Specialist*, 29, 210-217. doi:10.1097/NUR.0000000000000136
- [6] Cremasco, M. F., Wenzel, F., Zanei, S. S. V., & Whitaker, I. Y. (2012). Pressure ulcers in the intensive care unit: The relationship between nursing workload, illness severity and pressure ulcer risk. *Journal of Clinical Nursing*, 22, 2183-2191. doi:10.1111/j.1365-2702.2012.04216.x
- [7] Mehta, R. S., Rai, H. K., Bhatta, N., Bhattari, B., & Shrestha, R. (n.d.). *Effectiveness of bed sore prevention training programme in ICU/CCU at B. P. Koirala Institute of Health Sciences*. Retrieved from http://www.slideshare.net/rsmehta/9-bed-sore-education-program?from_action=save
- [8] National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance. (2014b). *Prevention and treatment of pressure ulcers: Quick reference guide*. Retrieved from <http://www.npuap.org/wpcontent/uploads/2014/08/Updated-10-16-14-Quick-Reference-Guide-DIGITAL-NPUAP-EPUAP-PPPIA-16Oct2014.pdf>
- [9] New South Wales Government Health. (2014). *Pressure injury prevention and management*. Retrieved from http://www0.health.nsw.gov.au/policies/pd/2014/pdf/PD2014_007.pdf
- [10] Lyder, C. H., & Ayello, E. A. (2008). *Pressure ulcers: A patient safety issue*. In R. G. Hughes (Ed.), *Patient safety and quality: An evidence-based handbook for nurses* (pp. 267-299). Retrieved from <http://www.ncbi.nlm.nih.gov/books/NBK2650/>
- [11] American Association of Critical Care Nurses. (2015). *AACN scope and standards for acute and critical care nursing practice*. Retrieved from <http://www.aacn.org/wd/practice/docs/scope-and-standards-acute-critical-care-2015.pdf>
- [12] Beeckman, D., Defloor, T., Schoonhoven, L., & Vanderwee, K. (2011). Knowledge and attitudes of

- nurses on pressure ulcer prevention: A cross-sectional multicenter study in Belgian hospitals. *Worldviews on Evidence-Based Nursing*, 8, 166-176. doi:10.1111/j.1741-6787.2011.00217.x
- [13] Gunningberg, L., Mårtensson, G., Mamhidir, A. G., Florin, J., Muntlin Athlin, Å., & Bååth, C. (2015). Pressure ulcer knowledge of registered nurses, assistant nurses and student nurses: A descriptive, comparative multicentre study in Sweden. *International Wound Journal*, 12, 462-468. doi:10.1111/iwj.12138
- [14] Nuru, N., Zewdu, F., Amsalu, S., & Mehretie, Y. (2015). Knowledge and practice of nurses towards prevention of pressure ulcer and associated factors in Gondar University Hospital, Northwest Ethiopia. *BioMed Central Nursing*, 14 (1), 1-8. doi:10.1186/s12912-015-0076-8
- [15] Novelia, S. (2016). *Knowledge, working environment, and practice regarding prevention of cesarean section surgical site infection among midwives and nurses in Indonesia* (Master thesis), Prince of Songkla University, Songkhla, Thailand.
- [16] Polit, D. F., & Beck, C. T. (2012). *Nursing research: Generating and assessing evidence for nursing practice* (9th ed.). Philadelphia: Lippincott Williams & Wilkins.
- [17] Islam, S. (2010). *Nurses' knowledge, attitude, and practice regarding pressure ulcer prevention for hospitalized patients at Rajshahi medical college hospital in Bangladesh*. Retrieved from <http://kb.psu.ac.th/psukb/bitstream/2010/7830/1/326010.pdf>
- [18] Oermann, M. H., & Gaberson, K. B. (2016). *Evaluation and testing in nursing education* (5th ed.). New York: Springer.
- [19] Kallman, U., & Suserud, B. O. (2009). Knowledge, attitudes, and practice among nursing staff concerning pressure ulcer prevention and treatment—A survey in a Swedish healthcare setting. *Scandinavian Journal of Caring Sciences*, 23, 334-341. doi:10.1111/j.1471-6712.2008.00627.x
- [20] Tubaishat, A., & Aljezawi, M. (2014). Exploring pressure ulcer care in Jordan: nurses' knowledge and practice. *Journal of the Dermatology Nurses' Association*, 6, 115-123. doi:10.1097/jdn.0000000000000046
- [21] Uba, M. N., Alih, F. I., Keve, R. T., & Lola, N. (2015). Knowledge, attitude and practice of nurses toward pressure ulcer prevention in University of Maiduguri Teaching Hospital, Borno State, North-Eastern, Nigeria. *International Journal of Nursing and Midwifery*, 7(4), 54-60. doi:10.5897/IJNM2014.0155
- [22] Curley, M. A. (1998). *Patient-nurse synergy: Optimizing patients' outcomes*. Retrieved from <HTTP://SEARCH.PROQUEST.COM/DOCVIEW/227899610?PQ-ORIGSITE=GSCHOLAR>
- [23] AACN Certificate Corporation (2016). *The AACN synergy model for patient care*. Retrieved from <http://www.aacn.org/wd/certifications/content/synmodel.pcms?menu=certification>
- [24] American Association of Critical-Care Nurses. (2016). *AACN standards for establishing and sustaining healthy work environments: A journey to excellence, 2nd edition*. Retrieved from <http://www.aacn.org/wd/hwe/docs/hwestandards.pdf>
- [25] Taha, A. S. (2014). Nurses knowledge and practices related to pressure ulcer at intensive care unit. *Journal of International Academic Research for Multidisciplinary*, 2(2), 247-262. Retrieved from <http://www.jiarm.com/Mar2014/paper11172.pdf>
- [26] Dilie, A., & Mengistu, D. (2015). Assessment of nurses' knowledge, attitude, and perceived barriers to expressed pressure ulcer prevention practice in Addis Ababa Government Hospitals, Addis Ababa, Ethiopia, 2015. *Advances in Nursing*, 1-11. doi:10.1155/2015/796927
- [27] Benner, P. (1982). *From novice to expert*. Retrieved from <http://www.jstor.org/stable/3462928>
- [28] Taylor, C. (2002). Assessing patients' needs: Does the same information guide expert and novice nurses?. *International Nursing Review*, 49, 11-19. doi:10.1046/j.1466-7657.2002.00098.x
- [29] Daley, B. J. (1999). *Novice to expert: An exploration of how professionals learn. Adult education quarterly*. Retrieved from <http://tinyurl.com/ya7tn24k>
- [30] Thailand Nursing and Midwifery Council Competencies of Registered Nurses. (n.d.). *Thailand nursing and midwifery council competencies of registered nurses*. Retrieved from http://www.tnc.or.th/files/2010/02/page-138/professional_competency_pdf_10152__28999.pdf
- [31] Nepal Health Research Council. (2010). *Report on status of nurses in Nepal*. Retrieved from <http://library.nhrc.org.np:8080/nhrc/bitstream/handle/123456789/72/628.pdf?sequence=1>
- [32] Acharya, S. P. (2013). Critical care medicine in Nepal: Where are we?. *International Health*, 5(2), 92-95. doi:10.1093/inthealth/iht010.
- [33] Nurse Teach Reach. (2017). *Critical care program; Patan Hospital and Grande International Hospital*. Retrieved from <http://www.nurseteachreach.org/nepal-201617.html>
- [34] Council for Technical Education and Vocational Training. (2013). *Curriculum proficiency certificate level in nursing (Three year program)*. Retrieved from <http://ctevt.org.np/files/curriculum/Diploma/PCL%20Nursing,%202013.pdf>
- [35] Kathmandu University. (2004). *Curriculum for bachelor of science in nursing*. Retrieved from <https://www.scribd.com/doc/43987226/Syllabus-of-BSc-Nursing-Kathmandu-University>
- [36] Tubaishat, A., Aljezawi, M., & Al Qadire, M. (2013). Nurses' attitudes and perceived barriers to pressure

- ulcer prevention in Jordan. *Journal of Wound Care*, 22, 490-497. doi:10.12968/jowc.2013.22.9.490
- [37] Aslan, A., & Giersbergen, M. Y. V. (2015). Nurses' attitudes towards pressure ulcer prevention in Turkey. *Journal of Tissue Viability*, 25, 66-73. doi:10.1016/j.jtv.2015.10.001
- [38] Kaddourah, B., Shaheen, A. K. A., & Tannir, M. A. (2016). Knowledge and attitudes of health professionals towards pressure ulcers at a rehabilitation hospital: A cross-sectional study. *BioMed Central Nursing*, 15(1), 17. doi:10.1186/s12912-016-0138-6
- [39] Demarre, L., Vanderwee, K., Defloor, T., Verhaeghe, S., Schoonhoven, L., & Beeckman, D. (2011). Pressure ulcers: Knowledge and attitude of nurses and nursing assistants in Belgian nursing homes. *Journal of Clinical Nursing*, 21, 1425-1434. doi:10.1111/j.1365-2702.2011.03878.x
- [40] Sving, E., Gunningberg, L., Högman, M., & Mamhidir, A. G. (2012). Registered nurses' attention to and perceptions of pressure ulcer prevention in hospital settings. *Journal of Clinical Nursing*, 21, 1293-1303. doi:10.1111/j.1365-2702.2011.04000.x
- [41] Doran, D., Haynes, B. R., Estabrooks, C. A., Kushniruk, A., Dubrowski, A., Bajnok, I., ... & Bai, Y. Q. C. (2012). The role of organizational context and individual nurse characteristics in explaining variation in use of information technologies in evidence based practice. *Implementation Science*, 7(1), 1-14. doi:10.1186/1748-5908-7-122
- [42] Cook, S. D., & Yanow, D. (1993). Culture and organizational learning. *Journal of Management Inquiry*, 2, 373-390. doi:10.1177/105649269324010
- [43] Hancock, H. C., & Easen, P. R. (2006). The decision-making processes of nurses when extubating patients following cardiac surgery: An ethnographic study. *International Journal of Nursing Studies*, 43, 693-705. doi:10.1016/j.ijnurstu.2005.09.003
- 44) O'Donnell, O. & Boyle, R. (2008). Understanding and managing organisational culture. Dublin: Institute of Public Administration.