**NURSES’ KNOWLEDGE OF THE PREVENTION OF PRESSURE ULCERS AND ASSOCIATED FACTORS IN THE KARAPITIYA TEACHING HOSPITAL**

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**Introduction**

A pressure ulcer (PU) is an area of localized damage to the skin, muscle and or underlying tissue, caused by shear, friction on unrelieved pressure, usually over bone prominences. Prevalence rates of PUs are varied ranging from 7% to 71.6% across Europe, the United. States. and Canada. In spite of that, at any point in time, nearly 10% of hospital patients are suffering from pressure ulcers (Moore & Cowman (2012). PUs are a common problem in long-term care (Anthony *et al,* 2019) and it imposes a significant impact on patients, their relatives, and caregivers. They lead to a financial burden (Spilsbury *et al*, 2007) and patients suffer immensely due to pain and distress which restricts their lifestyle. Thus, PU prevention should be considered as a priority in clinical and non-clinical areas especially where patients are at high risk (Hopkins *et al*, 2006).

Nurses play a major role in pressure ulcer prevention and care. However, previous investigations from global contexts have demonstrated inadequate knowledge on PU prevention among health care workers including nurses (Beeckman *et al*, 2011; Ebi *et al,* 2019; Qaddumi and Khawaldeh, 2014). As reported in a Jordanian study, the majority of the sample (73%, n=141) had insufficient knowledge about PU prevention while reporting the lowest scores in the themes of PU etiology, preventive measures and risk assessment (Chianca *et al*, 2010; Qaddumi & Khawaldeh, 2014). Moreover, nurses’ knowledge of ulcer prevention was found to differ based on their clinical nursing unit and years of nursing experience. Although evidence on PUs prevention knowledge is available in the global context, there are no reported local studies assessing nurses’ ulcer prevention knowledge. Thus, the aims of the present study were (i) to assess nurses’ knowledge on pressure ulcer prevention (ii) and to identify factors which influence on their’ knowledge.

**METHODOLOGY**

This was a descriptive cross-sectional study conducted among nurses (n=384) employed in medical and surgical wards, and special units including intensive care unit, neuro surgical unit and other special units in the Teaching Hospital, Karapitiya. Nurses who were directly involved in patient care for more than one year were recruited for the study using convenience sampling technique. The participation was entirely voluntary. Data were collected in early 2018 using a self-administered, close-ended questionnaire. The questionnaire consisted of two sections; a) socio-demographic information and, b) 22 questions on assessing nurses’ knowledge on PU prevention; related to pressure ulcer development, risk assessment, skin care, nutrition to maintain healthy skin, management of mechanical loads and educational programs for patient, family, and staff. Since this section was developed according to a previous guideline on pressure ulcer prevention (Maylor and Torrance, 1999) content validity of the questionnaire was examined prior to the pre-test. This study was approved by the Ethics Review Committee of Faculty of Medicine, University of Ruhuna. Data was analysed using SPSS version 21. Frequencies, percentages, means, and standard deviations were used for demographic variables and to describe the scores of the study variables. The relationship between knowledge and socio-demographic variables was determined by independent-t-test, one-way ANOVA and Pearson’s correlation coefficient. Level of significance was accepted at p<0.05.

**RESULTS & DISCUSSION**

Of the total 384 nurses invited, 351 participated in the study (response rate = 91.4%). Their demographic characteristics are shown in Table 1. The majority of the participants was below 40 years (72.9%) and most of them were females (87.5%) and diploma holders (82.9%). Only few nurses (1.1%) have undergone a formal training on PU prevention.

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| **Table 1 *Socio-demographic Characteristics of Participants (N=351)*** | | |
| Characteristics | Category | n (%) |
| Sex | Female | 307(87.5) |
| Male | 44(12.5) |
| Age  (in years) | 20 – 29 | 45(12.8) |
| 30 – 39 | 211(60.1) |
| 40 – 49 | 80(22.8) |
| 50 – 60 | 15(4.3) |
| Marital status | Single | 67(19.1) |
| Married | 284(80.9) |
| Professional qualification | Diploma | 291(82.9) |
| Undergraduate | 51(14.5) |
| Degree | 9(2.6) |
| Duration in service in hospital  (in years) | < 5 | 74(21.1) |
| 6 – 10 | 165(47) |
| 11 – 15 | 69(19.7) |
| 16 – 20 | 27(7.7) |
| >21 | 16(4.6) |
| Experience at current workplace  (in years) | < 5 | 201(57.5) |
| 6 – 10 | 129(36.8) |
| 11 – 15 | 17(4.8) |
| 16 – 20 | 4(1.2) |
| Clinical area of practice | Medical | 82(23.4) |
| Surgical | 93(26.5) |
| ICU | 86(24.5) |
| Orthopedic | 24(6.8) |
| Neuro-surgery | 20(5.7) |
| Other | 46(13.1) |
| ICU; Intensive Care Unit | | |

Of the 22 items tested, eleven items were answered correctly by only 37.6% (n=132) nurses. The mean overall knowledge on PU prevention was 57.4(±15.07). Figure 1 shows categories of knowledge calculated based on McDonald Criteria (McDonald, 2002). Accordingly, majority of nurses had very low (59.8%, n=210) to low knowledge (18.5%, n=65) on PU prevention. Present findings are consistent with studies conducted among Jordanian (Qaddumi and Khawaldeh, 2014) and Uganda nurses (Mwebaza *et al,* 2014). Educational preparation of nurses may be perhaps related to the inadequate knowledge of nurses as the majority of nurses had diploma preparation. In agreeing with that, 67.3% of nurses had good knowledge on pressure ulcer prevention practices among Ethiopian nurses where most of the nurses had bachelors’ degrees (Dilie and Mengistu, 2015).

In the present study, PU knowledge gaps in nurses may be attributed to lack of formal training in PU prevention. Findings have shown that a vast majority of nurses (98.9%) have not received any formal training in PU prevention.

Figure 1 *Nurses’ Overall Knowledge on PU Prevention Based on McDonald Criteria*

Further nurses’ knowledge on PU was assessed according to six sub domains. Figure 2 shows mean percentage of ulcer prevention knowledge across each domain. Accordingly, nurses had very low knowledge on ulcer risk assessment (48.9%) while knowledge on skin care, nutrition to maintain healthy skin and management of mechanical load is average (53-55%). According to the findings of a Brazilian study, nurses had overall understanding of PU prevention and assessment principles (Chianca *et al*., 2010). However, their knowledge in patient positioning, massage, PU assessment, and staging definitions is insufficient.

Figure 2 *Mean Percentage of Knowledge on PU Prevention Based on Six Domains*

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| Table 2 *Factors Affecting Nurses’ Knowledge on Pressure Ulcer Prevention* | | | |
| Characteristic | Category | Mean knowledge (%) | p-value |
| Gender | Male | 56.17 | 0.022 |
|  | Female | 62.29 |
| Marital status | Single | 52.84 | 0.006 |
|  | Married | 58.49 |
| Professional education | Diploma in Nursing | 55.40 | 0.000 |
| Undergraduates and Graduates | 67.19 |
| Clinical area of practice | Medical | 55.09 | 0.078 |
| Surgical | 55.22 |
|  | Intensive Care Unit | 60.88 |
|  | Orthopedic | 60.60 |
|  | Neuro- Surgery | 56.13 |
|  | Other | 58.39 |

As shown in Table 2, findings of the present study revealed that nurses’ knowledge on PU prevention was related on their gender (p=0.022,), marital status (p=0.006) and their professional education level (0.000). Ebi *et al*. (2019) and Qaddumi and Khawaldeh (2014) in line with this study reported significant difference between genders. Similar to present findings, some studies (Hulsenboom *et al,* 2007; Nuru *et al,* 2015) have reported higher knowledge among those completed higher education. However, Ebi *et al*. (2019) explained opposite findings to the present study. According to the present findings, nurses’ knowledge on PU prevention was not significantly different according to their clinical area of practice. This is probably due to the inclusion of nurses who were involved in direct care in the study sample. On the contrary, A Brazilian study has revealed significantly higher knowledge among nurses in patient clinical nursing unit than nurses in indirect care (Chianca *et al*., 2010).

Moreover, present findings indicated positive correlations between nurses’ knowledge on PU prevention and duration of nursing experience (r=0.510, p=0.000) and their age (r=0.427, p=0.000), experience in the current clinical working place (r=0.289, p=0.000). Similar to present findings Qaddumi & Khawaldeh (2014) have demonstrated differences in nurses’ PU knowledge with regards to years in nursing years of experience. Chianca *et al*. (2010) revealed weak and negative correlation (r = −0.21, p=0.033) between PU knowledge and years of experience in the hospital. It may be attributed their study sample.

**CONCLUSIONS AND RECOMMENDATIONS**

Nurses in the present study demonstrated inadequate knowledge on PU prevention which may be attributable to the level of exposure they get on pressure ulcer care. Gender, civil status, and professional education were found to affecting nurses’ knowledge on PU prevention. Moreover, nurses’ knowledge on PU prevention appears to be correlated to their age and on-the job experience they have acquired during their career. Since nurses’ knowledge on pressure ulcer prevention is important in improving the quality of care and the quality of life of patients, appropriate periodic educational sessions are mandatory in improving nurses’ knowledge.

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