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### Knowledge and practice regarding prevention of pressure ulcer among staff nurses in selected hospital, Gangtok, East Sikkim

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#### Abstract

Pressure ulcers (pressure sores, decubitus ulcers, bedsores, and pressure injuries) are localized damage to the skin and/or underlying tissue that usually occur over a bony prominence as a result of pressure or pressure in combination with shear and/or friction. The aim of the present study was to assess knowledge and practice regarding prevention of pressure ulcer of staff nurses. A descriptive research design was conducted in Hospitals, Gangtok, East Sikkim among of 136 staff nurses. Standardized tool Pieper-Zulkowski PUKT (Pressure Ulcer Knowledge Test), and observational checklist for practice were administered. The study revealed that 86(55%) had average knowledge, 44(28%) staff nurses had good knowledge and 6(4%) staff nurses had poor knowledge and also majority i.e. 110(71%) staff nurses had good practice and 26(17%) had poor practice regarding. Study also found that there was moderately positive correlation between knowledge and practice regarding prevention of pressure ulcer ( $r=0.79$ ) and there was an association between knowledge with year of experience ( $\chi^2=15.50$ ,  $df=8$ ) and practice with area of posting ( $\chi^2=0.00$ ,  $df=6$ ). The study showed that there is still much scope for improving their knowledge especially in area of wound description.

**Keywords:** Pressure ulcer, knowledge, practice, prevention

#### Introduction

Pressure ulcers (pressure sores, decubitus ulcers, bedsores, and pressure injuries) are localized damage to the skin and/or underlying tissue that usually occur over a bony prominence as a result of pressure or pressure in combination with shear and/or friction. Pressure ulcers occur due to pressure applied to soft tissue resulting in completely or partially obstructed blood flow to the soft tissue [1]. According to National Pressure Ulcer Advisory Panel pressure ulcer is defined as "localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear and/or friction." The National Pressure Ulcer Advisory Panel (NPUAP) has updated the definition of a pressure ulcer and the stages of pressure ulcers, based on current research and expert opinion solicited from hundreds of clinicians, educators, and researchers across the country [2]. According to National Pressure Ulcers Advisory Panel, pressure ulcers are an extremely common problem in health care settings, with an overall prevalence rate of 9.3% in all facilities in the United States. According to data from the most recent International Pressure Ulcer Prevalence Survey 2018, rates are highest in long-term acute care, with an overall prevalence of 28.8%.

In home care, studies have reported incidence rates from 4% to 15% and prevalence rates from 5% to 15%. While the prevalence of pressure ulcers has decreased in the past decade, more work needs to be done. To end this, NPUAP has developed a number of materials that can be used for all health care settings and organizations [5]. According to NHS (National Health Services) England article, nearly 700,000 people are affected by pressure ulcers each year, across all care settings, including patients in their own homes, with the most vulnerable of patients aged over 75. Around 186,617 patients develop a pressure ulcer in hospital each year. Of the Pressure Ulcer risk assessment scales (PURASs) available, the Braden scale, the Norton scale, and the Waterlow scale, having undergone validation in most parts of the world, are the most commonly adopted [6]. According to the Agency for Healthcare Quality and Research April 9, showed that pressure ulcers affect up to 2.5 million patients per year, and related costs range from \$9.1 to \$11.6 billion per year in the US. Complications include pain, scarring, infection, prolonged rehabilitation, and permanent disability. They are largely preventable, and 60,000 patients die as a direct result of pressure ulcers each year. They are common across the healthcare continuum, and as many as 42% of patients in ICUs and 28% of hospice patients have

pressure sores<sup>[9]</sup>. Miyazaki M.Y, H Maria, Benedita C<sup>[13]</sup>. Conducted a descriptive-exploratory study to describe and to analyze knowledge on pressure ulcer prevention among nursing team members working in direct care to adult and elderly patients at a university hospital. The study findings showed that the mean percentage of correct answers on the knowledge test was 79.4% (SD=8.3%) for nurses and 73.6% (SD=9.8%) for nursing auxiliaries/technicians. Both professional categories display knowledge deficits in some areas related to the theme. The objectives of the study are to assess the knowledge & practice regarding prevention of pressure ulcer among staff nurses, find out the correlation between knowledge and practice regarding prevention of pressure ulcer among staff nurses, find out the association between knowledge and practice regarding prevention of pressure ulcer among staff nurses about with selected variables.

### Material and methods

Research approach: Quantitative approach was adopted

Research Design: Descriptive survey design

Research Setting: Hospitals, Gangtok, East Sikkim

Population: Staff nurses working hospitals, Gangtok, East Sikkim.

Sample size: 136 staff nurses

Sampling technique: Non-Probability purposive

### Sampling criteria

#### Inclusion criteria

- Who were working in medicine, surgery, neurology, cardiology, orthopaedic ward, intensive care unit in C.R.H and STNM Hospital, Gangtok, East Sikkim.
- both male and female staff nurse
- who were willing to participate

#### Exclusion criteria

- who were not available at the time of data collection
- who were working in emergency and gynaecological ward

### Data collection tool and techniques

Tool I: Demographic Profile

Tool II: Standard Pieper Pieper-Zulkowski PUKT (Pressure Ulcer Knowledge Test), Version2 and Observational Checklist for practice

### Data collection procedure

The study was conducted in the month of December 2018 among 136 staff nurses of Central Referral hospital and STNM Hospital, Gangtok, East Sikkim after Administrative approval was taken from the Principal, Sikkim Manipal College of Nursing to conduct the study. Formal permission from Medical Superintendent of CRH and STNM Hospital was taken. The purpose of the study was explained to the entire subject and written consent was obtained from all the study participants.

### Statistics

The data is analyzed based on the objectives and hypothesis of the study by using descriptive and inferential statistics. The study finding are presented in section as follows.

## Results

### Section 1 Description of demographic variable

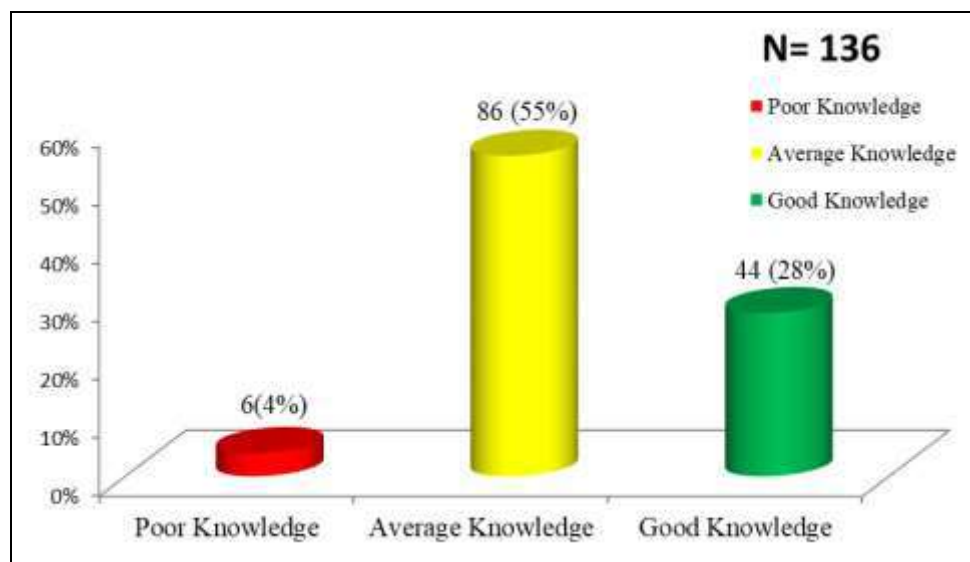
**Table 1:** Frequency and percentage distribution of samples according to their demographic variable N=136

Variables	Frequency(f)	Percentage (%)
<b>Age (in years)</b>		
20-25 years	63	47
26-30 years	60	44
31-35 years	10	7
>36 years	3	2
<b>Gender</b>		
Male	4	3
Female	132	97
<b>Professional Category</b>		
GNM	43	31
ANM	1	1
B.Sc	80	59
P.B.Sc	12	9
M.Sc	-	-
<b>Years of experience</b>		
1 year	49	36
2-5 years	66	49
6-10 years	16	12
11-15 years	2	1
>16 years	3	2
<b>Area of posting</b>		
Medicine	23	17
Surgery	21	15
Neurology	7	5
Cardiology	8	6
Orthopaedic	13	10
ICU	58	43
ITU	6	4
<b>Formal training on Pressure ulcer prevention</b>		
Yes	50	37
No	86	63

The data presented in Table.1 Shows the frequency and percentage distribution of samples according to their demographic variable of 136 staff nurses. Majority of the staff nurses 63(47%) were in the age group 20-25years, 60(44%) were in 26-30 years, 10(7%) were in 31-35 years and 3(2%) were in 36 years and above. Majority 132(97%) were female, whereas 4(3%) were male. 80(59%) staff nurses professional category were B.Sc. Nursing, 43(32%) staff nurses professional category were GNM, 12(9%) staff nurses professional category were P.B.Sc and 1(1%) staff nurses professional category were ANM. Majority 66(49%) had 2-5 years of experience, 49(36%) had 1 year of experience, 16(12%) had 6-10 years of experience, 3(2%) had more than 16 years of experience and 2(1%) had 11-15 years of experience. Majority 58(43%) staff nurses were from ICU, 23(17%) were from medicine ward, 21(15%) were from surgery ward, 13(10%) were from orthopaedic ward, 8(6%) were from cardiology ward, 7(5%) were from neurology ward and 6(4%) were from ITU. Majority 86(63%) staff nurses had not received formal training on pressure ulcer prevention and 50(37%) staff nurses had received formal training on pressure ulcer prevention through CNE, Workshop.

**Section 2:** Description of knowledge regarding prevention of pressure ulcer among staff nurses.

### Level of knowledge



**Fig 1:** Showing percentage of knowledge score of samples regarding prevention of pressure ulcer

The data presented in the figure 4.1 Depicts that maximum of the staff nurses 86(55%) had average knowledge, 44(28%) staff nurses had good knowledge and 6(4%) staff nurses had poor knowledge regarding prevention of pressure

ulcer.

### Section 3: Description of practice regarding prevention of pressure ulcer among staff nurses

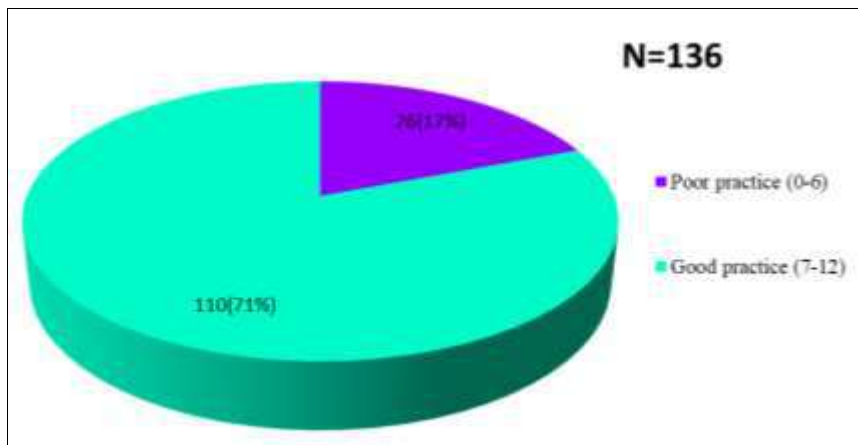
**Table 2:** Frequency and percentage distribution of Practice regarding prevention of pressure ulcer N=136

Sl. No	Observational Checklist	YES		NO	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1.	Perform a skin assessment for pressure ulcer	133	98	3	2
2.	Lower the bed head before repositioning	94	70	42	31
3.	Reposition the patient every 2 hourly	58	43	78	57
4.	Provide back care to the patient	93	68	43	32
5.	Follows steps of back care	41	30	95	70
6.	Use skin moisturizer or lotion to hydrate the skin	60	44	76	56
7.	Use draw sheet when changing or positioning or lifting the patient	93	68	43	32
8.	Place the pillow under the patient's leg in order to keep heels off the bed	95	70	41	30
9.	Provide smooth and wrinkle free bed	131	98	5	4
10.	Monitor intake of nutritional diet	136	100	0	0
11.	Provide adequate fluid intake for hydration (water, IV fluids)	136	100	0	0
12.	Advice to patient or care giver regarding prevention of pressure ulcer	91	67	45	33

The data presented in table 2 Shows that majority 133(98%) staff nurses performed a skin assessment for pressure ulcer, 94 (70%) lowered the bed head before repositioning, 78(57%) did not repositioned the patient every 2 hourly, 93(68%) staff nurses provided back care to the patient, 95(70%) did not followed steps of back care, 76 (56%) did not used skin moisturizer or lotion to hydrate the skin, 93(68%) staff nurses used draw sheet when changing

or positioning or lifting the patient, 95(70%) placed the pillow under the patient's leg in order to keep heels off the bed, 136(100%) staff nurses provided smooth and wrinkle free bed, monitored intake of nutritional diet and provided adequate fluid intake for hydration and 91(67%) staff nurses advised to patient or care giver regarding prevention of pressure ulcer.

## Level of practice



**Fig 2:** Showing percentage of practice score of samples regarding prevention of pressure ulcer.

The data presented in the figure 2 Depicts that maximum of the staff nurses 110 (71%) had good practice and 26 (17%) staff nurses had poor practice regarding prevention of pressure ulcer.

## Section 4: Description of correlation between the knowledge and practice on prevention of pressure ulcer among staff nurses

**Table 3:** Correlation between knowledge and practice regarding prevention of pressure ulcer among staff nurse N=136

Variable	Total Score	Mean	'r' value
Knowledge	6013	44.21	r=0.79
Practice	1160	8.53	

The data presented in the table 4.6 Shows that there is moderately positive correlation between knowledge and practice regarding prevention of pressure ulcer among staff nurses ( $r=0.79$ ). There is significant correlation between knowledge and practice regarding prevention of pressure

ulcer among staff nurses.

## Section 5: Description of association between knowledge and practice with selected variables

**Table 4:** Association between knowledge with selected variables regarding prevention of pressure ulcer among staff nurses N=136

Sl. No	Variables	Median			Df	$\chi^2$	t-value	Remarks
		<45 Poor knowledge	≥45 Average knowledge	>45 ood knowledge				
1.a)	Demographic proforma Age (in years)							
	20- 25 years	6	39	18	6	10.72	12.59	NS
	26-30 years	0	41	19				
	31-35 years	0	4	6				
	>36 years	0	2	1				
2.	Gender							
	Male	0	1	3	2	3.45	5.99	NS
	Female	6	85	41				
3.	Professional Category							
	GNM	1	29	13	6	3.85	12.59	NS
	ANM	0	1	0				
	B.Sc	5	50	25				
	P.B.Sc	0	6	6				
	M.Sc	0	0	0				
b)1.	Other variables Years of experience							
	1 year	5	29	15	8	*15.50	15.51	S
	2-5 years	1	48	17				
	6-10 years	0	8	8				
	11-15 years	0	0	2				
	>16 years		1	2				
2.	Area of posting				12	13.50	21.03	NS
	Medicine	1	17	5				
	Surgery	0	16	5				

	Neurology	1	5	1				
	Cardiology	1	3	4				
	Orthopaedic	1	10	2				
	ICU	2	31	25				
	ITU	0	4	2				
3.	Formal training on Pressure ulcer prevention							
	Yes	1	32	17	2	1.11	5.99	NS
	No	5	54	27				

**Note:** \*Yates Correction ( $\chi^2_c$  value)

NS= Non significant

S= Significant

The data presented in table 4.7 Depicts that there was an association between knowledge score with year of experience ( $\chi^2=15.50$ , df=8) and there was no association between knowledge score with other demographic proforma

such as age, gender, professional category, area of posting and formal training on pressure ulcer regarding prevention of pressure ulcer among staff nurses.

**Table 4.8:** Association between practice with selected variables regarding prevention of pressure ulcer among staff nurses N=136

Sl. No	Variables	Median		df	$\chi^2$	t-value	Remarks
		Poor practice $\leq 9$	Good practice $>9$				
Demographic proforma							
Age (in years)							
a)1.	20- 25 years	13	50	3	1.37	7.82	NS
	26-30 years	12	48				
	31-35 years	1	9				
	>36 years	0	3				
2.	Gender						
	Male	0	4	1	974	3.84	NS
	Female	26	106				
3.	Professional Category						
	GNM	9	34	3	.73	7.82	NS
	ANM	0	1				
	B.Sc	14	66				
	P.B.Sc	3	9				
	M.Sc	0	0				
Other variables							
Years of experience							
b)1.	1 year	8	41	4	1.98	9.49	NS
	2-5 years	15	51				
	6-10 years	3	13				
	11-15 years	0	2				
	>16 years	0	3				
2.	Area of posting						
	Medicine	10	13	6	*.00	12.59	S
	Surgery	12	9				
	Neurology	1	6				
	Cardiology	1	7				
	Orthopaedic	0	13				
	ICU	2	56				
	ITU	6	6				
Formal training on Pressure ulcer prevention							
3.	Yes	8	42	1	.497	3.84	NS
	No	18	68				

**Note:** \*Yates Correction ( $\chi^2_c$  value)

NS= Non significant

S= Significant

The data presented in table 4.8 Depicts that there was an association of practice score with area of posting ( $\chi^2=0.00$ , df=6) there was no association between practice score with other demographic proforma such as age, gender, professional category, years of experience and formal training on pressure ulcer regarding prevention of pressure

ulcer among staff nurses.

### Discussion and Conclusion

- The findings of the study, among 136 staff, maximum of the staff nurses 86(55%) had average knowledge, 44(28%) staff nurses had good knowledge and 6(4%)



staff nurses had poor knowledge regarding prevention of pressure ulcer which is supported by similar study conducted by, Kallman Ulrika <sup>[52]</sup> on knowledge, attitudes and practice among nursing staff concerning pressure ulcer prevention and treatment a survey in a Swedish healthcare setting. The findings revealed that majority of the nursing staff were able to correctly identify areas of risk and suggest appropriate measures for prevention and treatment of pressure ulcer. All the respondents displayed good knowledge on prevention and treatment of pressure ulcers and demonstrated a positive attitude towards the area of care. And also a contrary, study conducted by, Jamal Qaddumi and Abdullah Khawaldeh <sup>[53]</sup>, in Jordan to assess pressure ulcer prevention knowledge among Jordanian nurses: a cross-sectional study. The result indicated that, majority (73%, n = 141) of nurses had inadequate knowledge about pressure ulcer prevention.

- In the present study, among 136 staff, maximum of the staff nurses 110(71%) had good practice and 26(17%) staff nurses had poor practice regarding prevention of pressure ulcer. Majority 133(98%) staff nurses performed a skin assessment for pressure ulcer, 94 (70%) lowered the bed head before repositioning, 93(68%) staff nurses provided back care to the patient, 93(68%) staff nurses used draw sheet when changing or positioning or lifting the patient, 95(70%) placed the pillow under the patient's leg in order to keep heels off the bed, 136(100%) staff nurses provided smooth and wrinkle free bed, monitored intake of nutritional diet and provided adequate fluid intake for hydration and 91(67%) staff nurses advised to patient or care giver regarding prevention of pressure ulcer. This study is supported by a study conducted by H. Ozdemir and A. Karadag <sup>[55]</sup>. On prevention of pressure ulcers: a descriptive study in 3 intensive care units in Turkey. The result showed some of the frequently applied pressure ulcer prevention practices, these include patient repositioning (91.8%), keeping patient skins dry and moist (83.2%), balanced diet (80.1%), protecting the skin during patient transfer (85.7%), documenting prevention strategies (83.2%), and removing any tightly fitting clothes from the patient (87.8%).
- The findings of the present study revealed that, there is moderately positive correlation between knowledge and practice regarding prevention of pressure ulcer among staff nurses ( $r=0.79$ ). There is significantly correlation between knowledge and practice regarding prevention of pressure ulcer among staff nurses This finding is supported by a study conducted by, S Khojastehfar, T Najafi Ghezalje, S Haghani <sup>[56]</sup>, in Iran on factors related to knowledge, attitude, and practice of nurses in intensive care unit in the area of pressure ulcer prevention: a multicenter study. The result indicated that, mean score of knowledge, attitude, and practice of the nurses about the pressure ulcer prevention were  $63.47 \pm 10.31$ ,  $39.10 \pm 40.22$ , and  $32.03 \pm 6.17$ , respectively, where there was a positive and significant relationship between these three variables.
- The findings of the present study revealed that there

was an association of knowledge score with year of experience ( $\chi^2=15.50$ ,  $df=8$ ) regarding prevention of pressure ulcer among staff nurses. The present study findings came congruent with Nuru Nurhusien, Zewd Fisseha, Amsal Senafikish and Mehretie Yohannes <sup>[59]</sup>, study conducted on knowledge and practice of nurses towards prevention of pressure ulcer and associated factors in Gondar University Hospital, Northwest Ethiopia. The findings of the study revealed that level of education, length of work experience and formal training on prevention of pressure ulcer were found to have significant and independent effect on nurses' knowledge regarding to prevention of pressure ulcer.

## Conclusion

The study findings showed that level of nurses' knowledge was average regarding prevention of pressure ulcer, and level of practice was good. Maximum knowledge score gain was in the area of prevention and minimum score gain was in the area of wound description Therefore although they have knowledge as well as skills regarding prevention of pressure ulcer, there is still much scope for improving their knowledge in area of wounds.

## Acknowledgement

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## References

1. The Free Encyclopaedia. Pressure Ulcer; 2019. Available from: [https://en.wikipedia.org/wiki/Pressure\\_ulcer](https://en.wikipedia.org/wiki/Pressure_ulcer)
2. Black Joyce, Baharestani, Mylene M *et al.* From the NPUAP (National Pressure Ulcer Advisory Panel) updated pressure ulcer staging system. *Lipincott Nursing Centre, Advances in Skin & Wound Care the Journal for Prevention and Healing* 2007;20(5):269-274.
3. Edsberg EL, Black MJ, Goldber Margaret Nichol Mc L *et al.* Revised National Pressure Ulcer Advisory Panel Pressure Injury Staging System. *The Journal of Wound, Ostomy, and Continence Nursing* 2016;43(6):585-597.
4. Canadian patient safety institute. Pressure Ulcer 2016. Available from: <https://www.patientsafetyinstitute.ca/en/toolsResources/Hospital-Harm-Measure/Improvement-Resources/HHI-Pressure-Ulcer/Pages/default.aspx>
5. Scott B, Janet C, *et al.* Frequently Asked Questions about Pressure Injury Staging, Creighton University Health Sciences Continuing Education. National Pressure Ulcer Advisory Panel, 2018, 6789.
6. NHS (National Health Services) England, 2014. available from: <https://www.england.nhs.uk/blog/stop-the-pressure/>
7. Madhusudhan K, Pujita B. Review on Pressure Sores. Review article, 2016, 2230-7885.
8. Franks Moffatt. Quality of Life and Pressure Ulcers: What is the Impact? *Journal of Wounds* 2005;17(1).

9. Levine MJ. Pressure Ulcers are an Under-Appreciated Public Health Issue. Agency for Healthcare Quality and Research 2016;55(5):780-791.
10. Julian Guest F, Graham Fuller W *et al.* Cohort study evaluating pressure ulcer management in clinical practice in the UK following initial presentation in the community: costs and outcomes. *BMJ Journal* 2018;8(7).
11. Nasreen Sajida, Afzal Muhammed, Sarwar Hajra. Nurses Knowledge and Practices Toward Pressure Ulcer Prevention in General Hospital, Lahore. *Saudi Journal of Medical and Pharmaceutical Sciences* 2017, 2413-4929.
12. Hemavathy V, Girijabhas K, Deviin KB. A study to assess the knowledge and practice regarding pressure ulcer among students of BSC nursing 3rd year in SreeBalaji College of nursing, Chennai. *International Journal of Applied Research* 2016;2(2394-7500):252-253.
13. Miyazaki MY, Maria H, Benedita C. Knowledge on Pressure Ulcer Prevention among Nursing Professionals. *Scielo* 2010, 1518-8345.
14. Md. Shariful Islam. Nurses' Knowledge, Attitude, and Practice Regarding Pressure Ulcer Prevention for Hospitalized Patients at Rajshahi Medical College Hospital in Bangladesh. *Research Gate* 2010, 31228999.
15. Zhou Q, Yu T, Liu Y, Shi R, Tian S *et al.* The prevalence and specific characteristics of hospitalised pressure ulcer patients: A multicentre cross-sectional study. *Wiley Journal of Clinical Nursing* 2017;10(1111):694-704.
16. Borsting Tove E, Tvedt RC *et al.* Prevalence of pressure ulcer and associated risk factors in middle- and older-aged medical inpatients in Norway. *JCN Journal of Clinical Nursing* 2017;27(1826-1835):9-10.
17. Mehta C, George JV, Mehta Y, Wangmo N. Pressure ulcer and patient characteristics – A point prevalence study in a tertiary hospital of India based on the European Pressure Ulcer Advisory Panel minimum data set. *Journal of Tissue Viability* 2015;24(3):123-130.
18. Arora M, Harvey LA, Glinsky JV *et al.* Telephone-based management of pressure ulcers in people with spinal cord injury in low- and middle income countries: a randomised controlled trial. *Nature Research Academic* 2017;55:141-147.
19. Lima Serrano M, González Méndez MI, Carrasco Cebollero FM, Lima Rodríguez JS. Risk factors for pressure ulcer development in Intensive Care Units: A systematic review. *Medicina intensiva* 2017;41(6):327-390.
20. Kayser SA, An Gilder CAV, yello EAA, Lachenbruch C. Prevalence and analysis of medical device-related pressure injuries: results from the international pressure ulcer prevalence survey. *PubMed US National library of Medicine National Institutes of Health* 2018;(6):276-285.
21. Olivo S, Canova C, Peghetti A, Rossi M, Zanotti R. Prevalence of pressure ulcers in hospitalized patients: a cross-sectional study. *PubMed US National library of Medicine National Institutes of Health* 2020;2(29):20-28.
22. Jakobsen TBT, Pittureri C, Seganti P *et al.* Incidence and prevalence of pressure ulcers in cancer patients admitted to hospice: A multicentre prospective cohort study. *PubMed US National library of Medicine National Institutes of Health* 2020;(3):641-649.
23. Sayan HE, Girgin NK, Asan A. Prevalence of pressure ulcers in hospitalized adult patients in Bursa, Turkey: A multicentre, point prevalence study. *PubMed US National library of Medicine National Institutes of Health* 2020;10(1111):13354.
24. Osis SL, Diccini S. Incidence and risk factors associated with pressure injury in patients with traumatic brain injury. *PubMed US National library of Medicine National Institutes of Health* 2020, 12821.
25. Luo M, Long XH, Wu JL, Huang SZ, Zeng Y. Incidence and risk factors of pressure injuries in surgical spinal patients: a retrospective study. *PubMed US National library of Medicine National Institutes of Health* 2019;46(5):397-400.
26. Latimer S, Chaboyer W, Thalib L, McInnes E, Bucknall T, Gillespie BM. Pressure injury prevalence and predictors among older adults in the first 36 hours of hospitalization. *PubMed US National library of Medicine National Institutes of Health* 2019;(21-22):4119-4127.
27. Cowan LJ, Ahn H, Flores H, Yarrow J, Barks LS, Garvan C *et al.* Pressure ulcer prevalence by level of paralysis in patients with spinal cord injury in long-term care. *PubMed US National library of Medicine National Institutes of Health* 2019;32(3):122-130.
28. Zarei E, Madarshahian E, Nikkhah A, Khodakarim S. Incidence of pressure ulcers in intensive care units and direct costs of treatment: evidence from Iran. *PubMed US National library of Medicine National Institutes of Health* 2019;(2):70-74.
29. Biçer EK, Güçlüel Y, Türker M, Kepiçoglu NA, Sekerci YG, Say A. Pressure ulcer prevalence, incidence, risk, clinical features, and outcomes among patients in a Turkish hospital: a cross-sectional, retrospective study. *PubMed US National library of Medicine National Institutes of Health* 2019;(2):20-28.
30. Anderson M, Finch Guthrie P, Kraft W, Reicks P, Skay C, Beal AL. Universal Pressure Ulcer Prevention Bundle with WOC Nurse Support. *Journal of Wound, Ostomy and Continence Nursing* 2015;42(3):217-225.
31. Baron VM, Cézane PR, Miria SB *et al.* Experimental study with nursing staff related to the knowledge about pressure ulcers. *PubMed US National library of Medicine National Institutes of Health* 2016;24(2831).
32. Asiye Gul, Isillsik Andsoy, Birgul Ozkaya, Ayten Zeydan. A descriptive cross-sectional survey of Turkish Nurses' Knowledge of pressure ulcer risk, prevention, and staging, *Wound Management and Prevention*, *PubMed US National library of Medicine National Institutes of Health* 2017;63(6):1943-2720.
33. Aath Kodi Malar. Knowledge of Nurses Regarding Prevention Pressure Ulcer. *Research Gate* 2016;3(2):2249-8648.
34. Werku Etafa Ebi, Getahun Fetensa Hirko, Diriba Ayala Mijena. Nurses' knowledge to pressure ulcer prevention in public hospitals in Wollega: a cross-sectional study design. *BMC Nursing* 2019;18:20.
35. Dilie Abebe, Mengistu Daniel. Assessment of nurses' knowledge, attitude, and perceived barriers to expressed

- pressure ulcer prevention practice in Addis Ababa Government Hospitals, Addis Ababa, Ethiopia. Hindawi, Nursing Research and Practice, 2015, 796927.
36. Chianc TC, Rezende JF, Borges LE *et al.* Pressure Ulcer Knowledge Among Nurses in a Brazilian University Hospital. PubMed US National library of Medicine National Institutes of Health 2010;56(10):58-64.
37. Kallman Ulrika. Knowledge, Attitudes and practice among nursing staff concerning pressure ulcer prevention and treatment – A survey in a Swedish healthcare setting. PubMed US National library of Medicine National Institutes of Health 2009;23:334-341.
38. Fulbrook Paul, Lawrence Petra, Miles Sandra. Australian Nurses' Knowledge of Pressure Injury Prevention and Management. Journal of Wound, Ostomy and Continence Nursing 2019;46(2):106-112.
39. Mwebaza I, Katende G, Groves S, Nankumbi J. Nurses' Knowledge, Practices, and Barriers in Care of Patients with Pressure Ulcers in a Ugandan Teaching Hospital. Hindawi, Nursing Research and Practice 2014;10(1155):973602.
40. Sawant Neelam, Shinde Mahadeo. Nurses Knowledge and Practices towards Prevention of Pressure Ulcer in Tertiary Care Hospital. International Journal of Science and Research 2015, 2319-7064.
41. Nuru Nurhusien, Zewd Fisseha, Amsal Senafikish, Mehretie Yohannes. Knowledge and practice of nurses towards prevention of pressure ulcer and associated factors in Gondar University Hospital, Northwest Ethiopia. BMC Nursing 2015,12912-015-0076-8.
42. Hoviattalab Khadijeh, Hashemizadeh Haydeh. Nursing practice in the prevention of pressure ulcers: an observational study of German Hospitals. Research Gate 2014, 12723.
43. Shrestha R. Knowledge and practices of bed sore prevention among staff nurses working in a selected hospital, Ludhiana, India. Journal of Chitwan Medical College 2016;6(16):38-43.
44. Njau KS, Mwenda SC, Njoroge KG. Practices by Nurses to Prevent Pressure Ulcers among Patients at a Level Five Hospital in Kenya. BMC Nursing 2018;3(2).
45. YJung Kim, Lee Yun J. A study on nursing knowledge, attitude, and performance towards pressure ulcer prevention among nurses in Korea long-term care facilities. International Wound Journal 2019;10(1111):13021.
46. Panos Papani kolaou, Nassar Omayyah S, Shahin Abeer, Anthony Denis, Mohammad NY. Saleh Nurses' knowledge and practice of pressure ulcer prevention and treatment: An observational study. Journal of tissue Viability 2019;28(4):210-217.
47. Mohammad NY, Saleh MA, Jamal, Anthony Denis. An interventional study on the effects of pressure ulcer education on Jordanian registered nurses' knowledge and practice. Procedia Social and Behavioural Science 2012;47:2196-2206.
48. Provo Barbara, Piacentine Linda, Susan. Practice versus knowledge when it comes to pressure ulcer prevention. Journal of WOCN 2009;24(5):265-269.
49. Ghosh Debalina, Nida Yuha, Yadav Umasanker. A study to assess the knowledge on Decubitus ulcer and its management in selected tertiary care hospital of Moradabad, Uttar Pradesh: A original study. International Journal of Nursing Education 2019;11(4):203-206.
50. Shrestha Nisha, Shrestha P. Knowledge of pressure ulcer management among nurses. Journal of Gandaki Medical College-Nepal 2016;9(2).
51. De Meyer D, Verhaeghe S, Van Hecke A, Beeckman D. Knowledge of nurses and nursing assistants about pressure ulcer prevention: A survey in 16 Belgian hospitals using the PUKAT 2.0 tool. PubMed US National library of Medicine National Institutes of Health 2019;(2):59-69.
52. Kallman Ulrika. Knowledge, Attitudes and practice among nursing staff concerning pressure ulcer prevention and treatment – a survey in a Swedish healthcare setting. PubMed US National library of Medicine National Institutes of Health 2009;23;334-341.
53. Qaddumi J, Khawaldeh A. Pressure ulcer prevention knowledge among Jordanian nurses: a cross- sectional study. PubMed US National library of Medicine National Institutes of Health 2014;13:6.
54. Nuru N, Zewdu F, Amsalu S, Mehretie Y. Knowledge and practice of nurses towards prevention of pressure ulcer and associated factors in Gondar University Hospital, Northwest Ethiopia. PubMed US National library of Medicine National Institutes of Health 2015;14(1):34.
55. Ozdemir H, Karadag A. Prevention of pressure ulcers: A "descriptive study in 3 intensive care units in Turkey. Journal of Wound, Ostomy and Continence Nursing 2008;35(3):293-300.
56. Khojastehfar S, Najafi Ghezalje T, Haghani S. Factors related to knowledge, attitude, and practice of nurses in intensive care unit in the area of pressure ulcer prevention: a multicenter study. PubMed US National library of Medicine National Institutes of Health 2020;(2):76-81.
57. Aydin, Karadag Arzu, Karadag, Ayise. Assessment of Nurses' Knowledge and Practice In Prevention and Management of Deep Tissue Injury and Stage I Pressure Ulcer. Journal of Wound, Ostomy, Continence Nursing 2010;37(5):487-494.
58. Islam Shariful. Knowledge, attitude, and practice on pressure ulcer prevention among nurses in Bangladesh. Research Gate 2010, 312289999.
59. Nuru N, Zewdu F, Amsalu S, Mehretie Y. Knowledge and practice of nurses towards prevention of pressure ulcer and associated factors in Gondar University Hospital, Northwest Ethiopia. PubMed US National library of Medicine National Institutes of Health 2015;14(1):34.
60. Sajida Nasreen, Muhammed Afzal, Hajra Sarwar, Ali Waqas. Nurses Knowledge And Practices Toward Pressure Ulcer Prevention In General Hospital Lahore. Saudi Journal of Medical and Pharmaceutical Sciences, 2017;3:520-527.
61. AK Aydın, Karadağ A, Gül S, Avşar P, Baykara ZG. Nurses' knowledge and practices related to pressure injury: A cross-sectional study, PubMed US National library of Medicine National Institutes of Health 2019;(2):117-12.