

Nurses' Knowledge Regarding Pressure Ulcer At Tertiary Level Hospital In Dhaka, Bangladesh

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Abstract

Background: Pressure Ulcer is one of the chief complications of prolonged hospitalization patients, it occurs when localized tissue gets deprived of circulation due to soft tissue compressed between external surfaces and bony prominence for a prolonged time.

Aim: The aim of this study was to assess the level of nurses' knowledge regarding pressure ulcer at tertiary level hospital in Dhaka, Bangladesh.

Method: A descriptive type of cross-sectional study was conducted from July 2023 to June 2024 among 50 senior staff nurses who were selected by convenient sampling technique. Data was collected by a structured knowledge-based questionnaire regarding Pressure Ulcer. Data were analyzed using descriptive statistics (frequencies, percentages and mean).

Results: The mean age of respondents was 35 years. The overall nurses' knowledge was very good 82.4%, 4% had below average knowledge, 4% had average knowledge, 18% had excellent knowledge, 26% had good knowledge regarding pressure ulcer among nurses. Higher professional qualifications significantly influenced the knowledge of respondents on pressure ulcer. The level of total knowledge score of B.Sc. in Nursing and B.Sc. in Public Health Nursing (Post Basic) respondents was 82.75% whereas Diploma in Nursing Science and Midwifery was 82.5%.

Conclusion: On the basis of findings, the study provides suggestions to prioritize training programs in raising the level of nurses' knowledge regarding pressure ulcer prevention in terms of providing quality care to manage and prevent pressure ulcer.

Keywords: Pressure Ulcer, Nurse, Knowledge, Bangladesh

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I. Introduction

Pressure ulcers have been labeled as one of the most expensive and physically debilitating complications in the 20th century. Pressure ulcer is the third most expensive disorder. World stop pressure ulcer day showed that nearly 700,000 patients were affected by pressure ulcers each year (Nasreen et al., 2017). According to a systematic review and meta-analysis study, the international prevalence of pressure ulcers was 12% across different regions and settings, with a wide range of 4% – 45%. In addition, pressure ulcers are costly as the related prevention and treatment would yield greater quality-adjusted life years at higher cost from the perspective of healthcare and societal sector (Liang et al., 2024). Several studies have explored about the prevalence of Pressure ulcer among hospitalized patients across the globe and revealed that it was 22.9 % in Sweden, 18.2 % in Norway, 27 % in Italy, and 18.7 % in Brazil. On the other hand, the prevalence of Pressure ulcer in Africa was 17.23 % in the Sub-Saharan Tertiary Centre, 3.22 % in South-west Nigeria, and 19.3 % in Tunisia (Gedamu et al., 2021).

It was estimated that 60,000 deaths occurred each year in the United States of America due to pressure ulcer related complications. At least 1.7 million patients develop pressure ulcers every year. Another study estimated that the incidence of pressure ulcer in acute care settings ranged from 2.2% to 66% in the United

Kingdom and from 0% to 65.6% in the United States of America and Canada respectively. Recent studies conducted in Europe, United State of America, Canada and Australia provided estimates of pressure ulcer prevalence in hospitals ranging from 8.3% to 25.1%. The incidence of pressure ulcer in Asian countries was considered high ranging from 2.1% to 31.3% in ICU (Hossain, 2022).

In Bangladesh, one study conducted among the critically ill patients, 81.1% had developed pressure ulcers after admission into hospital. The most common place of pressure ulcer was geriatric High Dependency Unit (30.2%) and officers ward (18.9%). Among the pressure ulcer patients 79.2% were male. Most common stages of pressure ulcer were stage II (66.0%) followed by stage I (18.9%), stage III (13.2%) and stage IV (1.9%). All of them were bedridden and half (50.9%) were completely immobile. According to Braden Scale, about half (50.9%) had high risk for development of pressure ulcer followed by moderate risk (26.4%) and there were none beyond risk. About three fourth (73.6%) of pressure ulcer patients had hypertension & cerebrovascular diseases (Hossain, et al., 2022)

Another study conducted in Bangladesh by Hoque et al., 1999 among paralyzed patients in Bangladesh and found that 94 out of 247 patients (38%) developed pressure ulcers (Islam, 2010).

Pressure ulcer prevention is very important because 95% of all pressure ulcers are preventable, therefore, nurses who work in clinical settings and are in daily contact with people at high risk for pressure ulcer should have adequate knowledge level and a positive attitude. Insufficient knowledge and skills in pressure ulcer prevention can increase or exacerbate the chances of developing pressure ulcers, where nurses need regular training in this area. Improving nurses' knowledge of pressure ulcer prevention not only improves the quality of pressure ulcer care, but also reduces the length of hospital stay and the number of patients suffering from pressure ulcers (Jing et al., 2022).

Pressure ulcer is a significant financial burden to any health care system and has adverse effects on achieving goals of care. Pressure ulcer created several adverse effects, such as increased risk of infection, delayed wound healing, increased mortality, increased use of hospital resources and patient care costs, increased patients' length of hospital stay, pain and suffering, and lower quality of life. Considering the serious impact of pressure ulcer, it is an urgent need to conduct the study on nurses' knowledge regarding pressure ulcer at National Institute of Traumatology and Orthopedic Rehabilitation, Dhaka, Bangladesh. The findings of this study can provide useful information to health authorities regarding the level of nurses' knowledge about pressure ulcer to enable them to arrange training and educational programs to enhance nurses' knowledge regarding pressure ulcer.

Justification of the study

Pressure ulcer is a serious issue worldwide that is considered a painful burden for patients and people of all ages, causing complications such as discomfort and pain. It is destroying quality of life, increasing costs, and requiring a long stay in the hospital. They might result in a life-threatening situation. The issue of pressure ulcer incidence is very complex. Despite progressive technologies and successful clinical research in terms of prevention and treatment, pressure ulcers present a high incidence of 7-71.6%, prevalence of 8.8-53.2% and considerably high mortality (Anna et al., 2021).

Pressure ulcers have been described as one of the costliest and physically debilitating complications since the 20th century. The pain and discomfort of pressure ulcer delays rehabilitation, prolongs illness and timing of discharge, and contribute to disability and death. These dramatically raise health care costs because of the need for supplies and nursing hours. Moreover, health care budgets expend billions of dollars worldwide on prevention and treatment of patients with extended hospital stays from pressure ulcer development (BMC Nursing, 2015).

A study conducted in Portugal on the prevalence and incidence of pressure ulcers in hospital emergency services followed by systematic review highlighted that the management of pressure ulcers is a real and current challenge in hospital emergency services. The pressure ulcers (point) prevalence ranged from 5.2% (at admission) to 12.3% (at discharge) and the pressure ulcers incidence ranged from 4.5% to 78.4%. It is important to identify the patients at (higher) risk to establish an (earlier) preventive care plan according to patients and emergency services' characteristics (Sardo et al., 2023).

Nurses' knowledge plays a significant role in prevention of pressure ulcer through ensuring quality care. Therefore, it is important to have adequate knowledge about pressure ulcers to provide quality care for nurses. From this perspective, it is essential to assess nurses' knowledge regarding pressure ulcer prevention. The outcomes of this study were providing baseline data for higher authority to plan for an initiation for the improvement of nurses' knowledge to improve quality of nursing care. So, it is essential to conduct a study to assess the level of nurses' knowledge regarding pressure ulcer.

Research Question

What is the Level of Nurses' Knowledge Regarding Pressure Ulcer at National Institute of Traumatology and Orthopedic Rehabilitation (NITOR), Dhaka?

Research Aim

The aim of this study is to assess the level of Nurses' Knowledge Regarding Pressure Ulcer at Tertiary Level Hospital in Bangladesh.

Research Objectives

1. To assess the level of Nurses' Knowledge regarding the Concept of Pressure Ulcer.
2. To identify the level of Nurses' Knowledge regarding Preventive Measures of Pressure Ulcer.
3. To find out the level of Nurses' Knowledge regarding Complications of Pressure Ulcer.
4. To state the Socio Demographic characteristics of nurses.

Research variables:

A. Socio demographic variables

- Age (in year)
- Gender
- Religion
- Marital status
- Professional education
- Working experience
- Special training on pressure ulcer prevention
- Length of working experience in current area

B. Knowledge related variables

- Concept of pressure ulcer (meaning, common site, risk factors, causes and sign-symptoms).
- Preventive measures of pressure ulcer.
- Complications of pressure ulcer.

Operational definition

Nurse

In this study, Nurse is a person who should have a valid license from Bangladesh Nursing and Midwifery Council and who have been working at NITOR, Dhaka and providing care in the selected ward for caring pressure ulcer patients.

Knowledge

In this study, the researchers tried to explore the level of nurses' knowledge regarding pressure ulcer including concepts (meaning, common site, risk factors, causes and sign-symptoms), preventive measures, and complications.

II. Literature Review

In this study researchers reviewed different articles and literature relevant to the research title to develop and in depth understanding of the current knowledge on the topic, to critically analyze the available information, synthesize and evaluate the available knowledge, including identification of trends on the study topic. Researchers also developed a clear understanding about definition, common site, risk factors, causes, stages, pathophysiology, preventive measures, complications, nurses' knowledge regarding pressure ulcer.

Definition of Pressure Ulcer

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 (National Pressure Ulcer Advisory Panel, 2007).

Common sites of Pressure Ulcer

For people who use wheelchairs, bedsores often occur on skin over these areas:

- Tailbone or buttocks.
- Shoulder blades and spine.
- The backs of arms and legs where they rest against a chair.

For people who need to stay in bed, bedsores may happen on the:

- Back or sides of the head.
- Shoulder blades.
- Hip, lower back or tailbone.

- Heels, ankles and skin behind the knees (Mayo clinic, 2024).

Risk Factors

- Decreased mobility, skin moisture, poor nutritional status, and loss of sensory perception stand out as the most common risk factors.
- Neurologic disease
- Cardiovascular disease
- Prolonged anesthesia
- Dehydration
- Hypotension
- Surgical patients (National Library of Medicine, 2024).

Causes of Pressure Ulcer

There are three primary contributing factors for pressure ulcers. They are:

- **Pressure** - If there is any constant pressure on any side of the body, it can lessen the blood flow to tissues. Due to inadequate blood supply, tissues do not get essential nutrients such as oxygen and other nutrients due to which they get damaged and might eventually die.
- **Friction** - It occurs when the skin rubs against clothing or bedding especially the thin patients, frail skin, and poor circulation as turning and moving can damage the skin and increases the risk of bedsores.
- **Shear** - It occurs when two surfaces move in the opposite direction (Wound Care Surgeon, 2024).

Stages of Pressure Ulcer: There are four stages of pressure ulcer.

Stage 1 ulcers have not yet broken through the skin.

Stage 2 ulcers have a break in the top two layers of skin.

Stage 3 ulcers affect the top two layers of skin, as well as fatty tissue.

Stage 4 ulcers are deep wounds that may impact muscle, tendons, ligaments, and bone (Healthline, 2023).

Sign and Symptoms of Pressure Ulcer

A change in the color of the skin. People with pale skin are more likely to see red patches on skin, and people with darker skin areas are more likely to see purple or blue patches.

- Reddening of the skin does **not** turn white when press it. This is called a ‘non-blanching erythema’.
- Any unusual changes in skin texture may be related to pressure damage. Common changes include skin feeling spongy or ‘boggy’.
- A patch of skin that feels cooler or warmer to the touch than others.
- A sore or itchy patch of skin (Harvest Health Care, 2020).

Preventive Measures of Pressure Ulcer

According to the **National Pressure Injury Advisory Panel, 2019 (NPIAP)** “Pressure Injury Prevention Points are as follows-

- Risk Assessment
- Skin Care.
- Nutrition.
- Positioning and Mobilization.
- Monitoring, Training and Leadership Support (The Joint Commission, 2022).

Complications of Pressure Ulcer

Untreated pressure sores can lead to a wide variety of secondary conditions, including:

- Sepsis (bacteria entering the bloodstream)
- Cellulitis (inflammation of body tissue, causing swelling and redness)
- Bone and joint infections
- Abscess (a collection of pus)
- Cancer (squamous cell carcinoma) (Mayo clinic, 2024).

Nurses’ Knowledge Regarding Pressure Ulcer

In 2022, one study was conducted on Nurses Knowledge on pressure ulcer prevention at Mianyang Central Hospital, Mianyang, China. The researcher followed systematic review and meta-analysis design. The study found that nurses and nursing students Knowledge had (45.8-57.2%) and (42.5-55.2%). Finally, the study suggested providing regular training to nurses and including the principles of pressure ulcer prevention in the curriculum of nursing students to improve their knowledge (Wu et al., 2022).

In 2019, an observational study was conducted on Nurses knowledge and practice of pressure ulcer prevention and treatment in Jordan. The researcher followed correlational study design and respondents were 377 nurses and 319 patients from 11 hospitals. The study result showed less than satisfactory knowledge on Pressure Ulcer prevention treatment, which is 74.5% and 72.6% respectively, where researchers hope to have at least 80%. Finally, the study suggested that there is a need to increase pressure ulcer training both in nurse education and continuing education after graduation (Saleh et al., 2019).

In 2019, one study was conducted on Nurses knowledge to Pressure Ulcer Prevention in public hospitals in Wollega, Ethiopia. In this study the researcher followed a descriptive multicenter cross-sectional study design to collect data from 212 randomly selected nurses in public hospitals in Wollega zones. Analysis of the study displayed that 91.5% had inadequate knowledge of pressure ulcer prevention. Finally, the study suggested that to increase regular adequate further training of nurses regarding pressure ulcer prevention points (Ebi et al., 2019).

In 2016, another study was conducted on Knowledge and practices of bed sore prevention among staff nurses working in a selected hospital ,Ludhiana ,Punjab , India .In this study the researcher followed purposive sampling technique was used for selecting 60 respondents ,thirty respondents working in general ward and thirty from special units .Researcher found that higher level of knowledge regarding bed sore prevention among nurses working in general ward was good (36.67%) whereas nurses working in specialized areas had (53.33%) and overall (40.0%) had excellent. Finally, the study suggested that knowledge and practice gaps exist which have implications for patient care suggesting the need for a specific educational intervention to respond to this need. (Shrestha, 2016).

In 2021, one study was conducted on Nurses knowledge and practice regarding prevention and Management of pressure ulcer for hospitalized patients in Dhaka Medical College Hospital & Shaheed Suhrawardy Medical College Hospital, Bangladesh. In this study, the researcher followed a descriptive type of cross-sectional design to assess 310 nurses' knowledge working in different units in Dhaka Medical College Hospital & Shaheed Suhrawardy Medical College Hospital. The study found that 55% of nurses had satisfactory level knowledge who got special training on pressure ulcers. On the other hand, the nurse's knowledge was not up to the level. The study suggested that nurses need in-service training on pressure ulcers and set up a pressure ulcer prevention protocol, to improve nurses' knowledge and practice regarding prevention and management of pressure ulcers (Nahar et al., 2021).

In 2020, another study was conducted on Nurses knowledge and practices regarding prevention and management of pressure ulcer for hospitalized patients in Rajshahi Medical College Hospital. In this study the researcher followed a description type of cross-sectional design to assess 300 nurses' knowledge working in different units in Rajshahi Medical College Hospital. They found that nurses had moderate level knowledge who got special training on pressure ulcers. Finally, the study suggested that nurses need to increase their knowledge on pressure ulcer prevention and management to improve nursing practice (Reza et al., 2020).

III. Material And Methods

This chapter contains description of research design, study place, study duration, population, sample size, sampling technique, ethical consideration, data collection procedure, data analysis and interpretation, data presentation and grading criteria.

Study Design

A descriptive type of cross-sectional study was carried out to conduct the study.

Study Place

The study was conducted at National Institute of Traumatology and Orthopedic Rehabilitation (NITOR), Dhaka where approximately 500 nurses work in that hospital.

Study Period

The study period was from July 2023 to June 2024.

Study Population

The total number of nurses who worked in para male and female ward, A ward and B ward at NITOR, Dhaka. About 200 Senior Staff Nurses were placed in this ward that was considered a study population.

Sample Size

The sample size was selected 50 (fifty) according to 25% proportional estimation from the total number of population (N=200).

Sampling Technique

A convenient sampling technique was followed to recruit the sample size based on the following:

Selection Criteria

Inclusion criteria

- Respondents who were available during the data collection period were physically and mentally sound
- Respondents who are working in the para male and female ward, A ward, B ward
- Willing to participate voluntarily in the study to give information

Exclusion criteria

- Who did not meet the inclusion criteria
- Nurses who were on leave and off duty

Research Instrument

Research instruments were developed by the researchers based on study objectives and variables after reviewing related studies. The instruments were divided into two parts.

Part A: Demographic data information. It consists of age, gender, marital status, professional education, working experience, special training on pressure ulcer, length of working experience in current area.

Part B: Nurses' knowledge regarding questionnaires. It includes-concept, prevention, and complications of pressure ulcer. There were 20 knowledge-based questions and each question contained 04 options and one option was considered the correct answer.

Validity of the Instrument

The validity of the questionnaire was assessed and reviewed by the three experts in academic fields. The researchers modified the instruments based on the suggestions of the experts.

Reliability of the Instrument

Pre-test was done on ten respondents from another selected hospital (Shaheed Suhrawardy Medical College Hospital, Sher-E-Bangla Nagar, Dhaka) for the reliability and acceptability of the questionnaire. After reviewing the questionnaire, the necessary correction was done for finalizing and data collection procedure by the researchers.

Ethical Considerations

Informed consent: Written permission was taken from the Principal, College of Nursing, Mohakhali, Dhaka **Memo No. P.F, 1-1/2003/C. N/206/1(3)** and from the concerned authority of the hospital National Institute of Traumatology & Orthopedic Rehabilitation (NITOR) for the collection of data and also from the respondents informed consent was taken with their written signature after giving a clear explanation by the researchers.

Voluntary Participation: The study objectives the study was explained to respondents in detail for their clear understanding and encouraging them for voluntary participation.

Confidentiality and Anonymity: Confidentiality and anonymity was strictly maintained regarding obtaining data from respondents. The respondents were assured that their name was not published anywhere except the concerned investigators.

Data Collection Procedure

Prior data collection, the researchers provided a brief description regarding the purposes of study for clear understanding. The researcher ensured the respondents that they could withdraw themselves at any time without any confusion. The researchers obtained written permission from the hospital National Institute of Traumatology & Orthopedic Rehabilitation Director, Nursing Superintendent, and Respondents. After completing the questionnaire, the researcher thanked the respondents for their cooperation for this study. This process continued until fulfill the estimated sample.

Data Management

The collected data was checked, organized, coded, and entered into the master sheet for facilitating the analysis procedure.

Data Analysis and Interpretation

Descriptive statistics were used for analysis of the respondents’ characteristics, distribution, and level of knowledge of pressure ulcer in terms of frequency, percentage and mean.

Data Presentation

The results were presented through a table and chart (pie and bar).

Grading criteria

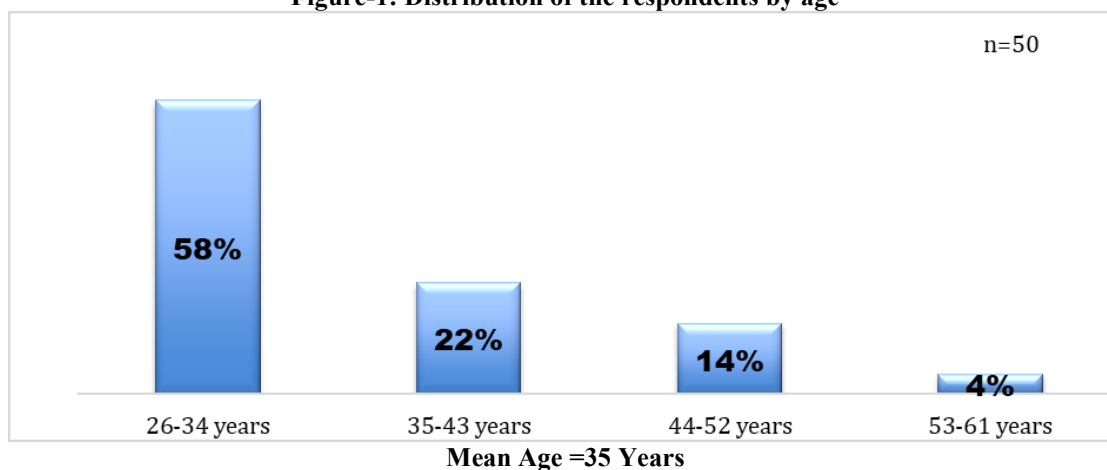
Assessing the level of Nurses' knowledge, the researchers prepared 20 structured questions and each question contained 05 marks. Total marks were 100 and grading was done by percentage (%) in the following way:

Sl. No	Knowledge Level (Grading)	Percentage (%)
1.	Excellent	90-100%
2.	Very good	80-89%
3.	Good	70-79%
4.	Average	60-69%
5.	Below average	<60

IV. Results

Part A: Socio Demographic Characteristics

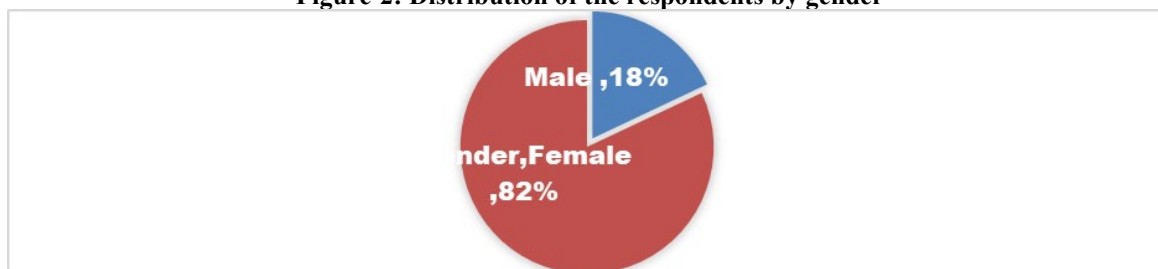
Figure-1: Distribution of the respondents by age



Description:

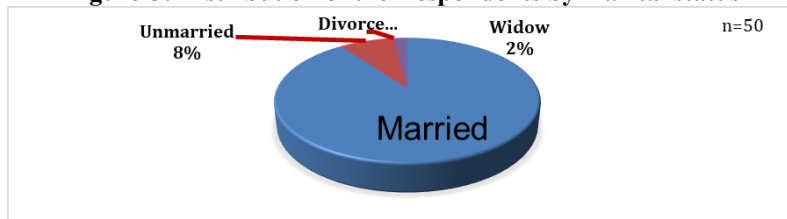
The above figure 1 shows that 58% respondent’s age were between 26-34 years, 22% respondents were between 35-43 years, 14% were 44-52 years and 4% were between 53-61 years. The mean age of respondents was 35 years.

Figure-2: Distribution of the respondents by gender



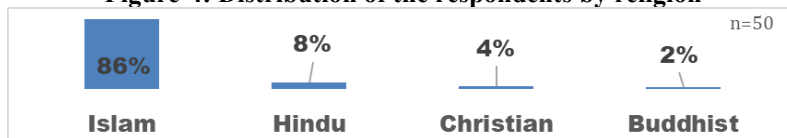
Description: The above figure 2 shows that out of 50 respondents 82% are female and 18% respondents are male.

Figure-3: Distribution of the Respondents by marital status



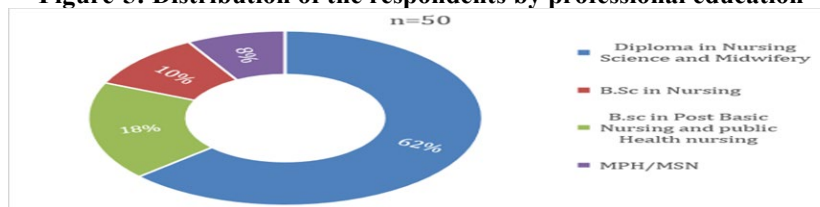
Description: Above figure 3 shows that majority of the respondents 90% were married. The rest 8% were unmarried and 2% were widows.

Figure-4: Distribution of the respondents by religion



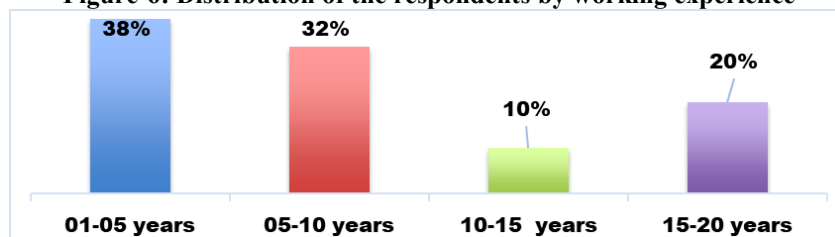
Description: This figure 4 shows that majority of the respondents 86% were Muslim, 8% were Hindu and only 4% were Christian and 2% were Buddhist.

Figure-5: Distribution of the respondents by professional education



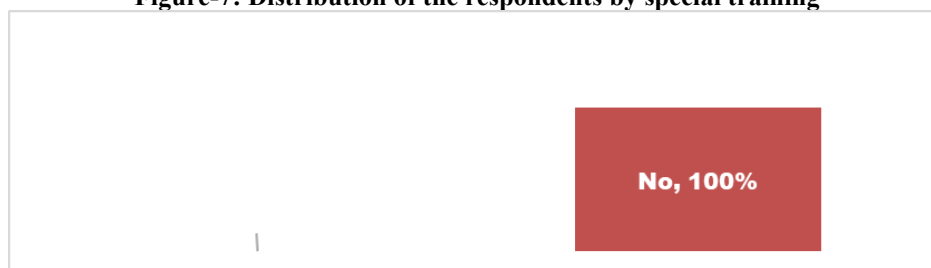
Description: This figure 5 shows that most of the 62% respondents were Diploma in Nursing Science and Midwifery, 18% respondents are B.sc in post basic nursing and Public Health Nursing 10% respondents had B.Sc. in Nursing, 08% were MPH/MSN.

Figure-6: Distribution of the respondents by working experience



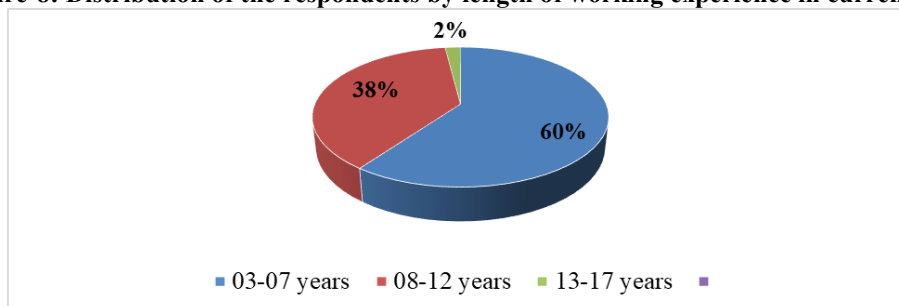
Description: This figure 6 shows that 38% of respondents had 1-5 years and 32% had 5-10 years, 10% had 10-15 years and 20% had 15-20 years' working experience.

Figure-7: Distribution of the respondents by special training



Description: The figure 7 shows no respondents had any special training on pressure ulcer prevention out of 50 respondents.

Figure-8: Distribution of the respondents by length of working experience in current area



Description: This overhead figure 8 shows 60% respondents' length of working experience in current area 03-07 years, 38% respondents' length of working experience in current area 08-12 years and 2% respondents' length of working experience in current area 13-17 years.

Part-B: Knowledge Based Results

Table 1: Distribution of the respondents' knowledge regarding concept of pressure ulcer n=50

Sl. No	Statements	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
01.	Meaning of Pressure Ulcer	34	68	16	32
02.	Common site of pressure ulcer	42	84	08	16
03.	Comfort position, sitting position, pressure ulcer are most likely to develop on -	28	56	22	44
04.	Risk factor for developing pressure ulcer -	46	92	04	8
05.	The main cause of pressure ulcer	37	74	13	26
06.	The signs of a pressure ulcer	30	60	20	40

Description: The above table 1 indicates that, 92% respondents answered correctly regarding risk factor for developing pressure ulcer, 84% answered correctly regarding the common site of pressure ulcer, 74% answered correctly regarding is the main cause of pressure ulcer, 68% answered correctly regarding pressure ulcer, 60% answered correctly regarding the signs of a pressure ulcer, 56% answered correctly regarding in a sitting position where pressure ulcer are most likely to develop on.

Table 2: Level of nurses' knowledge regarding concept of pressure ulcer n=50

Sl. No	Knowledge level	Scores	f	%	Obtained marks	Mean score
01.	Excellent	90-100%	08	16	240	30
02.	Very Good	80-89%	19	38	475	25
03.	Good	70-79%	-			
04.	Average	60-69%	10	20	200	20
05.	Below average	<60%	13	26	185	14.23
Mean of total nurses' knowledge score 22 (73.33% = good level of knowledge)						

Description: The above table 2 shows the knowledge regarding concept of pressure ulcer. 38% respondents had very good knowledge, 26% respondents had below average knowledge. 20% respondents had average knowledge, 16% respondents had excellent knowledge, 0% respondents had good knowledge. Total knowledge score regarding concept of pressure ulcer was 73.33% (good).

Table 3: Distribution of the respondents' knowledge regarding preventive measures of pressure ulcer n=50

Sl. No	Statements	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
01.	Preferable technique for prevention of pressure ulcer	42	84	8	16
02.	Way of prevention pressure ulcers for a bed ridden patient	49	98	01	2
03.	Type of bed is used to prevent pressure ulcer	45	90	05	10
04.	Type of diet helps to prevent pressure ulcer	49	98	01	2
05.	Type of environment is helpful to prevent pressure ulcer	50	100	00	0
06.	Necessary vitamin needed to prevent pressure ulcer	50	100	-	0
07.	Repositioning is an accurate preventive method because-	24	48	26	52
08.	If a bed ridden patient cannot be repositioned, the most appropriate pressure ulcer prevention is -	35	70	15	30

Description: The above table 3 shows the knowledge regarding prevention of pressure ulcer. The highest number of respondents 100% answered correctly regarding which type of environment is helpful to prevent pressure ulcer, 100% answered correctly regarding which vitamin needed to prevent pressure ulcer, 98% answered correctly regarding how to prevent pressure ulcer in a bed ridden patient, 98% answered correctly regarding which type of diet helps to prevent pressure ulcer, 90% answered correctly regarding which type of bed is used to prevent pressure ulcer, and 84% answered correctly regarding which technique is preferable for prevention of pressure ulcer, 70% answered correctly regarding if a bed ridden patient cannot be repositioned, which method is the most appropriate for pressure ulcer prevention, 48% answered correctly regarding why repositioning is an accurate preventive method.

Table 4: Level of nurses' knowledge regarding preventive measures of pressure ulcer n=50

Sl. No	Knowledge level	Score	f	%	Obtained marks	Mean score
01.	Excellent	90-100%	16	32	640	40
02.	Very Good	80-89%	15	30	525	35
03.	Good	70-79%	13	26	390	30
04.	Average	60-69%	4	8	100	25
05.	Below average	<60%	2	4	40	20
Mean of total nurses' knowledge score =33.9 (84.75% = very good level of knowledge)						

Description: The above table 4 shows that respondent's knowledge regarding prevention of pressure ulcer. 32% respondents had excellent knowledge, 30% respondents had very good knowledge, 26% respondents had good knowledge, 8% had average knowledge, 4% had below average. The total mean score had 33.9 and total knowledge score had 84.75% (very good).

Table 5: Distribution of the respondents' knowledge regarding complication of pressure ulcer n=50

Sl.	Statements	Correct answer		Incorrect answer	
		(f)	(%)	(f)	(%)
01.	Type of patients develop a pressure ulcer if -	26	52	25	50

02.	When a patient is lying on a pressure -reducing foam mattress -	25	50	25	50
03.	The most common complication of pressure ulcer	47	94	03	06
04.	The long- term complication for non-healing pressure ulcer	49	98	01	02
05.	The role of a nurse reduces the complication of a pressure ulcer	50	100	-	0
06.	The factors are responsible for increasing complications of pressure ulcer	50	100	-	0

Description: This table 5 shows that respondent’s knowledge regarding complication of pressure ulcer. 100% respondents answered correctly regarding how can reduce the complication of a pressure ulcer, 100% answered correctly regarding which factors are responsible for increasing complications of pressure ulcer, 98% answered correctly regarding what is a long- term complication for non-healing pressure ulcer, 94% answered correctly regarding which is the most common complication of pressure ulcer, 52% answered correctly regarding why fewer chance of developing a pressure ulcer, 50% answered correctly regarding the use of foam mattress to reduce pressure ulcer.

**Table 6: Level of knowledge regarding complication of pressure ulcer
n=50**

Sl. No	Knowledge level	Scores	f	%	Obtained marks	Mean score
01.	Excellent	90-100%	14	28	520	37.14
02.	Very Good	80-89%	19	38	475	25
03.	Good	70-79%	-	-	-	-
04.	Average	60-69%	15	30	300	20
05.	Below average	<60%	02	4	30	15
Mean of total nurses’ knowledge score= 26.5 (88.33% = very good level of knowledge).						

Description: The above table 6 shows that respondent’s knowledge regarding complication of pressure ulcer greater than half of 38% respondents had very good knowledge, 30% respondents had average knowledge, 28% respondents had excellent knowledge, 4% respondents had below average. The total mean score was 26.5 and total level of knowledge had 88.33% (very good).

Table 7: Distribution of the respondents by overall knowledge level score regarding pressure ulcer n=50

Sl. No	Knowledge level	Score	f	%	Mean score
01.	Excellent	90-100%	09	18	94.44
02.	Very good	80-89%	24	48	82.5
03.	Good	70-79%	13	26	73.46
04.	Average	60-69%	02	04	60
05.	Below average	≤60%	02	04	52.5
Mean of total nurses’ knowledge score 82.4 (82.4% = very good level of knowledge).					

Description: The above table 7 indicates that majority of 48% respondents had very good knowledge, 26% respondents had good knowledge, 18% respondents had excellent knowledge, 4% respondents had average knowledge, rest of 4% respondents had below average knowledge and total mean score 82.4. Level of nurse’s knowledge score 82.4% (very good).

Table 8: Level of nurses' knowledge according to objectives

n=50

Sl. No	Objectives	Mean Score %	Level
01	Concept of pressure ulcer	73.3%	Good
02	Preventive Measures of pressure ulcer	84.75%	Very good
03	Complication of pressure ulcer	88.33%	Very good

Description: The mentioned table 8 shows the summarized result of level of nurses' knowledge according to objective. Level of nurses' knowledge regarding concept of pressure ulcer had good 73.3%, level of nurses' knowledge regarding preventive measures of pressure ulcer had very good 84.75% and level of nurses' knowledge regarding complications of pressure ulcer had very good 88.33%.

Table 9: Level of nurses' knowledge by professional education and working experience

n=50

Variables	Criteria	Frequency	Percentage (%)	Knowledge Score
Professional Education	Diploma in Nursing Science and Midwifery	32	64	82.5%
	B.Sc. in Nursing	05	10	80%
	B.Sc. in Nursing and Public Health Nursing (post basic)	09	18	82.77%
	MPH/MSN	04	08	78.75%
Working Experience	01-05 Years	19	38	81.84%
	05-10 Years	16	32	87.18%
	10-15 Years	05	10	76%
	15-20 Years	10	20	79%

Description: The above table 9 describes that level of nurses' knowledge score of Diploma in Nursing Science and Midwifery was 82.5%, B.sc in Nursing was 80%, B.sc in Nursing (Post basic) was 82.77%, MPH/MSN was 78.75% and level of knowledge 87.18% who had 05-10 years working experience, 81.84% who had 01-05 years working experience, 79% who had 15-20 years working experience and 76% who had 10-15 years working experience.

V. Discussion

A descriptive type of cross-sectional study was designed to assess the level of nurses' knowledge regarding pressure ulcer. The study focused on socio-demographic and knowledge-based findings and discussed the concept, preventive measures, and complications that varied the level of nurses' knowledge regarding pressure ulcer.

Socio-demographic information-

The present study involved 50 nurses with the mean age of 35 years between the range of 26 to 57 years and maximum age group was 26-34 years. In this study 82% respondents were female and 18% were male. Most of the respondents were Muslim. Among them most of the respondents were married. In the current study showed that most of the respondents had Diploma in Nursing Science & Midwifery by their professional education. Most of the respondents' total length of service experience was 1-5 years and the mean length of working experience in the current area was 7 years. The present study found that respondents got no special training on pressure ulcer.

Near to similar study was conducted in Ireland by Eskes et al., on Competence of Healthcare Employees in Pressure Ulcer Prevention and Care argues that long-term experience alone is not a guarantee of knowledge; rather, it requires support from healthcare policymakers, educational organizations, and employees themselves through knowledge exchange in clinical settings. (Persolja & Drufovka, 2024).

Nurses Knowledge Related to Pressure Ulcer

The present study showed that among all the respondents 48% had very good level of knowledge, rest of the respondents 26% had good knowledge, 18% had excellent knowledge, only 4% had average knowledge and 4% had below average knowledge regarding pressure ulcer. Nurses' knowledge regarding concept of pressure ulcer was Good (total knowledge score 73.33%), nurses' knowledge regarding preventive measures of pressure ulcer was very good (total nurses' knowledge score =84.75%) and nurses' knowledge regarding complication of pressure ulcer was Very Good (total nurses' knowledge score 88.33%). The present study showed that the respondents who had length of working experience 15-20 years, obtained level of knowledge score 79% whereas 5-10 years had 87.18%.

The study results revealed that the total level of nurses' knowledge score was 82.4% which indicates nurses' knowledge level was very good. The total knowledge score of B.Sc. in Nursing and B.Sc. in Public Health Nursing (Post Basic) respondents was 82.7%, Diploma in Nursing Science & Midwifery was 82.5%, MSN was

78 and B.Sc. in Nursing was 80%. In India Shrestha et al., was conducted a study on knowledge and practice of bed sore prevention among staff nurses found that 40% of overall staff nurses achieved excellent level of knowledge. Findings highlight a difference in knowledge between special (73%) and general (62%) based nurses regarding pressure ulcer and suggesting the need for a specific educational intervention to respond to this need (Shrestha et al.,2016).

In the present study, researchers found that excellent knowledge level was below average (18%) because respondents got no special training on pressure ulcer. Another study in Ethiopia Ebi et al., was conducted on nurses' knowledge on to pressure ulcer prevention found that 91.5% had inadequate knowledge to pressure ulcer prevention because 61.5% had no exposure to pressure ulcer training. The study highlights areas where measures can be made to facilitate pressure ulcer prevention such as regular adequate further training of nurses regarding pressure ulcer (Ebi et al., 2019).

Also, in this study researchers found that only 18% respondents had excellent knowledge which indicates below average level of excellent knowledge. Many factors might contribute to the low level of excellent knowledge regarding pressure ulcer. Firstly, the level of professional qualifications significantly influenced the knowledge of respondents on pressure ulcer. Secondly the length of working experience also influenced the knowledge of respondents on pressure ulcer. Based on the result of the present study it has been assumed that the level of nurses' excellent knowledge was below average (18%) because no participant had got special training on pressure ulcer.

VI. Conclusion

Pressure ulcer is the leading cause of disability and death worldwide. Nurses play a significant role in the assessment, management, and prevention of pressure ulcers. Nurses' must have up to date knowledge regarding pressure ulcer prevention and management. A descriptive cross-sectional study was conducted to explore Nurses' knowledge regarding pressure ulcer. The aim of this study was to assess the level of Nurses knowledge regarding Pressure Ulcer at National Institute of Traumatology Orthopedic & Rehabilitation. Out of 200 study population 50 sample was selected through maintain inclusion criteria. It was evident from the present study that the level of nurses' knowledge score related to concept of pressure ulcer was 73.3%, related to preventive measures was 84.75%, related to complications was 88.33%. The highest of 48% respondents had very good knowledge, 26% respondents had good knowledge, 18% respondents had excellent knowledge, 4% respondents had average knowledge, 4% respondents had below average knowledge and mean of total nurses' knowledge score 82.4%. Researchers assumed that the level of excellent knowledge was below average (18%), because no respondents got special training on pressure ulcer. Based on the findings, the study suggested that nurses need special training programs on pressure ulcer to enhance nurses' knowledge regarding pressure ulcer.

Limitation of the study

The limitations of the study that faced the researchers during conducting the research:

- The study was conducted in only one hospital, NITOR, so the findings cannot be generalized to other hospitals.
- There was no allocated budget for this research project to carry the study smoothly. So that the expenditure was financed by the researcher.
- There was no facility for printing and photocopying.
- There were no transport facilities for the researcher.
- There were no internet facilities for the researcher.

Recommendation

1. Arrange special training for the nurses to develop knowledge regarding pressure ulcer.
2. Allow and ensure nurses involvement in workshops, scientific seminars, symposium related to pressure ulcer prevention.
3. Provide adequate equipment for all the nurses for proper management of pressure ulcer.
4. Organize facilities for nurses to do library studies, journal club, and gather knowledge through literature review to improve knowledge regarding management of pressure ulcer.
5. Organize opportunities for nurses to participate in evidence-based- nursing and apply it properly in their clinical setting.

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