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Original Article

Assessment of Knowledge, Attitude and Practice regarding Patient's Perioperative Pressure Injury Prevention among the Operating Room Personnel of Medical Teaching Institutions, Peshawar

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ABSTRACT

Background: Pressure injuries (PIs), particularly perioperative pressure injuries (ORPIs), pose significant challenges in patient care, leading to increased morbidity, extended hospital stays, and elevated healthcare costs. Despite established guidelines, the incidence of ORPIs remains a concern, underlining the need for improved prevention strategies within the operating room setting.

Objective: This study aimed to assess the knowledge, attitudes, and practices (KAP) regarding perioperative pressure injury prevention among operating room personnel in medical teaching institutions in Peshawar, Pakistan, to identify knowledge gaps and areas for intervention.

Methods: A cross-sectional descriptive study was conducted over four months, from June to October 2023, involving 264 operating room personnel from three major medical teaching institutions in Peshawar. Participants included nurses, surgeons, and surgical technicians/technologists. Data were collected using structured questionnaires and the KoboCollect mobile application, covering sociodemographic information, and KAP related to perioperative pressure injury prevention. The study employed descriptive statistics, chi-square tests, and Pearson correlation coefficients for data analysis, utilizing IBM-SPSS version 27 and Microsoft Excel 365.

Results: The study revealed a mean knowledge score of 66.02% (SD = 18.99), with 44.3% of participants displaying low knowledge levels (<69%). Attitudes towards pressure injury prevention were predominantly positive, with an average score of 78.17% (SD = 10.38). Practice levels were moderate, with an average score of 79.43% (SD = 10.59), and 54.9% of respondents engaging in high-level practices (≥80%). Significant associations were found between knowledge levels and education (p=<0.001), and between practice levels and both age (p=0.01) and professional role (p=0.006).

Conclusion: The study highlights a critical gap in knowledge regarding perioperative pressure injury prevention among operating room personnel, despite positive attitudes and moderately high practice levels. Addressing this gap through tailored educational programs and policy interventions is crucial for enhancing patient care and preventing ORPIs.

Keywords: Perioperative Pressure Injury Prevention, Operating Room Personnel, Knowledge, Attitudes, Practices, Medical Teaching Institutions, Peshawar.

INTRODUCTION

Pressure injuries, also recognized as pressure ulcers or bed sores, are localized damage to the skin and underlying tissue primarily caused by prolonged pressure, or pressure in combination with shear. These injuries are particularly prevalent in areas over bony prominences or under medical devices, and their development is significantly influenced by sustained pressure, especially during the perioperative period, leading to skin and nerve damage that adversely affects patient health (1,2). Operating room-related pressure injuries (ORPIs), which typically develop within 48 to 72 hours following surgical procedures, are closely associated with the patient's positioning during surgery, often manifesting as non-blanchable erythema or blistering (3). This study delves into the

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Knowledge, Attitude, and Practice (KAP) of healthcare professionals regarding the prevention of perioperative pressure injuries, aiming to elucidate the interplay between these elements and their cumulative effect on patient outcomes. The severity of pressure injuries can range from mild skin redness to extensive tissue damage, necessitating a clinical classification into four stages for effective evaluation and management (2,4,5).

Despite the existence of international guidelines aimed at mitigating the incidence of pressure injuries, which remains a pressing concern with an incidence rate of approximately 8.4%, these injuries significantly contribute to patient morbidity and mortality, particularly among those with extended hospital stays (1,6). The imperative for preventive measures is evident, yet a consistent implementation is hindered by several factors, including the lack of interdisciplinary involvement and the inadequacies in the knowledge and clinical competencies of healthcare personnel. The literature underscores the prevalent gaps in knowledge and practice among healthcare workers, highlighting the urgent need for bespoke educational interventions to bridge these gaps (1,7,8). Moreover, the success of pressure injury prevention efforts is heavily reliant on patient-specific considerations and effective communication within the healthcare team (9).

Nevertheless, research focused on specific locales such as Peshawar is scarce, limiting the scope and generalizability of the findings presented in this study to the perioperative pressure injury prevention measures implemented within certain medical teaching institutions. Additionally, the decision to exclude anesthesia personnel from the study's purview calls for a more inclusive approach in future investigations to achieve a holistic understanding of the contributory factors to pressure injuries in perioperative settings. This comprehensive approach is crucial for developing and implementing effective preventive strategies tailored to meet the specific needs of the patient population and healthcare settings.

MATERIAL AND METHODS

In this cross-sectional descriptive study, the research team sought to evaluate the knowledge, attitudes, and practices (KAP) concerning the prevention of perioperative pressure injuries among operating room personnel at three major medical teaching institutions in Peshawar: Lady Reading Hospital (LRH), Hayatabad Medical Complex (HMC), and Peshawar Institute of Cardiology (PIC). Conducted over a period of four months, from June to October 2023, this investigation aimed to gain insights into the current status of perioperative pressure injury prevention measures by examining the perspectives of those directly involved in surgical care. The study specifically targeted a diverse group of operating room staff, including circulating nurses, surgeons, and surgical technologists/technicians, to ensure a comprehensive understanding of the issue across different roles within the surgical team. A total of 264 individuals were selected through a non-probability consecutive sampling method to participate in the study, providing a broad representation across the specified roles (3).

Ethical considerations were paramount, with the study receiving approval from the Institutional Review Boards (IRBs) of the respective institutions, in line with the Declaration of Helsinki for ethical principles for medical research involving human subjects. Participants were informed about the study's purpose and procedures, and informed consent was obtained prior to data collection. The methodology employed a dual approach for data collection, utilizing structured paper-based questionnaires alongside the KoboCollect mobile application, facilitating ease of participation. The questionnaire design was meticulous, incorporating sections for sociodemographic information, and KAP related to perioperative pressure injury prevention, with responses measured on a Likert scale. The sociodemographic questions aimed to capture a range of information including affiliation to a hospital or medical teaching institution, gender, age, current role, educational background, and years of experience. Knowledge assessment was conducted through questions developed from established guidelines and relevant literature, allowing for categorization of knowledge levels into low, moderate, and high. Attitudes and practices were similarly assessed through structured questionnaires, with outcomes classified into negative or positive for attitudes, and satisfactory or unsatisfactory for practices, based on predefined criteria (10–13).

For data analysis, the study utilized IBM-SPSS version 27 software and Microsoft Excel 365, employing a variety of statistical methods. Descriptive statistics were used to summarize the sociodemographic characteristics of the participants and their KAP scores. The chi-square test was applied to identify associations between categorical variables, while Pearson correlation coefficients were calculated to explore the relationships between knowledge, attitudes, practices, and various demographic factors. This analytical approach facilitated a nuanced understanding of the dynamics influencing perioperative pressure injury prevention practices among operating room personnel. The research was supported financially by the offices of research innovation and commercialization (ORICS) at Khyber Medical University, underlining the institutional commitment to advancing knowledge in this critical area of patient care (No. DIR/ORIC/Ref/24/00040).

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RESULTS

The demographic characteristics of operating room personnel across three major medical teaching institutions in Peshawar were comprehensively analyzed, revealing a diverse participant pool. The Hayatabad Medical Complex (MTI) accounted for 41.7% of the sample, closely followed by Lady Reading Hospital (MTI) at 38.6%, and the Peshawar Institute of Cardiology (MTI) comprising 19.7% of respondents (Table 1). A significant portion of the participants fell within the 26-35 age group, representing 61.7% of the total, highlighting the youthful demographic engaged in operating room roles. Gender distribution was nearly balanced, with females slightly surpassing males, accounting for 51.1% of the total. Nurses formed the majority of the professional roles at 53.8%, indicating a predominant presence in the perioperative setting. Educational backgrounds varied significantly, with diplomas being the most common qualification among respondents (47.3%), followed by degrees (33.7%), and a smaller yet significant number holding master's or PhD levels of education (17.8%). Experience levels were broadly distributed, with a notable 39.8% of participants having 5-10 years of experience in their field, suggesting a mix of seasoned and less experienced professionals within the operating room environment.

Regarding knowledge on perioperative pressure injury prevention, a substantial number of personnel exhibited low knowledge levels (< 69%), constituting 44.3% of the study population, as outlined in Table 2. However, a considerable segment displayed high knowledge levels (≥ 80%), making up 35.6% of respondents, with an overall mean knowledge percentage of 66.02% (SD = 18.99), indicating a gap in knowledge that warrants attention for improvement.

The attitude towards perioperative pressure injury prevention was predominantly positive, with 68.2% of participants demonstrating a favorable outlook (≥ 75%), as detailed in Table 3. This positive attitude aligns with a mean attitude percentage of 78.17% (SD = 10.38), suggesting a general awareness of the importance of pressure injury prevention among operating room personnel.

Table 1 Demographic Characteristics

Variable	Category	Frequency (n)	Percent (%)
Hospital	HMC – MTI	110	41.7
	LRH – MTI	102	38.6
	PIC – MTI	52	19.7
Age groups (years)	Under 25	28	10.6
	26-35	163	61.7
	36-45	61	23.1
	46-55	12	4.5
Gender	Male	129	48.9
	Female	135	51.1
Role of Professional	Nurse	142	53.8
	Surgeon	65	24.6
	Surgical Technician	45	17.0
	Surgical Technologist	12	4.5
Level of Education	Certificate	3	1.1
	Diploma	125	47.3
	Degree	89	33.7
	Master/PhD	47	17.8
Years of Working Experience	Less than 1 year	15	5.7
Total (N)	1-4 years	72	27.3
	5-10 years	105	39.8
	More than 10 years	72	27.3
		264	100%

Table 2 Personnel Level of Knowledge Regarding Patient's Perioperative Pressure Injury Prevention

Knowledge Levels	Frequency (N)	Percentage (%)	Knowledge Categories
< 69%	117	44.3	Low
70% – 79%	53	20.1	Moderate
≥ 80%	94	35.6	High

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Knowledge Levels	Frequency (N)	Percentage (%)	Knowledge Categories
Mean (M) = 66.02% (SD = 18.99)	n=264	100	Low

Table 3 Personnel Level of Attitude Regarding Patient's Perioperative Pressure Injury Prevention

Attitude Levels	Frequency (N)	Percentage (%)	Attitude Categories
≥ 75%	180	68.2	Positive
> 75%	84	31.8	Negative
Mean (M) = 78.17% (SD = 10.38)	n=264	100	Positive

Table 4 Personnel Level of Practice Regarding Patient's Perioperative Pressure Injury Prevention

Practice Levels	Frequency (N)	Percentage (%)	Practice Categories
< 69%	44	16.7	Low
70% – 79%	75	28.4	Moderate
≥ 80%	145	54.9	High
Mean (M) = 79.43% (SD = 10.59)	n=264	100	Moderate

Table 5 Sociodemographic Variables and Their Correlation with KAP

Variable	Knowledge %, (p)	Attitude %, (p)	Practice %, (p)
Age Groups (Years)	66.23, (p = 0.40)	78.86, (p= 0.95)	78.09, (p= 0.01)
Gender	67.07, (p = 0.01)	77.94, (p= 0.27)	79.41, (p= 0.23)
Level of Education	71.54, (p = <0.001)	80.26, (p= 0.02)	80.12, (p= 0.82)
Role of Professional	68.33, (p = <0.001)	78.11, (p= 0.02)	77.28, (p= 0.006)
Working Experience (Years)	67.66, (p = 0.05)	78.86, (p= 0.002)	78.15, (p= 0.42)

Table 6 Pearson Correlation Coefficients for KAP Regarding Prevention and Care of Patient's PIs

	Knowledge (r, p)	Attitude (r, p)	Practice (r, p)
Knowledge		0.20 (p = <0.001)	0.36 (p = <0.001)
Attitude	0.20 (p = <0.001)		0.23 (p = <0.001)
Practice	0.36 (p = <0.001)	0.23 (p = <0.001)	

Practices related to perioperative pressure injury prevention varied, with a majority (54.9%) adhering to high-level practices (≥ 80%), as shown in Table 4. This indicates a commitment to applying knowledge and attitudes towards effective prevention strategies in the clinical setting, supported by a mean practice percentage of 79.43% (SD = 10.59).

The analysis of sociodemographic variables in relation to knowledge, attitude, and practice (KAP) percentages revealed significant correlations, particularly between the level of education and knowledge percentage, where higher education correlated with greater knowledge (p = <0.001), as indicated in Table 5. Additionally, the role of professional experience demonstrated a significant impact on practice percentages (p = 0.006), underscoring the influence of professional background on the implementation of prevention measures.

Pearson correlation coefficients further elucidated the relationships within KAP variables, with knowledge and practice showing a strong positive correlation (r = 0.36, p = <0.001), highlighting the direct impact of knowledge on the execution of preventive practices. Similarly, attitudes towards prevention were positively correlated with both knowledge and practice (r = 0.20 and r = 0.23 respectively, p = <0.001 for both), emphasizing the interconnectedness of these variables in enhancing patient care and outcomes related to perioperative pressure injuries (Table 6).

DISCUSSION

In this investigation, a broader spectrum of healthcare professionals beyond nurses was considered to assess their roles in perioperative pressure injury prevention. This approach acknowledges the collective contribution of diverse professionals towards mitigating the incidence of such injuries. The study population predominantly comprised female professionals within the age range of 26-35, possessing 5-10 years of experience. This demographic profile diverges from earlier research, which typically depicted an older workforce with more extensive tenure in the field (14). A notable observation was the prevalence of two-year diploma

qualifications among the respondents, contrasting with previous reports indicating a higher proportion of staff with degree-level education (15).

The average knowledge score obtained was 66.02%, mirroring findings from prior studies where only a fraction of participants demonstrated a high level of knowledge regarding pressure injury prevention (16). It was evident that those with bachelor's degrees, particularly surgeons and surgical technologists, displayed enhanced knowledge, underscoring a clear correlation between the level of education and knowledge (p=<0.01). Additionally, a link between knowledge and working experience was identified (p=0.05), suggesting that both educational background and practical experience in the perioperative setting significantly influence knowledge acquisition (1,3,14,15).

Attitudes towards pressure injury prevention were generally positive, with an average score of 78.17%. However, this positivity was less pronounced among individuals with 1-4 years of experience, indicating a subtle but significant relationship between knowledge and attitude (p=<0.001, r=0.2). Despite the positive disposition, previous research has suggested that such attitudes may not directly translate into enhanced knowledge or skill levels (3). Nonetheless, the inclination towards positive attitudes could motivate healthcare professionals, especially nurses, to seek further education and prioritize the prevention of pressure injuries (17,18).

Practice levels were moderately high, with an average score of 79.43%, nearly reaching the satisfactory threshold of 80%. This study found that high practice levels were significantly associated with certain demographic characteristics, including the age group of 26-35 years (p=0.01) and the nursing profession (p=0.006). Furthermore, practices were notably superior among females, individuals with a Master's or PhD level of education, and those with 5-10 years of working experience, paralleling findings from a study conducted in Bangladesh (13). A significant association between practice levels and knowledge (p=0.001) was also reported, alongside a moderately positive correlation (r=0.36).

The correlations observed between knowledge, attitude, and practice were reminiscent of patterns identified in previous studies, including one conducted in Pakistan, which highlighted a significant link between inadequate knowledge and the occurrence of pressure injuries. The level of knowledge was found to be influenced by the participants' educational and occupational backgrounds (20). These findings underscore the vital interplay among knowledge, attitude, and practice in the realm of pressure injury prevention, emphasizing the necessity for healthcare providers to adjust their attitudes and practices accordingly.

Conclusively, this study sheds light on the varied competencies concerning pressure injury prevention among operating room personnel, revealing a gap in knowledge despite generally positive attitudes. The highest proficiency was observed among nurses, those with advanced degrees, and individuals with a moderate range of professional experience. A significant correlation was noted between knowledge, attitudes, and practices, though the overall knowledge level remained insufficiently low, suggesting a moderate positive correlation with attitudes and practices. Despite its limitations, such as reliance on self-reported questionnaires, the study offers foundational insights for enhancing nursing care in medical teaching institutions in Peshawar. Recommendations stemming from this research advocate for customized in-service training, the formulation of hospital policies, the initiation of intervention studies, and the proactive dissemination of findings to all relevant stakeholders. These strategies aim to close the identified knowledge gaps and enhance the positive attitudes and practices related to pressure injury prevention among the operating room personnel, ensuring improved patient care outcomes.

CONCLUSION

This study underscores the critical need for targeted educational interventions and policy reforms within healthcare settings to bridge the knowledge gaps in perioperative pressure injury prevention among operating room personnel. Despite generally positive attitudes and moderate practice levels, the identified deficiency in knowledge highlights an opportunity for healthcare institutions, particularly in Peshawar, to enhance patient care outcomes. Implementing tailored in-service training, establishing robust hospital policies, and actively disseminating research findings are imperative steps towards improving the competencies of healthcare professionals. These measures hold the potential to foster an environment where evidence-based practices are routinely applied, ultimately reducing the incidence of pressure injuries and enhancing patient safety and quality of care.

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