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Reviews on recent progress in nursing are commissioned by the editors. The purpose of the Nursearcher is to publish scientific and technical research papers to bring attention of International Researchers, Scientists, Academicians, and Health Care Professionals towards recent advancements in nursing practise. The articles are collected in the form of reviews, original studies, clinical studies among others. It may serve as a global platform for scientists in relevant fields to connect and share ideas mutually. This journal is open to all the research professionals whose work fall within our scope. Submissions are welcome and may be submitted here.

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Provide a context or background for the study (i.e., the nature of the problem and its significance). State the specific purpose or research objective of, or hypothesis tested by, the study or observation; the research objective is often more sharply focused when stated as a question. Both the main and secondary objectives should be made clear, and any pre-specified subgroup analyses should be described. Give only strictly pertinent references and do not include data or conclusions from the work being reported.

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Present your results in logical sequence in the text, tables and illustrations, giving the main or most important findings first.

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Discuss your findings by comparing your results with other literature.

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Cook NR, Rosner BA, Hankinson SE, Colditz GA. Mammographic screening and risk factors for breast cancer. American Journal of Epidemiology. 2009 Dec; 170(11): 1422-32. doi: 10.1093/aje/kwp304.

If there are more than six authors, write *et al*. after the first six names.

CONCLUSION(S)

Conclusion should elucidate how the results communicate to the theory presented as the basis of the study and provide a concise explanation of the allegation of the findings.

ACKNOWLEDGEMENT

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Compassionate Care in Cardiology: The Role of Nurses in Cardiovascular Disease Management

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Cardiovascular diseases (CVDs) are the disorders that affect the heart and blood vessels, and encompass a broad range of conditions which may lead to severe complications like heart attack, stroke and heart failure. These conditions are the leading causes of death globally and contribute to significant morbidity cases specifically in developing and least developed countries. Early detection, prompt treatment, and ongoing management are crucial in reducing the burden of CVD and improving outcomes for affected individuals. Nurses play a great role in the prevention, management, and treatment of cardiovascular diseases (CVDs) across various healthcare settings and are at the forefront to drive transformative initiatives that revolutionize care delivery and elevate standards of practice.

Nurses play an important role in CVD prevention by educating individuals and communities about risk factors and supporting healthy lifestyle choices such as regular exercise, a well-balanced diet, smoking cessation, and stress management. In order to lessen the frequency and severity of CVDs, they equip people with the knowledge and abilities to prevent these disorders. In addition, Nurses conduct comprehensive health assessments to identify individuals at risk for CVDs based on factors such as family history, lifestyle habits, and medical history. They perform screenings for hypertension, hyperlipidemia, diabetes, and other risk factors, facilitating early detection and intervention to prevent or delay the onset of CVDs. Moreover, they provide tailored education and counseling to patients diagnosed with CVDs, empowering them to understand their condition, adhere to treatment plans, and make informed decisions about their health. They educate patients about medications, lifestyle modifications, dietary changes, and self-care practices to manage CVDs effectively and prevent complications.

Nursing leaders, who often hold positions such as nurse managers, clinical nurse specialists, or nurse practitioners, are instrumental in optimizing the management of cardiovascular diseases (CVDs). They are responsible for ensuring that patients with CVDs receive timely access to evidence-based interventions for both acute episodes and long-term management. This involves developing protocols, guidelines, and care pathways that outline best practices for the assessment, diagnosis, and treatment of CVDs. By staying abreast of the latest research and clinical evidence, nursing leaders ensure that their teams deliver high-quality care that aligns with current standards and recommendations. Furthermore, hey foster collaboration among healthcare team members from diverse disciplines, including physicians, pharmacists, therapists, and social workers. By bringing together expertise from multiple specialties, nursing leaders ensure that patients with CVDs receive comprehensive, coordinated care that addresses their physical, emotional, and social needs.

All in all, nurses are the linchpin in reshaping the future of CVD management environment as they foster innovation, cooperation, and advocacy to improve outcomes and quality of life for people living with these illnesses. By bridging silos, breaking down barriers, and promoting a spirit of teamwork, nurses are facilitating seamless care coordination and integration to ensure that individuals with CVDs receive comprehensive, patient-centered care that addresses their holistic needs.

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Original Article

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Knowledge Regarding Needle Stick Injury Among Nurses of Tertiary Care Hospitals of Lahore

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ABSTRACT

Needle Stick Injuries (NSIs) in healthcare environments represent a widespread concern globally. Such injuries involve the piercing of the skin by a sharp object. They often occur during tasks like drawing blood, administering injections, or handling other sharp instruments, posing a significant risk to healthcare workers. **Objective:** To access knowledge regarding Needle Stick Injury among Nurses of Tertiary Care Hospital of Lahore. **Methods:** A cross-sectional study was conducted at Sharif City Hospital is a tertiary care teaching hospital. A total of 100 Staff Nurses were selected to participate in this study. A structured questionnaire was administered regarding knowledge of needle stick injury. The data were entered in SPSS version 25.0 software for statistical analysis and Data Interpretation. SPSS was used for data analysis. **Results:** Out of 100, majority of participants were female (58%), senior staff nurses (41%) and work in surgery department (34%). It was found that 48% Staff Nurses have suffered from sharps injury in the past the overall knowledge among nurses regarding sharp injury showed that knowledge regarding needle stick injury among nurses 59% have good knowledge, 27% have poor knowledge and 15% have poor knowledge. 48% of them have suffered from sharp injury, 38% have known about protocols regarding needle injury and 58% know about sharp disposal protocol. **Conclusions:** It was concluded that nurses have adequate knowledge regarding sharp injury, most of the sharps injuries were accidental and due to lack of knowledge and experience.

INTRODUCTION

Needle Stick Injuries (NSIs) in healthcare settings present a worldwide concern. NSIs involve the piercing of the skin by a sharp object [1]. Typically occurring during procedures like blood drawing or administering injections. Such incidents, commonly experienced by healthcare professionals handling needles, constitute an occupational hazard [2]. Investigations suggest that approximately 3.5 million individuals globally are affected by these injuries [3]. In 2007, the World Health Organization estimated that there were 2 million Sharps/NSI-related injuries annually worldwide. Among healthcare workers, nurses and physicians are particularly exposed to NSIs [4]. Healthcare workers who are not immune to the Hepatitis B Virus (HBV) have a defined risk of contracting the infection from 2% to 40% depending on whether the source patient has the hepatitis B antigen or not [5]. NSIs stand as the most prevalent occupational risk encountered by healthcare workers. Approximately 2 million health professionals worldwide are exposed to infectious diseases through skin contact each year. About 4.4% of cases of HIV/AIDS and 37.6% of cases of Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and human immunodeficiency virus (NSIs) globally are caused by NSIs [1]. Over 90% of blood-borne infections affect healthcare

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workers in developing nations. According to the Centers for Disease Control and Prevention (CDC), there are an estimated 600,000 to 1,000,000 occurrences of NSIs annually [6]. An accidental, unintended, and non-deliberate skin penetration injury in a medical setting caused by needles, catheter stylets, surgical scalpels, or shattered glass is referred to as a needle stick injury [7]. In addition to blood borne, droplet, and other communicable infections, healthcare workers, especially physicians and nurses, face significant risks of contracting infections through needle stick injuries, such as those caused by HIV, HBV and HVC viruses. The literature describes over twenty different causative agents of various diseases that can be transmitted following needle stick injuries with sharps [8]. Several factors contribute to sharps injuries, including the type and design of the needle, activities like recapping, handling and transferring specimens, collisions involving staff nurses and sharps, tasks during cleanup, manipulation of needles while working with patients, passing and handling devices, and improper disposal of needles into puncture-proof containers [9]. Evaluating risks and devising successful preventive and control measures are crucial aspects in reducing exposure among healthcare personnel. The World Health Organization (WHO) introduced a global initiative for workers' health during the 2007 World Health Assembly, emphasizing the importance for member nations to enhance occupational health standards [10]. Pakistan exhibits a moderately high prevalence of hepatitis within the general population, with hepatitis C at 4.9% and hepatitis B at 2.5%. However, the incidence of viral hepatitis C is progressively increasing in rural areas of Pakistan [11]. Similarly, studies on staff nurses exposed to the HCV by percutaneous occurrences or needle stick injuries have demonstrated an average frequency of 1.8% per injury for anti-HCV seroconversion [12].

The data indicates that a considerable portion of Staff Nurses face potential exposure to infections from blood borne pathogens following needle stick injuries. Therefore, the present research was conducted to evaluate the knowledge of Staff Nurses regarding NSI at Sharif City Hospital in Lahore.

METHODS

A cross-sectional study was conducted at Sharif City Hospital is a tertiary care teaching hospital during the period of Jan-March 2024. Ethical approval was taken from Shari college of Nursing (SCN No: 5003/24). Sample size was calculated by taking 95% confidence interval, 9% margin of error and 52.4% incidence of needle injury among nursing staff the sample of 100 nursing Staff was selected by convenient sampling technique were included in current study [13]. All the doctors, lab technician and other hospital employee were excluded from the study. A structured questionnaire containing both open and close-ended questions was administered. The first part of questionnaire includes demographic of participants and the 2nd part consist of knowledge. The score < 50% consider as poor, 51-70 as good and >70 as excellent. The participants were thoroughly briefed about the study and Informed consent was taken. The data were entered in SPSS 25.0 software for statistical analysis and Data Interpretation. All the qualitative variables were presented by frequency and percentages and quantitative variables by Mean ± SD. Descriptive analysis was conducted.

RESULTS

Total 100 participants were included in current study. 47% were 31-50years old and 39% were 20-30 years and 14% were above 50. Majority of participants were female (58%), senior staff nurses (41%) and work in surgery department (34%) table 1.

Table 1: Sociodemographic Characteristics of the Participants

Variables	N (%)
Age	
20-30	39 (39%)
31-50	47 (47%)
>50	14 (14%)
Gender	
Male	48 (48%)
Female	58 (58%)
Designation	
Shift Supervisors	12 (12%)
Staff Nurses	38 (38%)
Junior Staff Nurses	9 (9%)
Senior Staff Nurses	41 (41%)
Department	
Emergency Department	11 (11%)
Gynaecology	27 (27%)
Laboratory	09 (9%)
Medicine	17 (17%)
Pathology	2 (2%)
Surgery	34 (34%)

The overall knowledge among nurses regarding sharp injury showed that Knowledge regarding needle stick injury among nurses 59% were having good knowledge, 27% poor knowledge and 15% were having poor knowledge. 48% of them had suffered from sharp injury, 38% had knowledge about protocols regarding needle injury and 58% know about sharp disposal protocol table 2.

Table 2: Overall Knowledge among Nurses Regarding Sharp Injury

Variables	N (%)	N (%)
Knowledge	**Yes**	**No**
Suffered from Sharps Injury	48 (48%)	52 (52%)
Knowledge of your Hospital Protocols Regarding Needle Stick or Sharps Injury	38 (38%)	62 (62%)
Knowledge of Hospital's Sharps Disposal Protocol	58 (58%)	42 (42%)

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Overall Knowledge	
Poor	15 (15%)
Good	59 (59%)
Excellent	27 (27%)

The main cause of needle injury was accidental event (71%), followed by lack of training and improper equipment's (7%), lack of awareness (5%) and 10% due to incorporated patients figure 1.

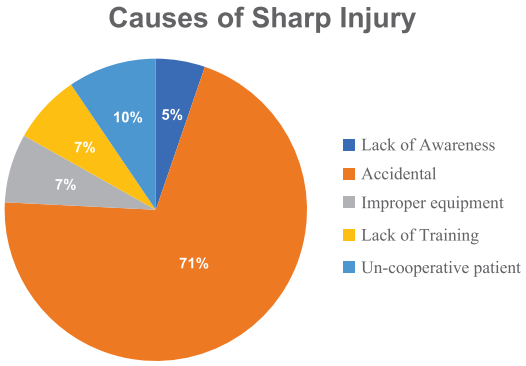

Figure 1: Causes of Sharp Injury

Figure 2 shows that 40% reported that the appropriate steps after sharp injury was to report authorities about sharp injury, 38% response that let blood ooze out, 15% reported wash the wound with distal infectant and 5% report self-medication and immunization.

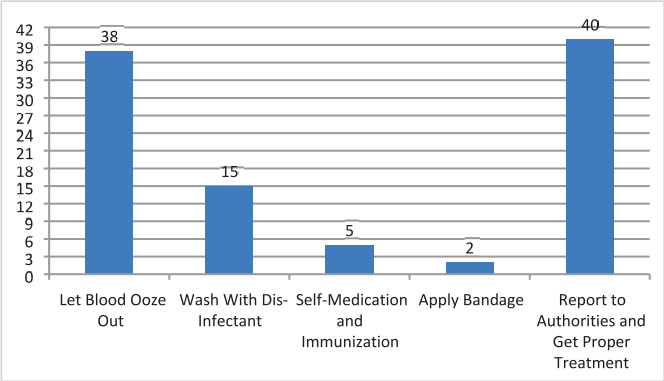

Table 2: Knowledge of Appropriate Step after Sharps Injury

DISCUSSION

The current study evaluates knowledge of health care workers about sharps injury in Sharif City Hospital, Lahore. About half of Staff Nurses (48.5%) reported to have a needle stick injury in their medical career which is less than we found in a study in rural North India to have a prevalence of NSI ever in working lifetime to be 73% but was higher than the similar study held in Karachi (26.1%) [14, 15]. In the current study, 15% of Staff Nurses recommended washing the injury site with water and soap, raising concern as 38% advised allowing blood to ooze out without taking any action following their most recent Needle Stick Injury (NSI). It is notable that only a small proportion of NSIs are reported to the healthcare system. In our study, approximately 40% of Staff Nurses disclosed their injury to a supervisor or senior, while in the AKU Karachi study, only 26% reported their injuries [16]. Previous studies have also demonstrated a significant disparity in the incidence rate of NSIs between studies that directly questioned Staff Nurses and those that relied solely on self-reports to the institution [17, 18]. In current study overall knowledge among nurses regarding sharp injury showed that Knowledge regarding needle stick injury among nurses 59% have good knowledge, 27% have poor knowledge and 15% have poor knowledge. These findings were comparable with another study approximately 70% of participants demonstrated a high level of understanding regarding the use of standard precautions, while 19.5% possessed a good, and 12.2% had average to below-average knowledge in this area [19]. In our study, 67% of sharps injuries were accidental which is near to a study in India which had accidental injury rate of 60.9% [20].

CONCLUSIONS

Needle stick injuries represent a serious occupational hazard that people working in a hospital face daily. Overall knowledge of staff nurses regarding various aspects of sharps injury improved with experience and duration of working in the Hospital. However, the knowledge need to be improved as most cases of sharps injury were accidental and/or due to lack of knowledge of the Staff Nurses.

Authors Contribution

Conceptualization: MG
Methodology: SU, SM
Formal analysis: SS
Writing, review and editing: GR, SS, AH

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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Original Article

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Perception of Student Nurses about their Clinical Learning Environment at Shaukat Khanum Memorial Cancer Hospital and Research Center Lahore

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ABSTRACT

Student nurses perceive that learning environment is a clinical area where students can learn new things according to their set objectives and enhance their knowledge and skills, there are a lot of challenges that students face during clinical placement. **Objective:** To explore perception of student nurses about their clinical learning environment at Shaukat Khanum Memorial Cancer Hospital & Research Center Lahore. **Methods:** This study was a cross sectional survey conducted at Shaukat Khanum Memorial Cancer Hospital from May 2022 to June 2022. Interprofessional clinical learning environment inventory tool was used for data collection from 37 student nurses. Data analysis was done by SPSS version 20.0. P-value<0.05 will be considered as significant. **Results:** There were 14 males and 23 female student is current study. 79% of the students showed positive perception and only 21% shows negative perception about their clinical learning environment. More than 94% nurse students suggested that clinical orientation was relevant and well organized according to their objectives.56% Students during their clinical rotation felt that they belonged to the same clinical area and 89% reported that the behavior of that area staff was friendly. There was insignificant association between gender and Clinical Learning Environment (P-value>0.05). **Conclusions:** The students showed positive perception and satisfaction about the clinical learning environment which indicates that the clinical learning environment is crucial for nursing students, enhancing their clinical, communication, and problem-solving skills.

INTRODUCTION

Clinical placement is essential part of nursing training and it is required for clinical skills development. Student nurses have different perceptions about clinical learning environment, some find it smooth and well organized, while other found it difficult because they face variety of challenges on daily basis [1]. There are multiple factors that affect students learning and that include learning environment atmosphere, engagement and collaboration between nursing students and clinical preceptors, and allocation of number of students to each preceptor in clinical area [2]. During clinical placement students need support from preceptors and senior nurses to meet their learning objectives other areas that need attention is staff-student relationship, students' relationship with preceptors and nursing managers and positive learning environment [3]. Literature says that, when students go to clinical area, they have different experiences some say that, they easily met their clinical objectives and other say that, they did not easily meet their clinical objectives due to unstructured learning opportunities [4]. Moreover, clinical placement may be frustrating for some students, for such students, teachers should identify the appropriate area for placement of students to meet their clinical objectives according to demand of their course and objectives [5].

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Supportive environment can be composed of positive staff morale, stress free working environments, and adequate patient workloads. For legal prospective clinical placement is very important aspect of nursing education and required to ensure that student nurse will perform different clinical tasks according to national and international standards. For most of students, clinical placements are very stressful because of unclear objectives, improper area orientation and improper supervision and inadequate exposure of all clinical areas [6, 7]. Preceptor's role and relationship with students is very important in student's clinical learning, positive and supportive relationship enhances clinical learning while lack of support and motivation from supervisor puts negative impact on students learning. Studies has shown that students in clinical learning environment encounter non-supportive behavior and lack of professional relationship, lack of time, and engagement of supervisors in their clinical tasks which is a big challenge for nursing students [8]. In the hospital setting, wards serve as vital clinical learning environments for students, where they develop essential skills for future nursing practice. Beyond hospitals, clinical learning occurs in various settings such as nursing homes, mental health care centers, children's day care homes, and even prisons. Quality clinical learning environments are characterized by professional supervision, thorough orientation, and timely feedback, fostering the integration of theory into practice and the development of critical thinking skills among students [9, 10]. High-quality clinical learning environments prioritize student success through a healthy climate, diverse learning opportunities, and structured evaluation methods. However, the COVID-19 pandemic has disrupted traditional clinical learning, necessitating innovative solutions to maintain student-patient interactions and professional development. Ongoing evaluation and feedback mechanisms are crucial for identifying and addressing challenges, mitigating student stress, and optimizing learning outcomes [11, 12]. Ziba *et al.*, in 2021, has explored from a study done in Ghana on perception of student nurses about their clinical learning environment that, in health care setting nursing practice has vital importance and for development of nursing skills it is important for student nurses to go through clinical placement, their clinical efficiency depends on ability to apply theory in practice [13]. According to a study student nurses perceive that, clinical learning environment is the environment in which students start their clinical practice as novice and gradually lead to expert and acquire desired skills and competence to provide safe nursing care to patients [14]. The clinical learning environment is constantly changing and it is influenced by characteristics of supervisor, their feedback and teaching style, their education and clinical expertise.

The present study was conducted to explore perception of student nurses about their clinical learning environment at SKMCH&RC Lahore.

METHODS

The study was conducted in nursing institutes in Khyber Pakhtunkhwa, Pakistan, using a cross-sectional analytical study design from March to December 2023. The study population was the nursing instructors that educate students in the private and public sectors at the Khyber Pakhtunkhwa institute, which was recognized by the Pakistan Nursing Council and affiliated with Khyber Medical University. The nursing educators are the participants who have completed their undergraduate program and have a valid Pakistan Nursing Council license. The inclusion criteria for the study were that the participant must have a valid PNC license, have more than one year of experience, and teach current nursing subjects in any recognized institute, while nursing instructors who are on leave or are not willing to be voluntary participants are excluded from the study. The sample size was calculated assuming all the nursing faculty as the population, then using 95% confidence, 5% margin of error and 80% prevalence the sample size was 185, and the data of 4 participants were excluded because they had incomplete forms; therefore, the final sample size of the study was 181 using the convenient sampling technique. The data collection process consists of two steps. In the first step, the demographic data of the participants were collected, which was gender, age, education and experience, while a valid and reliable questionnaire was used for the second step of the study, which was attitude and satisfaction of the participant. The attitude level was evaluated through an 18-item questionnaire with a 5-point Likert scale response from strongly disagree (1) to strongly agree (5). The data were divided into mild (18–42), moderate (43 to 66) and high (67–90) levels of attitude through cutoff values. Reliability was 0.8 and the validity of the tool was 0.87 [14]. The level of satisfaction was assessed through a 30-item questionnaire with a 5-point Likert scale response from strongly disagree (1) to strongly agree (5). The values were nominated as mild with a score of 30–70, moderate with a score of 71–110, and high (71–110). The reliability was 0.86, the validity of the tool was 0.8 and the consistency of the tool for all the items was from 0.7 to 0.9 [15, 16]. Data analysis was performed through SPSS 22.0 as descriptive and inferential statistics. An independent t-test and an ANNOVA were used to identify differences within the groups, while a chi-square test was used to identify the association of attitude and satisfaction with demographic variables. The Ziauddin University Karachi ethical review committee accepted the project, and prior to data collection, each setting gave its consent. The study's goals and objectives were explained to the participants, and they

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received assurances prior to giving their informed permission that the information would be kept private and that they would have the freedom to withdraw from the study at any moment to protect their rights.

RESULTS

There were 14 males and 23 female student is current study. More than 94% nurse students suggested that clinical orientation was relevant and well organized according to their objectives. Majority of students have positive perception about teaching strategies which were used by preceptors to enhance learning. Furthermore, study explored that a significant number of students thought that there was excessive supervision on students from supervisors. Study expressed that, there was heavy clinical work in clinical area for students and it should be reduced to enhance focused and objective oriented learning, 67% Students preferred clinical preceptor of the same discipline as of students (nursing). More than 90% students agreed that, they achieved their clinical objectives given by nursing institution within given time, 56% Students during their clinical rotation felt that they belonged to the same clinical area and 89% reported that the behavior of that area staff was friendly and supportive and they also found that the relevant clinical placement provided sufficient learning opportunities 89%, preceptors were approachable to students, 89% students had clear idea about what was expected from them from clinical rotation in any designated area. Students found that, on completion of clinical rotation they were able to better understand their role in clinical area and it also improved their critical thinking, decision making and communication skills with patients, their families and staff table 1.

Table 1: Inter-professional Clinical Learning Environment Inventory (ICPLEI) Contained 15 Questions Regarding Student Nurses' Perception About Their Clinical Learning Environment at SKMCH

Perceptions of Student Nurses about their Clinical Learning Environment at SKMCH & RC Lahore						
Sr. No.	**Perceptions of Nursing Students**	**Strongly Disagree**	**Agree**	**Neutral**	**Disagree**	**Strongly Agree**
1	The Purpose (Learning Objective) Of This Placement Was Made Clear	23	13	1	0	0
2	Orientation Was Relevant And Well Organized	23	12	2	0	0
3	The Teaching Strategies Helped Me In Learning	20	17	0	0	0
4	There Was Too Much Supervision On The Placement	4	21	10	2	0
5	The Workload In Clinical Area Was Too Heavy	19	7	6	5	0
6	My Preference Is For Mentor To Be Of The Nursing Discipline	11	21	2	2	0
7	I Valued Having Other Than Nursing Discipline Involve In Preceptorship	3	11	11	8	4
8	I Achieved The Nursing Specific Learning Objectives Within Given Time, Set By My Nursing Institution.	16	19	2	0	0
9	I Felt As If I Belonged To The Same Clinical Area	7	14	9	6	1
10	The Placement Provided Me With Sufficient Clinical Learning Opportunities	10	23	4	0	0
11	The Preceptor Were Friendly And Approachable	17	16	3	1	0
12	I Usually Had A Clear Idea Of What Was Expected Of Me	13	20	2	2	0
13	After This Placement, I Understood More About Nurses Role In Clinical Area	22	15	0	0	0
14	After This Placement, I Have a Better Understanding of the Patient's Role In Health Care Decision Making	18	17	2	0	0
15	I Felt Comfortable Communicating with Patients and Families to Seek Them Input Into Care	20	15	2	0	0

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Figure 1 shows the perception of nursing students regarding their clinical learning environment. 79% of the students showed positive perception and only 21% shows negative perception about their clinical learning environment.

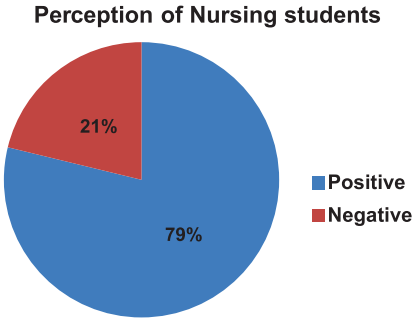

Figure 1: Perception of Student Nurses about their Clinical Learning Environment

There were 14 males and 23 female student is current study. 10 males and 18 females shows positive perception about their teaching environment, only 4 males and 5 females shows negative perception. There was insignificant association between gender and Clinical Learning Environment (P-value>0.05) table 2.

Table 2: Association of Gender with Perception about their Clinical Learning Environment

Variables	Positive	Negative	Total	p-Value
Male	10	4	14	0.6385
Female	18	5	23	
Total	28	9	37	

DISCUSSION

Data was collected from 37 students that include post RN degree and diploma nurse students at SKMCH and RC Lahore, majority of students feel that the purpose of clinical placement was made clear to them and orientation for clinical placement was well organized and relevant, clinical placement enhanced their learning regarding that clinical area and there was adequate supervision by preceptor in clinical area. 79% of the students showed positive perception and only 21% shows negative perception about their clinical learning environment. Serçekuş *et al.*, in 2016, has identified through research that, good preceptorship had positive impact on their learning and majority of students were satisfied during their clinical learning [17]. According to Chan *et al.*, in 2018 in contrast some other studies suggested that, students had different perception about their clinical learning environment, and these different perceptions can be due to change in teaching technology and resources available in clinical environment in developing countries, other factors include instructors, experience, communication skills, attitude of peers and learning environment, and organizational learning and teaching culture [18]. In currents study it was reported that majority of students have positive perception about teaching strategies which were used by preceptors to enhance learning. Furthermore, study explored that a significant number of students thought that there was excessive supervision on students from supervisors. These findings were in line with findings of Papathanasiou *et al.*, in 2014 calculated the mean of clinical learning environment observations which revealed clinical learning environment orientation relevant and individualized and students were satisfied with their clinical supervision and strategies used to enhance their learning [19]. In currents study it was reported that 56% Students during their clinical rotation felt that they belonged to the same clinical area and 89% reported that the behavior of that area staff was friendly and supportive and they also found the relevant clinical placement provided sufficient learning opportunities 89%, preceptors were approachable to students and 89% students had clear idea about what was expected from them from clinical rotation in any designated area. These findings are comparable with Cant and Colleagues which further explored that, quality of preceptorship depends on role and responsibilities assigned to preceptor, assigned preceptors per student and their supervision strategies, those students who had preceptor allocated to small number of students showed good learning and performance in contract to those who had one preceptor on large number of students. And those students who had same supervisor in all clinical areas were more satisfied and had good relationship with preceptors [20].

CONCLUSIONS

In was concluded that the student showed positive perspective regarding clinical learning environment. Students were satisfied with the supervisor ship which enhanced their communication skills with patients and other health care professionals. In addition, Proper supervision, healthy professional relationship among students, preceptors and multidisciplinary team and timely assessment and feedback from preceptors in clinical area by the same discipline helps students.

Authors Contribution

Conceptualization: SSA
Methodology: SU, GR
Formal analysis: GR
Writing, review and editing: AM, FM, AH

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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Role of Perceived Stress in Depression Among Trainee Nurses in Pakistan

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ABSTRACT

Stress has been defined as a threat to one's quality of life and physical and psychological well-being. Nursing students are more likely to suffer from stress due to the nature of their work, which may play a significant role in the development of psychological illnesses specifically depression. **Objective:** To find the role of perceived stress in depression in trainee nurses in Pakistan. **Methods:** The correlational research design was used in this study and the sample was selected by using purposive sampling technique. 555 female trainee nurses of age between 19 to 30 years (mean age of 21.41 years; SD= 2.25) participated in this study. Perceived stress was assessed using Urdu version of Perceived Stress Scale, while for Depression, indigenously developed Siddiqui-Shah Depression Scale was utilized. **Results:** The findings discovered that perceived stress plays a significant role in depression [R^2=.30, β= .55, F (1, 553) = 245.54, p<.00]. **Conclusions:** Globally, Nurses are taken as a vital part to healthcare system, including Pakistan where mental health issues among the population are noteworthy. The study concluded that perceived stress predicts depression among hospital trainee nurses. The findings may also have substantial implications in the imminent interventions to preclude nursing students experience stress and its inverse impacts of psychological nature.

INTRODUCTION

Nursing students play a role, as the generation of healthcare professionals based on them. The readiness of a nurse is influenced by how they adapt to and handle the challenges of an academic and clinical setting. A smooth transition for student trainees in an environment can positively impact the quality of patient care in hospitals [1]. In the realm of studies, nursing students encounter a number of stressors throughout their academic journey and are more prone to experiencing symptoms of depression compared to other students [2]. Nursing students face stressors during their path, which can affect their physical and mental wellbeing potentially impacting their academic performance adversely [3]. The occurrence of stress in nursing students has been widely discussed [4]. Stress is defined as the interaction between an individual and their environment that is perceived as straining or exceeding one's capabilities and posing a threat, to their wellbeing [5]. Perceived stress refers to how individuals assess the intensity of stressors and their capacity to deal with them. Students may experience stress both in academic as well as in clinical domain of learning. Deficient theoretical training, long study hours, shifts during examination, lack of free time, and lack of timely feedback may become reasons for their stress [6]. In the nursing field, stress has been a focus in studies and continues to be a prevalent subject [7-8]. Practical training during a nursing education is often perceived as stressful as compared to the coursework. Studies find that perceived deficiency of information and skills adds to their stress levels. Additionally, the initial clinical practice experience considers very important for students' professional life which if negative, can be upsetting for

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students and cause stress. During clinical practice, trainees are prone to face various challenges such as being in a complicated environment, relationship with clinical staff and instructors, manages changes in patients' status, fear of errors while managing emergency situations, to perform interventions on real patients, and visits to units and all these situations can turn into stressors [9]. While nursing students may not bear the level of patient care responsibility as registered nurses, during training they still encounter similar stress inducing factors [10]. Several studies have also discussed regarding the difference in the levels of stress that may be influenced by differing perspectives on stress and individual perceptions, as well as the programs offered worldwide and the use of varying measurement scales [11-12]. Unlike academic programs, nursing students often find themselves deeply connected to the demands of the workplace, where they must take on significant responsibility for the wellbeing of their patients. This can sometimes lead them to prioritize their duties over participating in campus life and social events relished by their peers [13]. It has also been studied that a certain degree of stress can boost students' motivation and drive encouraging them to persevere in their studies and work towards achieving goals, while excessive stress levels may contribute to feelings of depression and hopelessness among students ultimately impacting both their health and academic performance [14]. Depression, according to the American Psychological Association is a mood state that can be a source of disruption in daily functioning, such as lack of interest in activities, sorrow, reduce appetite and sleep, concentration issues, irritability and, in some cases, suicide. In the realm of studies, it has been noted that nursing students encounter levels of stress and are more prone, to experiencing symptoms of depression compared to students, in other disciplines [4,15]. Depression is a condition that can be impacted by a combination of genetic and environmental influences [16]. Increased stress levels can adversely affect student's capacity to learn. Excessive stress could lead to both physical as well as and psychological issues such as depression, that in turn potentially impacting a student's self-esteem and performance [17]. Research examining the strain resulting from prolonged exposure to stress has shown that students experience rates of depression more compared to the students of other discipline [18]. During their time in nursing school, students undergo a period of alteration in their cognitive, physiological, and physical domains, and this phase may put them at risk of experiencing despair due to challenges in managing stressors and coping with psychosocial changes [1]. The challenging demands of nursing particularly in Pakistani context create pressure on aspiring nurses, heightened by academic demands, clinical duties and systemic healthcare obstacles [19]. Experiencing levels of stress may result in depression, impacting abilities, academic achievements, and patient care negatively. Recognizing this connection is essential for designing interventions to enhance the wellbeing of trainee nurses. Addressing stress perception and its influence on depression, among trainee nurses can bring advantages to institutions, healthcare policymakers, clinical practices, and public health initiatives. Introducing health programs and support mechanisms in nursing schools and healthcare environments can elevate care standards, enhance educational results, and contribute to the overall effectiveness of the healthcare sector.

The present study aims to offer insights by focusing on the role of perceived stress in depression in trainee nurses that could guide strategies to bolster the health and professional growth of nurses in Pakistan.

METHODS

A correlational research design was employed in the present study in which a sample of 555 nursing students of age ranges between 19-30 years (Mean age 21.41; SD=2.25) were selected from various nursing schools in Karachi, Pakistan by using non-probability purposive sampling technique. The study was conducted from December 2022 to April 2023. In this study, only female students of ages 19 to 30 years, with Pakistani nationality were participated. The sample size was calculated through G*power version 3.1.9.7. Based on calculation, a sample size of 518 was deemed sufficient to detect the effect size of 0.03 with a power of 0.95 and an alpha level of 0.05. The full-time registered nurses, and the trainee nurses with age below 19 years, or above 30 years, and those who were not Pakistani nationals were excluded from the study. Current research was reviewed and approved by the Ethical Review Committee of the Institute of Clinical Psychology, University of Karachi, Pakistan [Letter No: ICP-1(101)6195]. In order to study the variables, Urdu version of the Perceived Stress Scale and Siddiqui-Shah Depression Scale were used. Perceived Stress Scale is a self-reported measure contained 10 items with a 5 point rating scale. The scores range from 4 "Very often" to 0 "Never", and the total score is obtained by reversing the scores on positive items [20]. The score of PSS ranges from 0 to 40, where high scores indicate high levels of stress. The PSS-10 has good psychometric properties (Cronbach's α = 0.78). The Urdu version of PSS is also psychometrically sound tool (internal consistency = .727, p<.01; test-retest reliability= .730, p<.01) [21]. The Siddiqui-Shah Depression Scale was used quantify the level of depression in clinical and non-clinical samples of Pakistani populations [22]. SSDS consists of 36 items with 4 point Likert type rating scale. The total score can be obtained by summing up the score on all items, where 0 is a minimum and 108 is the maximum score. The internal consistency of the scale of were found as .91 and

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.89 respectively. Research questionnaires were administered in small groups in classrooms setup. Before administration, participants were informed about the aims and significance of the research, their voluntary participation, and they were assured regarding no harm related to the research. Participants were given informed consent forms for their written consent before filling up the forms. Throughout the study, strict ethical guidelines were followed to ensure the confidentiality of the participants and compliance with established research standards. Data were carefully analyzed by using SPSS version 25.0, and the Linear Regression analysis was applied to find out the predictive correlations between PS and depression among student nurses.

RESULTS

As shown in table 1, the X age of the participants was 21.41 years. From total sample, 27.9% were in 1st year, 34.6% were in 2nd year, 24% were in 3rd year, and 13.5% were in 4th year. Total of 54.4% were Muslim, while remaining 45.6% were belong to other religions. 78.2% of the participants were awarded with scholarship on regular basis, while 21.8% trainee nurses were on self-finance. Among the total sample, 68.3% participants were living in nuclear family system, while other 31.7% were living in joint family system.

Table 1: Demographics Characteristics of Study Participants

Variables	Description	N (%)
Total Sample Size	Female Trainee Nurses	555
Age	Mean (SD)	21.41 (2.25)
Education	1st year	155 (27.9)
	2nd year	192 (34.6)
	3rd year	133 (24.0)
	4th year	75 (13.5)
Religion	Muslim	302 (54.4)
	Non-Muslim	253 (45.6)
Scholarship	Yes	434 (78.2)
	No	121 (21.8)
Family System	Nuclear	379 (68.3)
	Joint	176 (31.7)

Table 2 and 3 presented the prevalence of study variable among trainee nurses

Table 2: Prevalence of Perceived Stress in Student Nurses

Levels of Stress	Frequency (%)
Severe	121 (21.0)
Moderate	150 (27.9)
Mild	133 (23.1)
No Stress	151 (28.0)

Table 3: Prevalence of Depression in Student Nurses

Levels of Depression	Frequency (%)
Severe	49 (8.8)
Moderate	63 (11.4)
Mild	127 (22.9)
No Depression	316 (56.9)

Table 4 showed the significant predictive relationship between perceived stress and depression in the study sample. Perceived stress accounts for 30% of the variance in the outcome variable i.e., depression, and the model demonstrates significance as (R^2=.30, β= .55, P< 0.001).

Table 4: Predictive Association of Perceived Stress and Depression in Student Nurses

Predictor	R^2	β	F	Sig
Depression	.30	.55	245.54	.00*

Note. p<.001* (1-tailed); Perceived Stress= PS (Predictor); Depression: (Dependent variable)

DISCUSSION

The current study was aimed at investigating the role of perceived stress in depression among trainee nurses in Pakistan. Results reflect that PS plays a significant role in the development of depression in nursing students. These findings are consistent with the research conducted by which found a significant positive correlation between stress, depression and anxiety [23]. This strong association highlights the heightened susceptibility to health challenges, among nursing students. These negative emotional signs not only affect wellbeing but also disturb the educational journey and impede academic success [3]. In addition, it was also found that nursing students experience more stress than their counterparts that may be attributed to their juggling responsibilities between study, clinical work and family roles [24]. The health and happiness of healthcare professionals play a role in ensuring the wellbeing of patients and the overall functioning of the healthcare system. This is especially true, for nurses, who make up the group directly involved in patient care globally and are considered as at-risk population in terms of mental as well as physical wellbeing, which in turn affect their work including increased risk of medical errors, and compromised care of their patients [25]. Findings of the current research show that perceived stress and depression are prevailing among undergraduate student nurses and have positive association between these variables. Undergraduate nursing students often face elevated stress, anxiety, and depression, and these emotions can cause significant influence on their wellbeing, academic achievements as well as on their interactions with patients, during clinical training, and the effectiveness of provided care [26]. Furthermore, the findings of a study proposed a link where stress can trigger anxiety, which in turn may lead to depression [26]. Studies conducted in countries like Brazil, Vietnam and Thailand have shown stress plays a role in causing and predicting depressive symptoms in nursing students [2, 27]. Another study found a link between feeling stressed and

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experiencing depression, suggesting that high level of PS is connected to depression [28]. The connection between stress and depression is well documented and revealed that student's perception of stress was connected to depression [29]. Moreover, findings also reflected that stress and other factors are the contributory agents in depression among nursing students such as issues related to their training in the field of health [30, 31]. In this context, prevalence of stress, depression and anxiety is quite common worldwide [32]. Several studies identified many factors leading to stress which in turn cause mental health issues such as depression in nursing students. These factors may be related to academics and/or to clinical work [10, 33]. Academic stressors include long study hours, assignments, attendance, research projects, exams, poor grades and relationship with academic staff. While on the other hand, clinical stressors include adjustment to clinical environment, limited knowledge and skills, fear of making errors, relationships with peers and senior staff, worries related to patients' health, excessive workload, trauma experiences, and dealing with the attendants of patients [33].

CONCLUSIONS

Findings of this study conclude significant role of PS in the progression of depression among trainee nurses in Pakistan. The results also underscore the need for stress management interventions and mental health support services, specifically designed for cater the needs of trainee nurses in Pakistan.

Authors Contribution

Conceptualization: RA
Methodology: RM, RA
Formal analysis: RA
Writing-review and editing: RM, RA

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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Knowledge, Awareness of Diabetes Mellitus in Nurses Working in Tertiary Care Hospital of Peshawar

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ABSTRACT

According to the global burden of disease (2021) statistics, 529 million people were living with diabetes with the incidence of 6.1% globally. With increase in diabetes prevalence, nurses need comprehensive knowledge for effective patient care. Nurses, as part of multidisciplinary teams, play a crucial role in patient education for lifelong diabetes management. **Objective:** To assess the nurses' knowledge awareness about diabetes mellitus working in tertiary care hospital in Peshawar, Khyber Pakhtunkhwa, Pakistan. **Methods:** This was cross-sectional study conducted in the tertiary care hospital of Peshawar, levels of knowledge were evaluated using the 40-items Knowledge score questionnaire. Additionally, outlined demographic characteristics of the participants. Pearson correlation was applied to assess associations between nurses' knowledge scores and relevant demographic variables. **Results:** Among 280 nurses, the average knowledge score was 36.11 ± 1.78 (90.3%) on a 100-point scale. While participants of the study were correctly answered the acute and chronic complications of DM such as slow wound healing, damage of (Kidney, Nerve, Foot), Diabetic ketoacidosis and Hyperosmolar hyperglycemic state were 92.1%, 85.4%, 87.9%, 98.2%, 92.9% and 72.9% respectively. Moreover, a statistical difference in knowledge scores was observed between nurses with and without a family history of diabetes (P 0.00). **Conclusions:** Nurses have shown good knowledge on the various aspects of diabetes mellitus. However, there were some areas which need improvement. The general knowledge was better, but the score on dietary management, role of somatostatin in glucose regulation, renal and eye complications, and hyperosmolar hyperglycemic state was below 90%.

INTRODUCTION

Diabetes Mellitus (DM) is a chronic metabolic disorder caused by genetics and/or acquired insulin deficiency or insensitivity/resistance, results in the increased level of glucose in the blood, leading to complications affecting blood vessels and nerves [1]. There are ranges of symptoms based on the types of diabetes mellitus such as polyuria, polydipsia, weight loss, increased appetite [2]. Diabetes Mellitus had multifaceted threat which goes beyond the individual level and has profound economic burden on health system and national economy. According to the global burden of disease (2021) statistics, 529 million people were living with diabetes with the incidence of 6.1% globally [3]. The diabetes prevalence in Pakistan is 16.98%, approximately 220.9 million populations (2020), predicted cost spent 495.0 billion PKR, roughly constituting 73.7% of the country's total annual health expenditure of 671.4 billion PKR [4]. In European countries, nurses were legally permitted to treat and educate diabetic patients, while in Asian countries, doctors play a major role in treatment. Nursing responsibilities increases to enhance diabetic care. Nurse-led clinics for Diabetes Mellitus management are a new method to effectively ameliorate the management of disease [5, 6]. Health-care workers, including nurses, play a central role in providing education on diabetes prevention, diagnosis, and management to patients and their families [7]. With increase in diabetes prevalence, nurses need comprehensive knowledge for effective patient care. Previous studies reveal inadequate understanding among hospital staff, especially nurses, resulting in suboptimal care [8]. Optimal diabetes care

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requires not only nurses' knowledge but also increase self-management awareness in patients [9]. Nurses, as part of multidisciplinary teams, play a crucial role in patient education for lifelong diabetes management [10]. There were different Studies conducted showing deficiency in the knowledge among nurses in different areas of diabetic care and management in various countries [2]. Australasian studies indicate about 50% of nurses lack awareness of diabetes complications, and in Korea about 80% nurses have poor dietary management of diabetes [11-13]. These findings underscore insufficient knowledge across diverse healthcare settings [9]. Nurses having good diabetic knowledge can play a significant role by giving proper education to the diabetic patients with the correct knowledge they require for their care and management of disease both in healthcare and community areas [14, 15].

In undertaking this research on nurses' knowledge about DM, our primary aim was to address a critical gap in understanding the level of knowledge among nurses regarding DM. Finding of this research were anticipated to have significant implications for both nursing practice and patient outcomes. Through this investigation, it was observed to have the way for informed strategies that empower nurses, strengthen healthcare systems, and ultimately elevate the standard of diabetes care within our community.

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METHODS

A descriptive cross-sectional study was conducted at the tertiary care hospital in Peshawar, Pakistan, between July 2023 and Dec 2023. The study population comprised full-time registered nurses in the hospital. All interns, students, and trainee nurses were excluded from the study. Ethical approval was obtained from the Peshawar Institute of Cardiology (Ref No. IRC/23/37) prior to data collection. Questionnaires were distributed in nurses in different units using a simple random sampling technique during morning, evening, and night shifts. Majority of the questionnaires were completed during the evening shift, which was deemed more convenient and stable compared to the morning shift. The sample size for the study was calculated using G power, with a medium effect size of 0.30 and a 95% confidence level, resulting in a sample size of N=280. Participants were given the authority to fill out the questionnaire at any time during their duty hours after providing verbal informed consent and considering other agreed-upon ethical considerations. Participants were requested to fill and return the questionnaires to the concerned unit team leader. The tools of the study were predefined, structured, and consisted of close-ended questions. In the first portion of the questionnaire, 5 questions addressed various demographics of the participants, including sex, age, marital status, and other relevant qualifications. Furthermore, the questionnaire included 40 questions based on updated guidelines. The nurses' knowledge was assessed in six basic areas: screening or general questions (1), symptoms (3), pathophysiology (12), diagnosis (2), risk factors (4), complications (11), and management (8). To calculate the knowledge score, a scoring system was used: 1 point or 2.5% for each correct answer and 0 points for each incorrect answer, with a total maximum mean score of 40 or 100%. In the knowledge section, scores above 90% indicated excellent, 80-89% good, and below 80% indicated poor knowledge. Seven categories of knowledge were outlined based on respondents' scores. Registered nurses from various medical and surgical units participated. The data were entered and analyzed using SPSS version 25.0, with descriptive and inferential statistics applied. Pearson correlation was used to determine the strength of the association between the knowledge score and sociodemographic variables, including sex, age, education, and diabetes-related variables (knowledge, having diabetes mellitus, and family history). Student's t-tests evaluated differences in knowledge scores among categorical variables. Results were considered significant at a 95% confidence interval with 2-tailed p-values ≤ 0.05.

RESULTS

The samples were taken from the tertiary care hospital of the capital city of the province (Peshawar), Khyber-Pakhtunkhwa, Pakistan. The eligible study participants (N=280) were requested to participate, resulting in a 100% response rate. Among them, the majority were male 155 (55.54%), followed by female 125 (44.6%). The participants' ages ranged between 20-30 years 156 (55.7%), 31-40 years 79 (28.2%), and 41-50 years 45 (16.1%). Most participants have a qualification of Diploma in Nursing (53.6%), followed by a bachelor's in nursing (BSN) (43.6%) and a master's in nursing (MSN) (2.9%) (Table 1).

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Table 1: Demographic Characteristics of the Participants

S.No.	Variables		Frequency (%)
1	Sex	Male	155 (55.4%)
		Female	125 (44.6 %)
2	Age	20-30 Years	156 (55.7%)
		31-40 Years	79 (28.2%)
		41-50 Years	45 (16.1%)
3	Qualification	Diploma in Nursing	150 (53.6%)
		BSN	122 (43.6%)
		MSN	08 (2.9%)
4	Marital Status	Single	129 (46.1%)
		Married	151 (53.9%)

Among the total nurses, only 29 individuals reported a history of diabetes mellitus (36.30 ± 1.60) (P=0.00). Most of the nurses (n=250) asserted did not have a family history of DM, 30 nurses were the opposite. The following variables such as positive history of DM, family history of DM, qualifications and having knowledge about DM were strongly significant regard to diabetic knowledge mean score (P<0.05). Those nurse who have reported positive history of DM were more knowledgeable (mean 36.27 ± 1.71, correspondence 90.7%) compared to no history of DM. The qualification was significant, mean score of MSN higher 36.54 ± 1.70 than BSN 35.88 ± 1.46 and diploma 35.68 ± 1.83 (P=0.001). On contrary, the two variables, sex and age were not significant P>0.05 (Table 2).

Table 2: Diabetic Knowledge Score of the Nurses with Respect to their Demographic Characteristic

Variables	Frequency (%)	Mean ± SD	p-Value
Sex			
Male	155 (90.5%)	36.20 ± 1.72	0.135
Female	125 (89.7%)	35.87 ± 1.93	
Age			
20-30 Years	156 (90.5%)	36.21 ± 1.77	0.089
31-40 Years	79 (90%)	36.01 ± 1.80	
41-50 Years	45 (88.6%)	35.42 ± 1.93	
Having Diabetes Millets			
No	251 (84.4%)	33.93 ± 1.60	0.001
Yes	29 (90.8%)	36.30 ± 1.67	
Family history			
No	250 (85.6%)	34.23 ± 1.72	0.001
Yes	30 (90.7%)	36.27 ± 1.71	
Qualification			
Diploma in Nursing	150 (89.2%)	35.68 ± 1.83	0.001
BSN	122 (89.7%)	35.88 ± 1.46	
MSN	08 (91.4%)	36.54 ± 1.70	
Nurses claim about Knowledge of DM			
Claimed (Yes)	275 (90.3%)	36.11 ± 1.78	0.001
Claimed (No)	5 (83%)	33.20 ± 2.59	

The participants exhibited a higher level of understanding about DM when responding to inquiries about general (knowledge about DM), pathophysiologic, risk factors, complication, management, and symptoms (table 3). Responders correct answers related to pathophysiologic factors were regulating glucose level (insulin 87.5%, glucagon 87.1%, oxytocin 91.8%, somatostatin 85.4%, thyroxin 89.6), insulin secrete by (pancreas 93.2%, liver 87.1%, stomach 98.2%), DM is a metabolic disorder 97.1%, DM is a condition of high blood sugar 98.9%, resistance to insulin is a cause of DM 98.6%, destruction of beta cells is a cause of DM 96.4%. Majority of the participants correctly responded the risk factors of DM were age 96.8%, obesity 97.9%, family history 99.6 and pregnancy 98.2%. The participants of the study were aware relating to the acute and chronic complications of DM such as slow wound healing, damage of (Kidney, Nerve, Foot), Diabetic ketoacidosis and Hyperosmolar hyperglycemic state. They were accurately responded the complication of DM with 92.1%, 85.4%, 87.9%, 98.2%, 92.9% and 72.9% respectively. The most frequently incorrect answered by respondents was Hyperosmolar hyperglycemic state (27.1%, n=76). Majority of the participant correctly reported the nerves damage is common complication associated with diabetes mellites. More than ¾ (98.2%) nurses correctly answered about diabetes foot care is important and agreed that the best way to prevent foot ulcer is to wear loose shoes, prevent from further damage and regular wash. The participants were also investigated about the management of DM, most of the participants correctly answered the treatment option for DM were (insulin n=273,97.5%, oral glycemic agent n=261,93.2%, exercise n=248,88.6% and diet n=251,89.6%), exercise is important for DM patients (n= 271,96.8%), nurse will advise the care of (feet n=271,96.8%, regular exercise n=269, 96.1% and carry sweet when out from the home n=251, 89.6%). Majority of the nurses correctly responded the symptoms of DM were the frequent thirst 91.8% and urination 97.1%. The symptoms of which was least correctly answered was increase hunger has occurred in DM patients 90.4%. In all participant majority were well knowledgeable about the risk factors such as: age 96.8%, obesity 97.9%, family history of DM 99.6% and pregnancy 98.2% (Table 3).

Table 3: Frequency Percentage Distribution of Correct Answers to Questionnaire Items (n=280)

S. No.	Items	Frequency and Percentage of Correct Answers N (%)
General/Screening		
1	Knowledge about DM	275 (98.2%)
Pathophysiology		
2	Insulin Regulated Glucose Level	245 (87.5%)
3	Glucagon Regulated Glucose Level	244 (87.1%)
4	Oxytocin Regulated Glucose Level	257 (91.8%)
5	Somatostatins Regulated Glucose Level	239 (85.4%)
6	Thyroxin Regulated Glucose Level	251 (89.6%)
7	Liver Secreted Insulin	244 (87.1%)
8	Pancreas Secreted Insulin	261 (93.2%)
9	Stomach Secreted Insulin	275 (98.2%)

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10	DM was a Metabolic Disorder	272 (97.1%)
11	DM was a Condition of High Blood Sugar	277 (98.9%)
12	Destruction of Beta Cells was a Cause of DM	270 (96.4%)
13	Resistance to Insulin was a Cause of DM	276 (98.6%)
Risk factors		
14	Age was a Risk Factor for DM	271 (96.8%)
15	Obesity was a Risk Factor for DM	274 (97.9%)
16	Positive Family History was a Risk Factor for DM	279 (99.6%)
17	Pregnancy was a Risk Factor for DM	275 (98.2%)
Diagnostic		
18	Fasting Glucose Diagnostic Criteria for DM	251 (89.6%)
19	Random Glucose Diagnostic Criteria for DM	247 (88.2%)
Symptoms		
20	Increased of Thirst was the Symptom of DM	257 (91.8%)
21	Frequent Urination was the Symptom of DM	272 (97.1%)
22	Increase of Hunger was the Symptom of DM	253 (90.4%)
Complication		
23	Slow Wound Healing was the Complication of DM	258 (92.1%)
24	Diabetic Ketoacidosis was an Acute Complication of DM	260 (92.9%)
25	Hypoglycemia was an Acute Complication of DM	259 (92.5%)
26	Hyperosmolar Hyperglycemic State was an Acute Complication of DM	204 (72.9%)
27	Kidney Damage was a Chronic Complication of DM	239 (85.4%)
28	Eye Damage was a Chronic Complication of DM	246 (86.1%)
29	Nerve Damage was a Chronic Complication of DM	246 (87.9%)
30	Foot Ulcer was a Chronic Complication of DM	275 (98.2%)
Management		
31	Insulin was a Treatment Option for DM	273 (97.5%)
32	Oral Hypoglycemic was a Treatment Option for DM	261 (93.2%)
33	Exercise was a Treatment Option for DM	248 (88.6%)
34	Diet was a Treatment Option for DM	251 (89.6%)
35	Exercise was a Necessary for DM Patients	271 (96.8%)
36	Effect of Exercise on Blood Glucose Level	258 (92.1%)
37	Low Fatty and Sugar Diet was a Nurse Advise to a DM Patient	266 (95%)
38	Care for their Feet was a Nurse Advise to a DM Patient	271 (96.8%)
39	Regular Exercise was a Nurse Advise to a DM Patient	269 (96.1%)
40	Carry Sweets when they out was a Nurse Advise to a DM Patient	251 (89.6%)

DISCUSSION

This study examines nurse's awareness about Diabetes Mellitus in Peshawar's tertiary care hospitals, emphasizing their critical role in patient education, disease management, and healthcare delivery. Despite their pivotal role, our findings indicate negative association between nurses' age and diabetes knowledge, suggesting tenure does not always correlate with expertise due to increased administrative duties and focus on non-clinical qualifications. Similar study has findings were observed in a study conducted in Saudi Arabia [16]. Having positive history of diabetes mellitus, history of familial diabetes, qualification, and self-reported knowledge of diabetes were found to be highly significant regarding the mean score of diabetic knowledge. Nurses having master's in nursing have higher scores as compared to BSN and general nursing. Provision of knowledge and education cannot give guarantee of quality nursing practice, but knowledge is an important precursor of attitude and behavior and the impact of knowledge on the people attitude and behavior is well understood. There is a relationship between nurses' educational performance and their clinical and practical competency [10]. In the current study, there was a significant difference in the knowledge score between males and females. Males have more mean knowledge score as compared to females. This is similar to the study conducted in Riyadh where the perceived knowledge of males was higher than females, and it is in contrast to the other study conducted in Saudi Arabia [13, 17]. The nurses having positive family history has good knowledge score of diabetes. Reasonably, they were much aware of diabetes related treatment and complication. There was no significant difference in the Nigeria study on the nurse's knowledge about diabetes with respect to various demographics like age, gender, qualification, perceived knowledge, and ward practices of the nurses regarding the diabetes [18, 19]. This study revealed a generally high level of knowledge of diabetes mellitus among nurses. The mean score of knowledge was 36.11 ± 1.78, corresponding to 90.3%. However, none of these nurses were able to correctly answer all the questions. In this study, most of the nurses have good knowledge about diabetes (98.2%), but it contrasts to the study conducted in US, the reason might be the lack of collaboration between physician and nurses on the diabetes management and care [20]. Management of Diabetes among other non-communicable diseases has recently drawn substantial attention due to its associated complications and socio-economic impact. Lack of knowledge among health care providers has been found to be one of the major obstacles in the management of hyperglycemia [18, 19]. The participants of the study were aware of relating to the acute and chronic complications. They accurately responded the complication of DM. This is like to the findings where the nurses have reported several complications of type 2 diabetes mellitus including blindness, renal disease, and cardiac disease. Majority of the nurses reported tiredness and weakness as a complication. However, a very few perceived diabetes as a serious disease [7]. In managing diabetes, nurses have achieved scores of over 90% in most components, yet less than ninety percent in exercise treatment, dietary management, and the importance of carrying sweets.

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Education is crucial in each diabetes case. Similar studies indicate nurses' limited knowledge on diets due to cultural beliefs; many used to think diabetic diets should be sugar-free, whereas now balanced diets with low fats and high protein were recommended [20, 21]. Effective management requires a collaborative approach involving patients, families, and healthcare providers to build essential knowledge and skills, promoting self-care. Conversely, another study found registered nurses scored poorly, 41-72%, in diabetes management [22]. Nurses play a pivotal role and should possess adequate skills and knowledge for standardized treatment. Recent literature suggests trained nurses were increasingly replacing doctors in diabetes management [23].

CONCLUSIONS

Nurses have shown good knowledge on the various aspects of diabetes mellitus.However, there were some of the areas which need improvement.The general knowledge was better, but score on dietary management, role of somatostatin in glucose regulation, renal and eye complications, and hyperosmolar hyperglycemic state was below 90%. The current study has identified some deficiencies in the areas of knowledge which need to be enhanced among nurses to improve the care of patients. It is advisable to arrange training sessions and other educational activities for the nurses to develop and update their knowledge level.The hospitals may provide opportunities for nurses to work with senior clinicians to enhance the practices of diabetes.

Authors Contribution

Conceptualization: IR
Methodology: IR, AD, IA
Formal analysis: IR, NU
Writing, review and editing: IR, NU

All authors have read and agreed to the published version of the manuscript

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Assess the Knowledge and Attitude of Nurses Regarding High Alert Medication in Tertiary Care Hospital in Karachi

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ABSTRACT

Inappropriate administration of high-alert drugs carries a significant risk of death or serious injury. **Objective:** To assess the level of knowledge and attitude regarding high-alert medication among nurses. **Methods:** This cross-sectional study was conducted in a tertiary care hospital in Karachi among 56 nurses from January 2024 to March 2024. Participants were selected through a convenient sampling technique. The sample size was calculated by open EPI softer by considering a 95% confidence level and a 5% margin of error. The data were entered and analyzed by Statistical Package Social Sciences (SPSS) software version 26.0. **Results:** According to the study results, (64.3%) of the participants had a Positive attitude and (73.2%) had a high level of knowledge regarding high-alert medications (35.7%) had a negative attitude, and (19.6%) had a moderate level of knowledge regarding HAMs. **Conclusions:** This study concluded that most of the nurses had positive attitudes and a high level of knowledge regarding high-alert medications.

INTRODUCTION

Administering high-alert drugs incorrectly can result in significant harm or even death. It is estimated that medication errors cost the global economy $42 billion annually [1]. Several studies have been conducted in inpatient as well as in outpatient settings and the medication error rates reported from these studies varied between 11.7% to 97.7% [2]. Moreover, in Pakistan medication errors frequently result in fatalities, though these incidents are not adequately documented. Recently, the issue of High Alert Medication (HAM) related errors in Pakistan was brought to light by the death of a 9-month-old baby owing to the sudden delivery of a 15% potassium chloride injection. Since administering medications is the nurses' primary duty, they must have extensive knowledge about HAMs, linked to patient safety and excellent treatment [3]. Mostly medication administration occurs in clinical placement where clinical placement refers to the practice-based component of healthcare education where students gain hands-on experience in a real-world clinical setting [4, 5]. Nowadays, medication errors are taken as the prime patient safety and quality care concern. Worldwide, 2%–5% of patients are admitted to hospitals due to wrong medication administration most of which are preventable [6, 7]. According to the statistics given by the Center for Disease Control and Prevention (CDCP), in the United States, medication errors are the 3rd leading cause of mortality with, 98,000 deaths per [8]. In this regard, research conducted on knowledge of HAMs, confirms that

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nurses lack knowledge regarding HAMs administration and regulation, specifically concerning the administration of IV boluses [9]. Another study was conducted to find whether most of the nurses had insufficient knowledge about the Administration of alert medication and its regulations. The results of the study confirmed that nurses have a low level of knowledge regarding high-alert medication and their administration [10]. The significance of high-alert medications is also crucial as they are frequently utilized in the ICU, medical ward, emergency room, and pediatric ward [9]. There are significant issues around pharmaceutical use, even though many low-middle-income countries (LMICs), including Pakistan, attempt to maintain patient safety within the constraints of available resources. Nurses' understanding of high-alert drugs seems to be strengthened by educational interventions [11-13]. In a nutshell, it is concluded that knowledge about high-risk medications is crucial for general health care professionals, particularly nurses.

Therefore, this study was thus conducted to assess the knowledge and attitude of nurses regarding high-alert medications.

METHODS

A Descriptive cross-sectional study was done from January to March of 2024 at Civil Hospital in Karachi, Pakistan. Additionally, 56 nurse males and females in the morning shift with at least one year of experience and employed by the Civil Hospital in Karachi, were chosen using a convenient sampling technique. The optimal sample size was 56, and this was further determined by open EPI calculator version 3.0, after taking into account a 5% margin of error and a 95% confidence level with population size (for finite population factor correction factor or fpc)(N):) 65. Prior to collecting data, the principal investigator received authorization and approval from the Medical Superintendent of the civil hospital Karachi for the research with reference number SSNHN/747/23. The permission ensures that the study is conducted in an ethical manner and that the participant's rights and confidentiality are upheld. The goal of the study, the method used to gather the data, and the participants' rights to decline or withdraw from the study at any moment were all explained to the participants. Moreover, informed consent was taken from each participant in both Urdu and English. Prior to taking part in the research. The goal of the study, how the data will be collected, the advantages and disadvantages of participation, and the rights of the participants are all explained during the informed consent process. A consent form that each participant signed indicated that they were willing to take part in the study. An open-access adapted questionnaire was developed by Hsiao *et al.*, in 2010 [14], and informed consent from was provided to the participating nurses The inclusion criteria was all the nurses working in the civil hospital Karachi in the morning shift, and the exclusion criteria was nurses' refusal to participate in the study, absent at the time of data collection and incomplete forms. The study tool was consisting of three parts, demographic information knowledge and attitude. The first part asked about demographic information (five questions). The second part consists of 15 questions assessing nurses' knowledge of high-alert medications. The three options provided for each question are "True ", "False", and "I don't know, the third option was included to minimize guessing and to prevent questions unanswered. While scoring each right answer carried one mark, zero was given to the wrong ones and I don't know. There was a maximum score of 15 and a minimum score of 0. A percentage was computed based on the overall score. Participants' knowledge of high-alert drugs was rated as poor by those with a score below 50%, as moderate by those with a score between 50% and 75%, and as high by those with a score above 75%. The third part consists of five questions assessing nurses' attitudes to high-alert medications. The three options provided for each question are "True ", "False", "I don't know. While scoring each right answer carried one mark, zero was given to the wrong ones and I don't know. There was a maximum score of 05 and a minimum score of 0 and the percentage was computed based on the overall score and was classified as positive (score above 50%) and negative (score below 50%).The statistical package for social sciences (SPSS) software, version 26.0, was used to enter and analyze the data. For assessing the knowledge and attitude of nurses regarding high-alert medication, frequency and percentage were calculated.

RESULTS

Table 1 shows the distribution of demographic variables of study participants. It has been noted that 17 (30.4%) subjects belonged to the 23-30 age group, 25 (44.6%) belonged to the 31-40 age,12 (21.4%) belonged to the 41-50 age group and 2 (3.6%) belonged to the 50 above age group. 24 (42.9%) subjects were female, while the remaining 32 (57.1%) were male. 12 (21.4%) had the professional qualification of a Diploma in general nursing 9 (16.1%) had BSN and 35 (62.5%) Post RN. 5 (8.9%) subjects had less than 03 years of professional experience, 10 (17.9%) has 3-6 years' professional experience while remaining 41 (73.2%) has more than 06 years' professional experience. The area of practice of most participants was in the critical wards 29 (51.8%) while 27 (48.2%) had an area of practice in critical areas.

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Table 1: Distribution of Demographic Variable

Variables	Frequency (%)
Gender	
Male	32 (57.1)
Female	24 (42.9)
Age	
23-30	17 (30.4)
31-40	25 (44.6)
41-50	12 (21.4)
>50	2 (3.6)
Qualification	
Diploma	12 (21.4)
GBSN	9 (16.1)
Post RN	35 (62.5)
Working Area	
Critical	29 (51.8)
Non-Critical	27 (48.2)
Experience	
<3 Years	5 (8.9)
3-6 Years	10 (17.9)
> 6 Years	41 (73.2)

Category of knowledge and attitude scores were assessed by frequency and percentage, table 2 showed that the majority of the participants 41 (73.2%) had a high level of knowledge followed by 11 (19.6%) participants had a moderate level of knowledge and only 4 (7.1%) participant had a low level of knowledge regarding high alert medications. Moreover, the majority of the participants 36 (64.3%) had a positive attitude and 20 (35.7%) participants had a negative attitude level regarding high-alert medications.

Table 2: Category of Knowledge and Attitude Scores (n= 56)

Category of Knowledge		
S.No.	**Levels of Knowledge**	**Frequency (%)**
1	Low Level of Knowledge	4 (7.1%)
2	Moderate Level of Knowledge	11 (19.6%)
3	High Level of Knowledge	41 (73.2%)
Total		56 (100%)
Category of Attitude		
S.No.	**Levels of Knowledge**	**Frequency (%)**
1	Positive Attitude	36 (64.3%)
2	Negative Attitude	20 (35.7%)
Total		56 (100%)

A total of 56 nurses participated in the study they were all included in the analysis. Table 3 showed that all responded to the questionnaire, and a response rate of 100% was achieved in knowledge and attitude.

Table 3: Response in Knowledge and Attitude

S. No.	Statement	True N (%)	False N (%)	I Don't Know N (%)
1	Insulin syringe can be replaced by 1 mL syringe.	33 (58.9)	23 (41.1)	0 (0)
2	'cc' or 'mL' is the dosage expression for insulin injection.	19 (33.9)	36 (64.3)	1 (1.8)
3	Port-A route can be used for blood withdrawal and drug injection generally.	40 (71.4)	15 (26.8)	1 (1.8)
4	Streptokinase modified by genetic engineering is used as clot bluster.	43 (76.8)	8 (14.3)	5 (8.9)
5	For chemotherapy dose calculation, while adults are based on BW, children BSA	39 (69.6)	7 (12.5)	10 (17.9)
6	For convenience, heparin and insulin should be stored together in the refrigerator.	32 (57.1)	24 (42.9)	0 (0)
7	Each drug better have multiple concentrations for nurses to choose.	39 (69.6)	15 (26.8)	2 (3.6)
8	If a ward stores Atracurium for tracheal intubation, the drug should be stored with other drugs and easily accessed by nurses.	31 (55.4)	24 (42.9)	1 (1.8)
9	When an emergency happens, fast IV push 10% CaCl2 10 mL in 1–2 min.	20 (35.7)	35 (62.5)	1 (1.8)
10	10% Ca gluconate and 10% CaCl2 are the same drugs and interchangeable.	18 (32.1)	36 (64.3)	2 (3.6)
11	If patient can tolerate, potassium can be administered orally instead of IV route.	38 (67.9)	16 (28.6)	2 (3.6)
12	When an emergency such as ventricular fibrillation happens, push fast 15% KCl.	9 (16.1)	45 (80.4)	2 (3.6)
13	15% KCl is frequently used, so it should be easily and freely accessed by nurses.	16 (28.6)	39 (69.6)	1 (1.8)
14	15% KCl better added to Ringer's solution for rapid infusion	19 (33.9)	37 (66.1)	0 (0)
15	Fast IV infusion of 3% NaCl 500 mL for patient who has low sodium level	27 (48.2)	26 (46.4)	3 (5.4)
16	Do you follow any precautions while administering high-alert medication?	55 (98.2)	1 (1.8)	0 (0)
17	Use distinctive labeling on look-alike drugs.	49 (87.5)	5 (8.9)	2 (3.6)
18	Use 'U' instead of 'unit' for dose expression.	33 (58.9)	21 (37.5)	2 (3.6)
19	Use 'Amp' or 'Vial' for dose expression instead of 'mg' or 'gm'	29 (51.8)	26 (46.4)	1 (1.8)
20	For pediatric doses, a use teaspoon for dose expression.	33 (58.9)	21 (37.5)	2 (3.6)

DISCUSSION

High Alert Medications (HAMs) are drugs that have the potential to cause significant harm if misused. Nurses play a crucial role in ensuring safe medication administration, including the proper use of HAMs [9]. Present study findings revealed that 17 participants (30.4%) were 23-30 years old, 25 participants (44.6%) were 31-40) years old, 12 participants (21.4%) were 41-50 years old, and only 2 participants (3.6%) was over 50 years old. Moreover, a higher proportion of participants were male (57.1%), and (42.9%) were female participants. In Contrast, a study from Saudi Arabia reveals that most of the participants (84.4%) were between 30 to 40 years old, and a higher proportion of participants were female (68.9%) [15]. These differences may be due to age and gender distribution and likely stem from a combination of factors including cultural disparities, variations in sample characteristics, and study

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designs. Moreover, in this study, the qualification of most participants' had a Post-RN BSN (62.5%), (21.4%) participants had a Diploma in General nursing and (16.1%) participants had a Generic BSN. Furthermore, the clinical experience of most of the participants was above 6 years (73.2%), the area of practice of most of the participants was a critical area which was (51.8%), and (48.2%) of participants were from non-critical areas. On the other hand, a study from Saudi Arabia study's finding shows that the qualification of most of the participants was Generic BSN (68.4%), and they were from non-critical areas [15]. Medication mistakes are a leading source of morbidity and death in the critical care and medical fields [16]. The differences in qualifications, clinical experience, and practice areas may be due to variations in educational systems, healthcare infrastructure, and job market demands. In the current study (73.2%) of nurses had good knowledge, whereas (64.3%) had a positive attitude toward high-alert medications. In contrast, another study finding shows that (97%) of nurses had sufficient knowledge, and (50%) of participants demonstrated a positive attitude toward medication errors [17-20]. The findings were different from other study carried out in Pakistan by Salman *et al.*, 2020, results showed that around 84% of the study participants achieved scores less than 70% indicating that the majority of Pakistani nurses have poor knowledge of HAMs administration as well as regulation [21]. The results of the current study demonstrate that using an ampoule or vial to convey dosage rather than milligrams or grams is incorrect since a documented definition of the unit must be used when prescribing high alert medications.53.6% of participants did not know about this regulation. In contrast, in another study from Palestine around 20% of nurses were unaware of the use of ampoules or vials for dosage expression instead of milligrams or grams [9, 14]. Around 57.1 % of nurses gave incorrect responses regarding this question. In contrast, another study finding shows that 22% of nurses gave incorrect responses regarding this question [9, 17, 14]. However, in the present study, 55.4% of our nurses gave correct responses regarding the question 'for pediatric dose, a used teaspoon for dose expression and only 43.7% of our nurses gave incorrect responses regarding pediatric dose expression. In contrast, another study's findings show that most of the nurses (81%) were unaware of the measurement of pediatric dose which was significantly higher than the findings of a previous study [9, 14]. Moreover, heparin and insulin should not be stored together in refrigerator due to mix up. Around 57.1 % of nurses gave incorrect response regarding this question. In contrast, another study finding shows that 22% of nurses who gave incorrect response regarding this question [9, 11, 21]. Concentrated electrolyte solutions like KCl (15%), calcium chloride (CaCl2), and hypertonic saline should not be administering via IV push due to greater risk of complications. Incorrect IV administration of KCl (15%) causes adverse events like arrhythmias and cardiac arrest leading to patient's death. Similarly, inappropriate administration of hypertonic saline cause's phlebitis, extravasations injuries, and Hypernatremia resulting in hypertensive emergencies especially in cardiac patients Administration of calcium salts via fast IV push is also associated with significant adverse event. The current study revealed that 69.6% and 64.6%the study population gives correct response regarding 15% KCl and 10% CaCl2 administration, which was contrast to the findings of a study conducted in Pakistani nurses in which one third of nurses give incorrect response regarding these questions [21]. Around 69.6% of the study participants gave correct response about the dose calculation in children and cancerous patients. In contrast, another study finding shows that 39% of nurses gave incorrect responses regarding this question [21]. Likewise, Lan *et al.*, also reported that knowledge of Taiwanese nurses about the dose calculation in aforementioned diseased population was poor [22]. The inadequacies in knowledge regarding the regulation and administration of high-alert medications can be attributed to the lack of extensive training in this area[3, 19, 20].

CONCLUSIONS

Based on the study findings, most of the participants had a positive attitude (64.3%) and high level of knowledge (73.2%) regarding high-alert medications and few had a negative attitude (35.7%) and moderate level of knowledge (19.6%)regarding high alert medications.

Authors Contribution

Conceptualization: AA
Methodology: DK
Formal analysis: DK, AB
Writing, review and editing: MIK, MK, Q, Z, MH, MI, SU

All authors have read and agreed to the published version of the manuscript

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Assessment of Emotional Distress among Hepatitis C Patients Undergoing Antiviral Therapy at Jinnah Hospital Lahore

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ABSTRACT

Hepatitis C is a significant worldwide health issue, causing mental and psychological distress in individuals, resulting in heightened stress and depression. **Objective:** To assess the emotional distress and assess the relationship between emotional distress and demographic variables of hepatitis c patients undergoing antiviral therapy at Jinnah Hospital Lahore. **Methods:** A quantitative cross sectional study design was used for this study. The study was carried out in Jinnah Hospital Lahore. Sample size of 108 patients is calculated with 95% confidence interval and 5% margin of error. Data were collected by using self-developed through convenient sampling technique. Both Male and female conscious patient, have a confirmed diagnosis of Hepatitis C and on antiviral therapy for 12 weeks were included in the study. Patients with Liver Cirrhosis and emotional trauma were excluded from study. An adopted Emotional Distress scale, consists of 14 questions was used to collect data from patients Emotional Distress Scale was used to collect data. Data were analyzed using SPSS 25.0. Chi square test applied to assess association between emotional distress and demographic variables of Hepatitis C patients. **Results:** The result showed that among 108, the most of the participants are the age group of 18-40 years and 58.3% are female. Emotional distress among hepatitis C patients undergoing antiviral therapy revealed varying degrees of emotional experiences and majority 45.4% of participants had severe distress. **Conclusions:** It was concluded that majority experienced severe emotional distress during antiviral therapy, offering valuable insights for interventions.

INTRODUCTION

Hepatitis C is a significant health issue, causing chronic liver disease [1]. The World Health Organization suggests that approximately 3% of the global population has disease related to Hepatitis C virus [2]. Hepatitis C can cause acute or chronic infection. It not only increases the morbidity and mortality related to liver disease but also effect quality of life and mental health of patients. Chronic Hepatitis is caused by hepatotropic virus that lead to cirrhosis of liver [3]. However, many are unaware of their infection [4]. Hepatitis C virus infection is a long-lasting condition that can impact various facets of human life, including physical health, mental well-being, and spiritual aspects [5]. In Pakistan, it effects 6.8% of population. Chronic HCV infection leads to cirrhosis of 5%-25% patients [6, 7]. The chronic and severe nature of Hepatitis C induces mental and psychological distress in individuals, resulting in heightened stress and depression [8]. The use of combination therapy to treat Hepatitis C often gives rise to negative side effects, contributing to emotional distress, including common occurrences like depression and anxiety among patients [9]. Moreover, individuals undergoing treatment for Hepatitis C virus may express increased levels of worry, with a noticeable trend being a diminished interest in sexual activities [10]. Individuals with Hepatitis C virus infection undergoing antiviral therapy may experience heightened levels of frustration, challenges in managing anger, and increased feelings of depression [11]. These conditions arise from the severe impact of the disease itself and the potentially adverse side effects associated with antiviral therapy [12]. Elevated

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anxiety and heightened depression significantly contribute to heightened fear among these patients [13]. Literature indicates that over 33% of hepatitis C patients on antiviral therapy experience depression [14]. Moreover, it is noted that approximately half of Hepatitis C patients undergoing antiviral therapy may contend with anxiety alongside depression [15].

Therefore, this study aimed to assess the emotional distress among Hepatitis C patients and to assess the relationship between emotional distress and demographic variables of hepatitis c patients undergoing antiviral therapy.

METHODS

Descriptive cross sectional study design was conducted at Jinnah Hospital Lahore. The study was conducted from December 2023 to March 2024. A sample size of 108 was calculated using 95% confidence interval, a 5% margin of error and an expected emotional distress of 26.5% using formula.

$$n = \frac{Z^2_{1-\alpha/2}\ p(1-p)}{d^2}$$

Convenient sampling technique was used to collect the data. Both Male and female conscious patient, have a confirmed diagnosis of Hepatitis C and on antiviral therapy for 12 weeks were included in the study. Patients with Liver Cirrhosis or Liver Carcinoma and emotional trauma were excluded from study. An adopted Emotional Distress scale, consists of 14 questions was used to collect data from patients [16]. Participants were asked to response on four point Likert Scale (0=not at all, 1=occasionally, 2= A lot of the time, 3= most of the time). Total score ranged from 0 to 42. The total score of each participant was graded as No Emotional Distress= 0-10%, Mild Emotional Distress= 11-50%, Moderate Emotional Distress= 51-70%, and Severe Emotional Distress= 71-100%. The tool is valid and reliable as Content Validity Index is 0.78 and Chronbach alpha is 0.83 [16]. Ethical permission to conduct the study was taken from Medical Superintendent of Jinnah Hospital Lahore with Ref. No. 601-23-SACON. A written informed consent was taken from participants. After taking permission, self-administered questionnaire was distributed among participants to collect the data. Data were analyzed using SPSS 25.0. Chi square test applied to assess association between emotional distress and demographic variables of Hepatitis C patients.

RESULTS

Table 1 shows that 61(56.5%) were of age 18-40 years and 30 (27.8%) were of 41-53 year, and 63 (58.3%) were male. Majority of patients 50 (46.3%) had less than 17,000 PKR salary per month and 59(54.6%) qualification up to matric.

Table 1: Demographic Characteristics of Participants

Variables	Categories	Frequency (%)
Age	18-40 years	61(56.5)
	41-53Years	30(27.8)
	> 53 years	17(15.7)
Gender	Male	63(58.3)
	Female	45(41.7)
Income	<17,000 PKR/month	50(46.3)
	17,000-30,000 PKR/month	41(38.0)
	> 30,000 PKR/month	17(15.7)
Education	Uneducated	35(32.4)
	Up to Matric	59(54.6)
	University Education	14(13.0)

Table 2 highlight that 9.3% of patients reported no emotional distress, while 12.0% indicated mild distress, 33.3% reported moderate distress, and a substantial 45.4% faced severe emotional distress.

Table 2: Patients' Emotional distress

Level of Emotional Distress	Frequency (%)
No Emotional Distress	10(9.3)
Mild Emotional Distress	13(12.0)
Moderate Emotional Distress	36(33.3)
Severe Emotional Distress	49(45.4)

Table 3 provides insights into the association between emotional intelligence and demographic characteristics among the participants. Notably, significant associations are observed between emotional distress and gender (p = 0.0001) as well as education level (p = 0.0000), suggesting that these factors may influence emotional intelligence levels among participants.

Table 3: Association between Emotional Intelligence and Demographic characteristics

Variable	Emotional Distress				p-Value
	No ED	Mild ED	Moderate ED	Severe ED	
Age					
18-40 years	20(18%)	22(20%)	30(28%)	36(33%)	0.092
41-53Years	18(17%)	20(19%)	32(29%)	38(34%)	
> 53 years	12(11%)	18(16%)	38(35%)	40(37%)	
Gender					
Male	10(9%)	17(16%)	18(17%)	28(26%)	0.0001
Female	7(6%)	10(9%)	11(10%)	18(16%)	
Income					
<17,000 PKR/month	20(18%)	22(20%)	33(31%)	33(31%)	0.0765
17,000-30,000 PKR/month	18(17%)	25(23%)	32(29%)	39(34%)	
> 30,000 PKR/month	10(9%)	19(16%)	34(31%)	38(35%)	
Education					
Uneducated	20(18%)	25(20%)	30(29%)	36(35%)	0.0000
Up to Matric	28(24%)	20(18%)	32(29%)	30(29%)	
University Education	34(31%)	38(35%)	19(16%)	10(9%)	

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DISCUSSION

Patients with HCV who are receiving antiviral therapy confront a variety of difficulties, such as adjusting to a chronic medical condition, managing adverse effects from the medication, and implementing and sustaining lifestyle modifications. Due to these problems, practitioners in the field of mental health have a unique chance to significantly improve patient treatment. Patients find it challenging to follow through on their medication regimens for HCV infection. The majority of patients encounter adverse reactions, and non-adherence is typical [14]. The treatment team must be assertive in assisting patients in adhering to their recommended regimen, though, since it is essential to the success of the treatment plan. Although each patient's treatment experience was unique, a few recurring themes emerged, including the intensity and range of drug side effects, the need for more support, and the challenges of juggling job and therapy. Hematology nurses are essential to the treatment and management of hepatitis patients because [17]. Therefore, this study was conducted to assess the emotional distress among hepatitis C patients undergoing antiviral therapy. The current study represented that the mean age of studied participants was (46.25 ± 9.553) years, this finding is supported with the result of a previous study who assessed the emotional distress, self-efficacy and liver enzymes among patients with hepatitis C infection undergoing treatment of antiviral therapy, where mean age of studied sample was (39.5800 ± 16.57893) years [14]. Majority of patients were male and were up to matric. The finding of this current study is in line with a previous study, which assessed the side effects of Interferon and Ribavirin among hepatitis C patients. They revealed that the majority of patients were male [1]. In contrast to the current study, a prior study reported that majority of patients, receiving antiviral therapy were females [8].The current study's findings showed that majority of Hepatitis C patients have severe emotional distress levels. The percentage of patients who had no emotional distress while that of patients who had moderate emotional distress decreased. Hepatitis C patients may experience severe emotional distress due to the stigma associated with the disease, uncertainty about its progression and treatment outcomes, and the physical and financial burdens of both the illness and its treatment. Additionally, fear of transmission, impact on relationships, and coexisting mental health conditions contribute to heightened emotional distress levels. Addressing these factors through comprehensive healthcare and support systems is essential for the emotional well-being of Hepatitis C patients [13, 18]. The result of a previous study revealed in support to the current study that there were of severe level of emotional distress among patient receiving anti-viral therapy. Furthermore they claimed that nursing intervention program is the key element for management of patients' emotional distress among hepatitis C infected patients [19]. Similar results were found in a previous study, which found that there was a severe emotional distress and a highly statistically significant decrease in the level of overall quality of life compared to before the program [4]. Similar results were also obtained in a prior research [19]. A previous study results also consistent with these findings [20].

CONCLUSIONS

The study concluded that demographic factors revealed that majority of patients falling within the 18-40 age bracket and were male. Majority of them were having income distribution earning less than 17,000 PKR/month. Majority of patients faced severe emotional distress due to anti-viral therapy. These findings provide a comprehensive snapshot of the sample population's demographics and emotional states, offering valuable insights for further analysis and intervention development.

Authors Contribution

Conceptualization: NAR
Methodology: UAS, MZ
Formal analysis: AR[2]
Writing, review, and editing: AR[1], AM

All authors have read and agreed to the published version of the manuscript

Conflicts of Interest

All the authors declare no conflict of interest.

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Original Article

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Knowledge of Intravenous Cannulation among Nursing Students at Two Private Nursing Schools Karachi

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ABSTRACT

Intravenous Cannulation (IVC) is a widely used, basic procedure carried out in all health care settings. Any kind of error or suboptimal practice can lead to serious complications and can worsen patient health. **Objective:** To assess the knowledge of nurses regarding IVC. **Methods:** A cross-sectional study was conducted at Horizon and Suvastu School of Nursing among post-RN BSN students from October to December 2023. Sample size was calculated with the help of openepi.com version 3.9 with a 95% confidence interval and a total of 134 participants were approached through the purposive sampling technique. Data were collected with Google Forms, shared with the students via whatsapp groups. An adopted questionnaire was used for data collection. **Results:** The results showed that 49.3% of participants were male, 50.7% were female, and 35.8% were between 26 and 30 years old. Considering the year of education, the majority 73.1% were studying in their second year. Results also showed that 35.8% of the respondents had a low level of knowledge, 32.8% had moderate knowledge, and 31.3% had a high level of knowledge regarding IVC. **Conclusions:** The study showed a low level of knowledge of IVC among nursing students; therefore, there should be an educational seminar to enhance the knowledge of nursing students regarding IVC.

INTRODUCTION

Intravenous Cannulation (IVC) is one of the most widely used and basic procedures carried out in health care settings, with an estimated 60% of patients requiring an IVC during their stay in hospitals [1]. IVC is an invasive procedure that carries the risk of serious immediate or delayed consequences, such as phlebitis, thrombophlebitis, catheter embolism, hemorrhage, infection, and sepsis [2]. IVC is a technique in which a cannula is placed inside the vein to gain venous access for the sampling of blood as well as the administration of IV fluids, medication, and total parenteral nutrition, chemotherapy, and blood products [3]. The client's vein is approached with a needle to allow the insertion of a plastic catheter, which is known as an intravenous cannula. It is an essential part of the nursing profession in all healthcare settings [4]. Nurses must have proper knowledge of all IV devices and starting of IV infusions. Also they should know about the prevention, management, and treatment of local and systematic complications caused by IVC. These side effects may occur due to insertion of IVC by in experienced nursing staff [5]. Hence, medical personnel, especially nurses who often administer IVC in any hospital setting, need to possess knowledge of this procedure. Many complications, such as extravasation, infiltration, inflammation, blockage, phlebitis, thrombophlebitis, infection, sepsis, needle stick injuries, and discomfort over the cannula site, can result from improper use of this vascular access device [6]. A study conducted in Saidu

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Group of Teaching Hospital, Swat, in 2023, about the nurses' knowledge and practice towards the care and management of intravenous cannulas showed that 77% of participants had strong knowledge of IVC [7]. Similarly, another study carried out in Chitwan Medical College Teaching Hospital, Nepal, showed that 84.72% of respondents were performing correct practices, despite the fact that only 82.47% of respondents had proper knowledge of IVC [8]. Similarly, according to a study conducted at the University Kebangsaan Malaysia Medical Centre; all 77 participating nurses conformed to standards, with 27.3% having a high understanding of PIVC insertion. In general, more knowledgeable nurses performed better during PIVC insertion [9]. Additionally, another study was done to assess nurses' knowledge, attitudes, and practice to prevent problems after cannulation. Nurses with professional degree have a good level of knowledge regarding IVC [10]. IVC is a common nursing procedure. An error or a suboptimal practice can lead to complications or adverse outcomes for a patient [11]. By assessing the nurse's knowledge, we can identify areas for improvement and promote targeted educational interventions to enhance the student nurse's knowledge regarding IVC.

Therefore, this study aimed to evaluate the knowledge of nurses regarding intravenous cannulation at two different nursing institutes, Horizon and Suvastu School of Nursing, Karachi, Pakistan.

METHODS

A descriptive cross-sectional study was conducted from October to December 2023 at Horizon and Suvastu School of Nursing among post RN BS Nursing students working in different hospitals, in Karachi. The schools are registered with the Pakistan Nursing and Midwifery Council, Islamabad, and affiliated with the Dow University of Health Sciences, Karachi. Sample size was calculated with the help of openepi.com version 3.9 with a 95% confidence interval on a target population of 300 Post RN BS Nursing students. The obtained sample size was 169. Permission was obtained from the principals of both of the schools, Horizon and Suvastu School of Nursing, for ethical considerations (Reference # HSNHS/2023/359 dated 8th September 2023). Data were collected online with Google Forms; a link was shared on whatsapp groups and questionnaires were filled out by 134 students; the response rate was 79%. Both junior and senior students of post-RN BSN who were willing to participate and had experience of more than 1 year were included in the study and those who were on leave were excluded. Data were collected through the purposive sampling technique with a valid and reliable structured questionnaire, adopted from a study conducted by Hassan *et al.*, in 2022 in Malaysia [12]. The validity of the tool was already checked. The questionnaire has two sections. Section I is about respondents' demographic characteristics, Section II is about knowledge of IVC, which was calculated by 22 questions with a dichotomous scale ("yes," "no"). Each question was given one mark and nurses who obtained above 70% considered a high level of knowledge, score between 50-70 % moderate and beloved 50% a low level of knowledge regarding IVC. SPSS software version 26.0 was used for data analysis, frequencies and percentages were computed for demographic and knowledge variables.

RESULTS

Table 1 showed that 33.6% of the students were in the age group between 21 and 25 years, 35.8% were between 26-30 years, 20.1% were between 31-35 years, and 10.4% were in the age group between 36-40 years. The study results also showed that 49.3% were male and 50.7% were female. Considering the year of education, the majority of the respondents were in their second year, constituting 73.1% of the sample, while first year students were 26.9%.

Table 1: Sociodemographic Characteristics of Nursing Students

Variables	Total (n =134) N (%)
Age	
21-25 Years	45 (33.6%)
26-30 Years	48 (35.8%)
31-35 Years	27 (20.2%)
36-40 Years	14 (10.4%)
Gender	
Male	66 (49.3%)
Female	68 (50.7%)
Year of Education	
1st Year Students	36 (26.9%)
2nd Year Students	98 (73.1%)

Table 2 showed the knowledge level of student nurses regarding IVC. 35.8 % of the respondents had a low level of knowledge, 32.9% had moderate knowledge, and 31.3% had a high level of knowledge about IVC.

Table 2: Nursing Students Level of Knowledge Regarding IVC

Variables	Total (n =134) N (%)
Low Level of Knowledge	48 (35.8%)
Moderate Level of Knowledge	44 (32.9%)
High Level of Knowledge	42 (31.3%)

DISCUSSION

The present study was aimed to assess the knowledge of IVC among student nurses at two different nursing institutions, Horizon and Suvastu School of Nursing, Karachi. The study findings showed that 35.8% of the students had a low level of knowledge regarding IVC, while only 31.3% had a high level of knowledge, which is lower than a study conducted in Osti *et al.*, in 2019, which showed 82.47% of respondents had proper knowledge regarding IVC [13]. In the present study, almost half of the participants were female (50.7%) and mostly fell in the

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26–30 year age group (35.8%), which is similar to a study conducted in Swat in 2023, which also showed that 58% were females and 48.9% were in age group between 20–30 years. To compare the knowledge level, their nurses had a higher level of knowledge (77%) as compared with the present study, which showed only 33.3% had a high level of knowledge, which is different from the present study [14]. Similarly, a study was conducted in Nepal, where most of the students (38.9%) were in their second year of generic BSN, which is different from the present study result, which showed that 73.1% were in their second year of academic year [15]. Additionally, according to another study that was conducted in North West Ethiopia, almost half of the respondents (54.7%) had good level of knowledge regarding IVC, which is also different from the present study, which showed only 33.3% of the respondents had good level of knowledge regarding IVC [16]. Similarly, the study findings were also compared with a study conducted in Kathmandu, in 2022, which showed that 55% interns of a teaching hospital in Kathmandu had knowledge about IVC which is higher than the present study [17]. The study results were also compared with developed country like Saudi Arabia. A descriptive cross-sectional study was conducted in Kufa in 2022, to evaluate the nurse's performance regarding IVC, the results showed poor performance of nurses regarding IVC. These findings are almost similar to the present study [18]. A study done in Al-Basrah Teaching Hospital, in 2021, showed that nurses had poor level of knowledge regarding IVC which is similar as compared to the present study [19]. Similarly, a study done in Karaoğlan *et al.*, in 2022, found nurses good in experience and knowledge which is different as compared to the resent study. [20]

CONCLUSIONS

The study revealed that majority of the nursing students (35.8%) had low level of knowledge regarding IVC. Therefore, there should be educational training programs to enhance the knowledge of nurses regarding IVC and prevent complications for patients.

Authors Contribution

Conceptualization: JK, SA
Methodology: MA, RM, AMJ, R.
Formal analysis: AQA
Writing, review and editing: AB, MH, MN

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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