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Editorial

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From Hesitation to Action: The Power of Health Decision-Making

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"Decisions determine destiny"—this is especially relevant for healthcare. All health outcomes — from treating common illnesses to surviving life-threatening diseases — are the result of a chain of decisions. Whether individuals, families, and communities develop and maintain healthy, successful trajectories involves timely, informed, and deliberate decisions on the part of individuals, families, and communities. Whether it's choosing when to go to a hospital, seek out professional help or follow medical advice, the ramifications of health-related decisions can be lifesaving — or life-threatening.

In an age of abundant and immediate information, deliberately deferring when to act on decisions related to health is an intellectual wobble. Several people delay care, misdiagnose, turn to incorrect information, or self-medicate. As seen in the research from the World Health Organization (WHO, 2023)1, the failure of decision-making concerning medical treatment adds a big component to the global burden of disease (World Health Organization, 2023).2Being unable to recognize when the time is right or the unwillingness to take action can lead a maintainable condition into a critical state.

Among the most relevant models is the "three-delay model," initially designed to understand better maternal mortality and later generalized to explain the behavior of patients seeking for healthcare. This framework describes three essential delays: the delay in acknowledging the need for care, the delay in arriving at a health facility, and the delay in obtaining an adequate intervention (Thaddeus Sereen, 1994).3 The initial delay—recognition is intrinsically linked to choice. If a person cannot tell when symptoms are serious, or if he or she is culturally or psychologically unwilling to act, timely intervention becomes impossible.

There are many factors influencing the effectiveness of decision making in health, such as health literacy, socio-economic status (eg, employment), cultural norms, psychological preparedness and access to services. It must come as part of health literacy in particular. Another example is the likelihood of seeking care If you have a good grasp of what symptoms, like, you know: chest pain, high fever, or persistent fatigue, etc. According to research, low health literacy has been linked to increased hospitalization rates, adverse health outcomes, and decreased use of preventive services.4 Thus, enhancing health literacy at the population level is essential for public health.

Furthermore, decision-making does not occur in a vacuum. Societal demands, peers, and families usually have great influence. Many cultures, particularly collectivist ones, consult with elders or family members on health decisions. Although this might be helpful, it could also cause delays if classical cures or superstitions are given precedence above medical guidance. Hence required are culturally appropriate health promotion initiatives that honor customary views but underline the need of prompt healthcare-seeking behavior.

The power to transform health decision-making lies in technology and digital health tools. Teleconsultation systems, mobile health apps, and artificial intelligence-powered symptom checkers let people evaluate their symptoms and make wise decisions. Research shows patients who turned to internet symptom checkers were more prone to seek adequate care and better interact with health care professionals.4 Still, digital tools must be reliable, reachable, and easy to use to work well. Users can be misled by overdependence on unchecked internet knowledge, so reminding them about reputable sources becomes even more important through public awareness.

Another field in which the critical consequences of decision-making surfaced is mental health. Sufferers sometimes hide psychiatric symptoms because of stigma, fear of being judged, or ignorance, so much so. Prompt treatment is needed for suicidal thoughts, anxiety, and depression. Globally, more than 700,000

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people die by suicide every year, many of whom never received professional help, as the points out5. Preventing such disasters calls for promoting mental health awareness and encouraging help-seeking behavior.6

Support for improved health decision-making also falls on policymakers and medical practitioners. From early on, public health initiatives, school-based education, and community outreach can all help to develop decision-making capabilities. Healthcare professionals need to establish settings where patients feel knowledgeable and respected. More research shows that shared decision-making—where physicians and patients cooperate to make healthcare choices— helps to enhance outcomes, compliance, and satisfaction.7

In essence, decision-making is not just a cognitive behavior; it is a public health factor. The timing of help-seeking decisions, accuracy of those decisions, and confidence in them can all have a great impact on mortality and morbidity. Though personal actions are central, so too are institutional initiatives meant to increase access, reduce stigma, raise empowerment, and improve health literacy. Improving decision-making ability has to be elevated as a major approach to meet more patient-centered and preventive models of care toward better health outcomes.

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Original Article

Open Access

Acceptance of Telemedicine in healthcare customers of District Karachi, Pakistan: a cross sectional analysis

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ABSTRACT

Background and Objectives: The global healthcare industry faced significant revenue and volume losses following the emergence of COVID-19 in December 2019. Telemedicine emerged as a potential solution to mitigate these challenges. The primary objectives were to determine the influence of internet browsing and immunosuppression on telemedicine acceptance and to evaluate the mediating role of fear of acquiring hospital-induced infections (HAI) in this relationship.

METHODOLOGY: A quantitative, cross-sectional study was conducted from April to September 2021. Data were collected using a validated online questionnaire distributed to patients, physicians, and health insurance providers in Karachi. The data were analyzed using SPSS version 24, employing correlation, regression, and mediation analysis. A p-value < 0.05 was considered statistically significant.

RESULTS: The study found that internet browsing significantly influenced telemedicine acceptance ($p < 0.01$), while immunosuppression did not ($p = 0.39$). The mediating role of fear of HAI was partially supported. The model's explanatory power was weak, with an R value of 0.29, indicating limited predictive capability.

CONCLUSION: The findings suggest limited acceptance of telemedicine among Karachi's population, highlighting the need for targeted awareness campaigns and policy adjustments. While internet browsing positively influenced telemedicine acceptance, immunosuppression did not. The study underscores the importance of addressing technological and health-related barriers to improve telemedicine adoption.

KEYWORDS: COVID-19, telemedicine, immunosuppression, internet browsing, healthcare acceptance.

INTRODUCTION

The emergence of Covid-19 On December 1, 2019 cases resulted in a decrease in healthcare revenue and volume globally. Numerous systems have profited from the increased use of "telehealth," synonymous with "telemedicine." Telemedicine is the quick electronic communication of medical information between clinical practice locations for treatment and education [1]. The pandemic encouraged a shift from in-person consultations to telehealth services in Karachi, Pakistan, and other regions to reduce virus transmission risks. This shift has shown the potential of telemedicine to improve healthcare access but also raised questions about customer acceptance [2].

In addition, studies reveal that the perception of telemedicine has predominantly been favorable, with several patients reporting satisfaction with their telehealth experiences during the pandemic [3,4]. Factors affecting its acceptability encompass perceived advantages, usability, and the immediacy of healthcare need throughout the crisis [5]. Comprehending the dynamics of telemedicine adoption in Karachi is essential for guiding future healthcare policies and practices, especially as the healthcare environment evolves in the post-pandemic era [6].

The biggest problems in the health care system are creating telemedicine policies, licensing and accredit-

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ing doctors who practice telehealth, strengthening the information system, ensuring patients can access and understand technology, being at ease with it, and having a good relationship with their provider and the doctors that practice remote healthcare services struggle with time management, team building, professional health, and medical education [7]. The majority of studies examine social influence, effort expectancy, and enabling situations, with perceived usefulness (PU) and PEU mediating [8].

The study is grounded in the Technology. Internet browsing was chosen as a determinant due to its role in facilitating access to telemedicine services, while immunosuppression was selected to explore the impact of health vulnerabilities on telemedicine acceptance.

Thereby, this study aims to fill this gap by examining the impact of these variables on telemedicine acceptance among healthcare customers in Karachi, Pakistan. These findings can assist both public and private healthcare organizations in Pakistan in making informed decisions about the implementation of telemedicine projects. This, in turn, can inform health policymakers about the role of telemedicine as an initiative to enhance the country's healthcare sector.

The present study evaluates the dependent variable, acceptance of telemedicine, against the independent variables: internet browsing and immunosuppression. We also identified the impact of the mediating variable, fear of acquiring HAI, on the relationship between immunosuppression and acceptance of telemedicine.

METHODOLOGY

This study employed a quantitative, cross-sectional design with a deductive approach. The target population included patients, physicians, and health insurance providers in Karachi, with a sample size of 384 respondents. The sample size was determined using a 95% confidence level and a 5% margin of error, based on the population of Karachi (16,459,000). Convenience sampling was used due to time constraints and accessibility.

Data were collected using an online questionnaire adapted from validated instruments, including the COVID-19 Fear Scale, the Prevalence of Immunosuppression Scale, and the Telemedicine Acceptance Scale. The questionnaire was distributed via Google Forms, and responses were recorded in Excel before being imported into SPSS for analysis. The data were analyzed using SPSS version 24. Descriptive statistics, correlation, regression, and mediation analysis were performed. Cronbach's alpha was used to assess the reliability of the scales, with values above 0.7 considered acceptable. The mediation analysis was conducted using Hayes' PROCESS macro.

RESULTS

Table 1 highlights the demographic characteristics of respondents. The sample consists of 384 respondents, with a nearly equal gender distribution (47.4% male, 52.6% female). The majority fall within the 21–35 age group (57%), followed by 36–50 years (21.9%) and 51–65 years (14.6%). Most respondents have a graduate degree (41.1%) and belong to the middle class (44.3%) or upper-middle class (43.2%). These demographic variables help contextualize the study's findings regarding telemedicine acceptance.

Table 1: Demographic Characteristics of Respondents (N=384)

Characteristic	Frequency	Percentage (%)
Age Group		
21–35 years	219	57.0
36–50 years	84	21.9
51–65 years	56	14.6
Gender		
Male	182	47.4
Female	201	52.6
Education Level		
Graduate Degree	158	41.1
College Degree	82	21.4
High School	59	15.4
Socioeconomic Status		
Middle Class	170	44.3
Upper Middle Class	165	43.2

Table 2 reveals the descriptive statistics of constructs in which the mean scores and standard deviations indicate moderate levels of Internet Browsing (Mean = 2.90, SD = 0.78), Immunosuppression (Mean = 2.03, SD = 1.14), and Telemedicine Acceptance (Mean = 2.81, SD = 0.79). Fear of Healthcare-Associated Infections (HAI) shows a relatively higher mean score (3.64, SD = 1.10), suggesting a notable concern among respondents. These values provide an overview of the distribution of key variables used in the regression and mediation analyses.

Table 2: Model Summary (Regression Analysis)

Variable	Mean ± SD	Range
Internet Browsing (IV1)	2.90 ± 0.78	1.00–4.70
Immunosuppression (IV2)	2.03 ± 1.14	1.00–5.00
Fear of HAI (Mediator)	3.64 ± 1.10	1.00–5.00
Telemedicine Acceptance (DV)	2.81 ± 0.79	0.86–5.00

Table 3 The regression model shows a weak relationship ($R = 0.293$) and a low explanatory power ($R^2 = 0.086$, Adjusted $R^2 = 0.081$). This suggests that only

8.6% of the variance in telemedicine acceptance is explained by Internet Browsing and Immunosuppression. The small R^2 value indicates that other unmeasured factors may influence telemedicine acceptance, which is acknowledged as a limitation in the discussion.

Table 3: Model Summary (Regression Analysis)

Model	R	R^2	Adjusted R^2	Std. Error
1	0.293	0.086	0.081	0.754

Table 4 indicates the ANOVA results confirm that the overall regression model is statistically significant ($F = 17.740$, $p < 0.001$), indicating that at least one of the predictor variables significantly contributes to explaining variations in Telemedicine Acceptance. However, despite statistical significance, the low R^2 suggests the need for additional predictors to improve the model's explanatory power.

Table 4: ANOVA Results

Model	Sum of Squares	df	Mean Square	F	p-value
Regression	20.151	2	10.075	17.740	<0.001
Residual	215.246	379	0.568		
Total	235.397	381			

Table 5 shows Internet Browsing has a significant positive effect on Telemedicine Acceptance ($B = 0.285$, $p < 0.001$), suggesting that increased browsing is associated with higher acceptance. In contrast, Immunosuppression has a non-significant effect ($B = -0.029$, $p = 0.390$), implying that it does not significantly influence telemedicine acceptance. The confidence intervals confirm the significance of Internet Browsing while showing that Immunosuppression's effect crosses zero, reinforcing its non-significance.

Table 5: Regression Coefficients with 95% Confidence Intervals

Variable	B	Std. Error	β	t	p-value	95% CI (Lower–Upper)
Constant	2.045	0.173	–	11.849	<0.001	1.706–2.384
Internet Browsing (IV1)	0.285	0.050	0.284	5.726	<0.001	0.187–0.383
Immunosuppression (IV2)	-0.029	0.034	-0.043	-0.861	0.390	-0.096–0.038

V1: Internet Browsing; IV2: Immunosuppression; DV: Telemedicine Acceptance. Confidence intervals (CI) derived from 5,000 bootstrap samples. Bolded values indicate statistical significance ($p < 0.05$).

Table 6 reveals the mediation analysis and it suggests that Immunosuppression does not significantly predict Fear of HAI ($B = 0.060$, $p = 0.224$). However, Fear of HAI significantly influences Telemedicine Acceptance ($B = 0.116$, $p = 0.001$). The indirect effect of Immunosuppression on Telemedicine Acceptance via Fear of HAI is not significant ($B = 0.007$, 95% CI = -0.005 to 0.023), indicating that Fear of HAI does not mediate the relationship between Immunosuppression and Telemedicine Acceptance.

Table 6: Mediation Analysis Results (Fear of HAI)

Path	Effect	Boot SE	95% CI (Lower–Upper)	p-value
IV2 → Mediator (Fear of HAI)	0.060	0.050	-0.037–0.158	0.224
Mediator → DV (Telemedicine)	0.116	0.036	0.045–0.186	0.001
Indirect Effect	0.007	0.007	-0.005–0.023	–

Confidence intervals (CI) derived from 5,000 bootstrap samples

DISCUSSION

The current study findings highlight the significant role of internet browsing in telemedicine acceptance, consistent with prior research on technology adoption frameworks such as the Technology Acceptance Model (TAM) and Social Cognitive Theory. These theories emphasize that familiarity with technology, as facilitated by frequent internet use, enhances perceived ease of use and usefulness, thereby driving acceptance [14, 15]. For instance, younger populations (e.g., Generation Y and Z), who are more tech-savvy, demonstrated higher telemedicine adoption rates, aligning with global trends where digital literacy correlates with telehealth utilization [16, 17].

Contrary to expectations, immunosuppression did not significantly influence telemedicine acceptance ($p = 0.39$). This suggests that health vulnerabilities alone may not drive adoption, potentially due to cultural preferences for in-person consultations or distrust in remote diagnostics among immunocompromised patients [5]. However, the partial mediation effect of fear of hospital-acquired infections (HAI) indicates that while immunosuppression itself is not a direct predictor, the psychological fear of infection in clinical settings may indirectly encourage telemedicine use. This aligns with studies showing that perceived health risks during pandemics amplify reliance on telehealth [6, 7].

The present study is critically necessary at that time when COVID-19 lockdown restrictions began to relax, prompting healthcare regulators and professionals to seek a healthcare plan to mitigate the impact of future pandemics. This study found a low R value attributable to the negligible correlation between immunosuppression and the absence of a mediating effect of fear of getting HAI on the adoption of telemedicine [9]. This has facilitated opportunities for future researchers to include new variables to enhance the R value.

The acceptability of telemedicine among healthcare consumers in Karachi during the COVID-19 pandemic can be ascribed to various interconnected reasons. The

pandemic's urgency facilitated the swift development of telemedicine services. Research indicates that patients were predominantly content with telemedicine, highlighting advantages such as convenience, time efficiency, and less risk of infection [10, 11]. A recent survey has revealed that a substantial majority of participants deemed telemedicine beneficial during the epidemic with numerous individuals indicating a preference to persist with these services moving forward [2]. This corresponds with data from other regions, where patient satisfaction with telemedicine has been reported as high, especially when patients could connect successfully with their healthcare practitioners [12, 13].

Nonetheless, despite the favorable welcome, some challenges persist that may impede the long-term adoption of telemedicine in Karachi with inadequate technology infrastructure, insufficient training of healthcare personnel, and apprehensions about privacy and data security have been recognized as substantial obstacles [18]. A thorough assessment indicated that although telemedicine services were broadly accepted, their implementation encountered challenges associated with technical issues and regulatory frameworks [19]. The present study has tackled critical obstacles to facilitate the efficient integration of telemedicine into the healthcare system in Karachi and abroad.

Furthermore, the significance of healthcare practitioners in promoting telemedicine acceptability is paramount. Their thoughts and attitudes around telemedicine substantially affect patient acceptability. Research indicates that healthcare providers that are adequately trained and supportive of telemedicine are more inclined to promote its utilization among patients [20, 21]. Thereby, enhancing provider education and addressing their concerns regarding telemedicine can lead to improved patient outcomes and satisfaction.

Strength and Limitations of the study

The present study also bridges the gap that existed in prior researches from the perspective of the independent variables and mediating variables. Another advantage of this study is that it critically evaluates the customer's preferences and inclination towards telemedicine and telehealth in order to align independent organizational efforts in quality care delivery and growth of healthcare industry. The research is helpful for health legislative bodies in making policies for telemedicine and telehealth keeping in view the customer behavior and priorities. This study facilitates the Federal and Provincial Government of Pakistan to make discretion regarding allocation of budget for restructuring telehealth in Pakistan.

The most prominent limitation of this study is it is quantitative study and it introduces biasness in responses since respondents have to choose any option from the fixed set of answers. In addition, it is a cross sectional research that studies a population at one point of time. The scope of this study is limited to Karachi City, only leaving behind a huge chuck on population of Pakistan and the other countries. The usage of simple random sampling technique has narrowed the scope of our study. The effect of predictors, outcome and mediator is checked but the effect of moderator is not studied in this research. Lastly, this research is conducted at the student level with in duration of four months only.

Future Considerations

First of all, it is imperative for the future studies to incorporate new independent variables to increase the R value of the research. Since, the role of mediation proved partial in this study, and future researchers could study the mediator as predictor to check its complete effect on acceptance of telemedicine, as well as introduce a moderator in the study. Further, this research could be done in countries where the scope of telemedicine is still emerging. Lastly, our worthy researchers may conduct this research as longitudinal design and could use systematic- random method of sampling.

CONCLUSION

This study highlights that internet browsing significantly influences telemedicine acceptance, while immunosuppression does not. Fear of healthcare-associated infections (HAI) did not mediate this relationship, suggesting that telemedicine adoption is more technology-driven than health-risk motivated. Despite the model's statistical significance, its low explanatory power ($R^2 = 0.086$) indicates that additional factors influence telemedicine acceptance.

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***Abeer Ajaz*:** Substantial contributions to the conception and design of the work.

***Sajjan Iqbal Memon*:** Design of the work and the acquisition. Drafting the work.Final approval of the version to be published.

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Original Article

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Knowledge, Attitudes, and practice of Nurses on Medication Errors in Saidu Group of Teaching Hospital Swat.

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ABSTRACT

Background and Objectives: Enhancing human health is the primary objective of nurses. Among the most frequent, potentially dangerous mistakes that impact patient care are medication errors. These errors are seen as a worldwide issue that raises death rates, hospital stays, and associated expenses.

Aim is to study the medication errors of ordering, dispensing and administering and to compare the errors occurring in the Saidu group of teaching hospital with those occurring in the other health care setups around the word. To identify the most common mistake regarding the preparations of medication. To assess nurse's errors concerning administration of medication. To evaluate nurses' knowledge regarding Post administration of medication.

METHODOLOGY: At the Saidu group of teaching hospitals in Swat, a descriptive cross-sectional study was carried out. At Saidu Group of Teaching Hospital SWAT, 79 critical care nurses in total were chosen for the study and given an adopted questionnaire to complete. Questionnaire was consisted of four major parts, the demographic section, knowledge section, attitude section and practice. Data were entered into the SPSS version 26 software for analysis. And the results were represented in the form of frequency and percentages. For ethics stability, consent form is used and ethical approval was granted from college faculty and hospital committee.

RESULTS: The mean age in our study was 31 in which 68 % were male while 32% were female. 68% of the study participants (Nurses) label the medication cup and few nurses do not label the medication cup with patient's name or room number. Only 20% of participant did not report medication error.

CONCLUSION: Knowledge about medication process among nurses were good but further need a bit of improvement.

KEYWORDS: Medication error, knowledge, Nurse, attitude

INTRODUCTION

Any departure from the doctor's prescription order as it appears on the patient's chart is commonly referred to as a pharmaceutical mistake. Medication mistakes in hospitals happen roughly once every patient every day. Error rates for dosages administered during the cart-filling process range from 0.87% to 2.9%. A dispensing error occurs when pharmacy employees provide medications to nursing units or directly to patients in an ambulatory care pharmacy.(4). In 1983, 2876 people died from ME. By 1993, this number had risen to 7391, a 2·57-fold increase(16). Globally medication errors are among the major health and economic concerns. Annually 44,000 people die from preventable medication errors.1 One in every hundred Medication errors lead to adverse reaction that can result in death (11).Approximately 20% of all medication administrations result in error(17). Between one and two errors per patient each day go undetected in addition to those that are reported (5).Increased lengths of stay, readmissions, patient mortality, post-discharge impairment, and emotional anguish for the patient, family, and administering nurse are among the monetary and personal expenses linked to these mistakes(6).Errors can be found in five distinct stages of the MA process: prescription, typing, dispensing, administering, and patient condition/documentation monitoring(5). The administration stage is especially prone to mistakes (11). Errors are more likely to occur

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throughout these intricate procedures when requests or disruptions occur simultaneously (5). MA takes up between 16 and 40 percent of nurses' time (18). Since MA does not happen in a vacuum, it was determined that it actually "constitute[s] the day" because it was impossible to distinguish its effects from other duties, rather than taking up a specific amount of the nurses' day. Nurses' capacity to provide safe and efficient patient-centered care is impacted by how process interruptions are handled given the strong emphasis on MA (8).

Significance of the Study:

The medication error is one of the most common mistakes occur in health care system and nurses with pharmacist and physician have in important role in stopping these errors so our aim is to highlight these errors and give suggestion to overcome these errors.

Rational:

Patient admitted at health care setup have a chance of having victim of medication error so through this study we want to identify the statistics of these error and give suggestion about lowering the frequency of these error.

Operational definitions

Registered Nurse: A nurse is a person who is formally trained in a nursing institute and possesses a valid registration with Pakistan Nursing council.

Knowledge: Knowledge is understanding or awareness of nursing staff regarding the protocols of Medication administration.

Attitude: A settled way of thinking or feeling of nursing staff regarding Basic Life Support.

Practice: The actual application of Basic Life Support guidelines on patients by the nursing staff.

METHODOLOGY

Type of Research

This is quantitative research, descriptive in nature. The data for this study was collected through a closed pre-coded questionnaire. Questionnaire included with closed ended questions. Quantitative examination is a method to test objective hypotheses and the relationship among variables (9). In our questionnaire there are four parts including demographic, educational level, practice and attitude of nurses toward the medication error.

Research Strategy:

A cross-sectional study was designed in public sectors of Swat to analyze the frequency of medication error and attitude of nurses toward the medication error. The study was conducted in public hospitals, (Public Hospital) Saidu group of Teaching Hospital, from March 20 to April 20 2022. The study was conducted through pre coded, structured questionnaire. Questions were related to educational level and attitude of nurses toward the medication error. The questionnaire was given to the nurses of inclusion criteria randomly.

Research design:

A descriptive cross-sectional study was conducted in public hospitals of Swat. For data collection a structured questionnaire with consent form was attached, in which aim of the study and rights of participants and rules clearly mentioned. Questionnaire included with demographic knowledge practice and attitude section. Pilot study was done by 20 questionnaires to remove any type of error.

Pilot study:

Pilot study was done in Saidu Hospital Swat (SGTH). 20 Nurses were asked to fill the questionnaires. All Nurses had experience more than year in Nursing. 26 of our questions only few were found incorrect which is been remove from questionnaire.

Target Population

More than 420 nurses working in Saidu hospitals of Swat, which was a target population for this study

Sample Size

79 sample size was selected for the study, Nurses from Saidu government hospitals, Male and female with various designation from hospital was the part of it. we use RAOSOFT for finding our accurate sample size in which we take 10% error the reason we did not take 5% is we are the beginners so chances of error are there then we take 95% confidence level because its mostly used and our total population is 430 nurses in SGTH. So, the RAOSAFT give us sample size of 79 as a reference we attached the screen shot at the end of the study

Sampling Technique

Due to shortage of time and lack of resources we apply Non probability descriptive cross sectional sampling technique.

Data Collection Methods

Data was collected through a questionnaire which include close ended questions. And questionnaire was the instrument of the study every participant has asked in consent form that if they want to leave the study at any time, they are free to leave. Questionnaire is the best and suitable data collection method for quantitative study as proved by many articles.

Research Instrument

Well structured, close ended questionnaire was my research instrument. The questionnaire covered four parts:

Demographic data
Educational level
Practice of nurses

Attitude of nurses toward medication process

Research survey:

When we modify our questionnaire and remove the incorrect questions from it then we visited to the Saidu group teaching hospital and discussion with the staff about the research and explain the questioned to them which they find difficult. Some staff just simply reject to give us data while some said that leave the questionnaire and come after an hour and take it and some filled it on the spot.

Inclusion Criteria:

All those registered nurses in SGHT having a least one-year experience and performing duty in different wards and willing to share experiences with us are come in our inclusion criteria. (n=50).

Exclusion Criteria:

Nurses who are not present in hospital during our study or those who are not willing to share their experiences with us are come in this part of our study.

Sampling:

The sample was drawn by non-probability convenient sampling techniques from the nurses available at the hospital at the moment.

Research Instrument:

For conducting the survey, we used questionnaire as an instrument. A close ended questionnaire was used with a nominal question. The language of the questionnaire is English. The questionnaire consists of five portions, the consent form, the demographic questions and the educational level the practice and attitude of nurses toward medication error.

The demographic part:

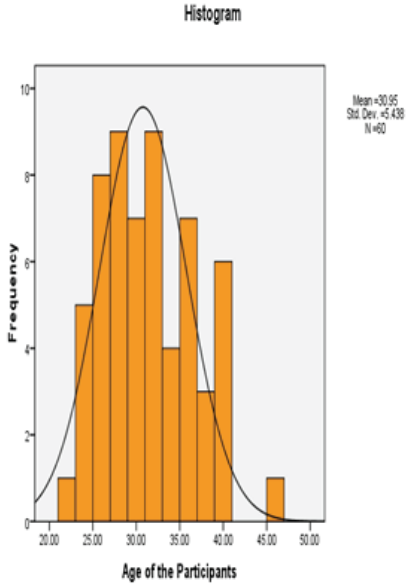
In this part of the questionnaire, we have asked the participants about age, gender, qualification. We also asked the nurses about their position and the options which we gave were diploma, specialization, BSN and MSN. Number of years in Nursing has been asked.

Data Analysis:

Data analysis was performed using SPSS, version 26, software. Frequency distribution tables for categorized variables, and numerical indices of minimum, maximum, mean and standard deviation (SD) for research quantitative variables were provided by means of descriptive statistics, and tables related to comparisons and correlations were done using analytical statistics.

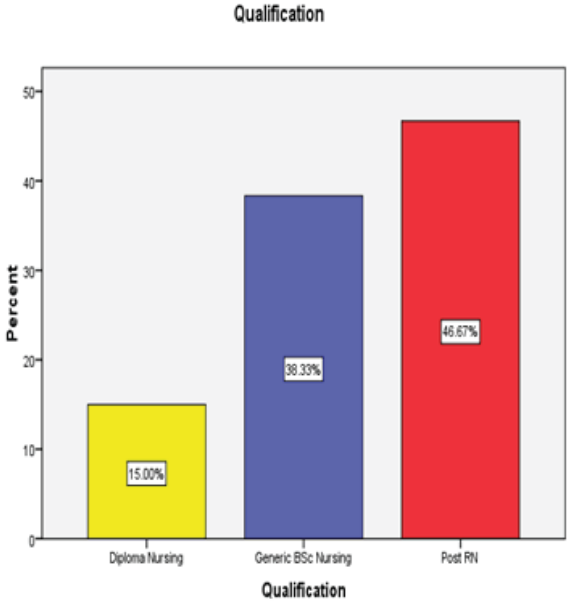
RESULTS

Interpretation: The graph reveal mean age of the study participants (Nurses) is 31. And the standard deviation is 5.4.



4.1 Graph no 1: Mean age and standard deviation of the study participants

In our study most of the study participants were male (68%) and less were female nurses (32%).



Graph no 2: Gender

Interpretation:

The education of nurses who were selected for the study was Diploma Nurses (15%), generic BScN (38%) and Post RN (47%).

Table No 1: ignorance of medicines minor side effect by the nurses

Do you check patient's armband prior to administer medication					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	47	78.3	78.3	78.3
	No	13	21.7	21.7	100.0
	Total	60	100.0	100.0	

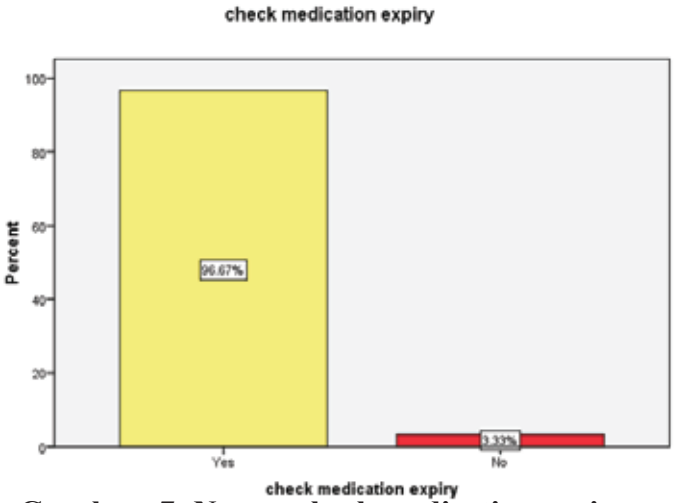
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	12	20.0	20.0	20.0
	No	48	80.0	80.0	100.0
	Total	60	100.0	100.0	

Interpretation: The mean experience of the nurses who were selected for the study was 8 year and standard deviation was 5.5%.The major reason for not participation and incomplete participation were family restrictions, time constraints and unexpected distance (attending) phone calls, physician calls for consultation and crying of children). Total 384 nursing mothers participated in study. Each district contributed around 33% participants. The socio-demographic variables of the study were district of residence, age and education of nursing mothers, number of children and place of delivery of last child. that among total participants, 72% (n=277) nursing

Table No 2: Nurses checking patient armband prior to administer medication

Do you prepare and carry medication of more than two patient at a time					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	29	48.3	48.3	48.3
	No	31	51.7	51.7	100.0
	Total	60	100.0	100.0	

Majority(78%) of the nurses check the patient armband before administering the medication to reduce the chances of error and very few ignore to check the armband of the patients.



Graph no 7: Nurses check medication expiry when administering medicines

Interpretation: Approximately all the study participant's nurses check the expiry of the medicines before administering the medication to the patients

Table No 2: Nurses checking patient armband prior to administer medication

Do you label syringes and bags with medication, name, and room number					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	43	71.7	71.7	71.7
	No	17	28.3	28.3	100.0
	Total	60	100.0	100.0	

Interpretation:

Maximum number (72%) of the study participant's label syringes and bags with medication, name and room number of the patients

DISCUSSION

This study was conducted with aim of identifying potential medication errors with their prevalence in Saidu group of teaching hospital, in resource limited setting. The role of nurse in preventing medication errors was also investigated. It was found that medication errors were common in health care setup.

In our study the nurses that much open to answered the that what type of medication error they done and what were the conserveness after the incidence but most of the nurses 93.3% said that its necessary to report any error in the medication process. Through discussion with staff, we find out that most of the error occur in the administrative phase of medication process as same to the study saying that Approximately 78% (158) of the 202 surveys received included medication error in administration. (22). During the study period, 136 (68 %.) medication errors were encountered in medication orders (n=200) by clinical pharmacists. Male gender was found most susceptible to medication errors (70.59%). Among the identified errors, prevalent error found was dosing error (27.21%), followed by incomplete prescription error (13).

Majority 68.33% of the participants in our study were male while only up to 32% were female which is also one of the reasons of low number of medication error as the study say that the response rate to the survey was 8.2%. Approximately 78% (158) of the 202 surveys received included medication error descriptions; we analyzed these 158 accounts. Of those nurses who admitted making an error, 87% were women(22).

The work load in government hospital is too huge because the number of nurses is too few in Saidu hospital. In our study 67% replied that there is enough staff

and the rest replied that there is no enough staff to handle work load which result poor patients care. Educational level section of our questionnaire has seven questions and the response to these questioned were 100% positive everyone knows the basics and have knowledge about medication error. Explanation of side effect from any medicines to the patients is important because it keep important role in patient's care. In our study 71.6% nurses replied that they explain the medication side prior to administering the medicine to the patients.

One of the main reasons of control medication error rate Is also that majority 73.3% nurses did not administer the medicine prepare by another nurse. And 97% of the participant have check the expiry rate before administering medicine.

CONCLUSION

Results of the study confirm that frequency of medication error among nurses is not too much high but still it is significant and should be taken as a part of concern. The reason of low frequency of medication error is the educational level of nurses which was quite good and other reasons were the attitude of nurses toward medication process they check expiry before administration and explain the process to their patient. But still need to give more education on how to lower the frequency of error and what to do if any error occurs because some nurses answered that they did not report if medication error occur.

Recommendation:

This study result showed that the ratio of medication error among nurses selected from Saidu government teaching hospital Swat KPK is low. The main reason behind this is the work experience which was more than 8 year and the strong reason was educational level. 38% were BScN and 46% of nurses done their post RN only few were only diploma nurse which was the reasons of low medication error frequency. In one study the researcher said that 87% of error occur from female nurses and our study 68% were male but still need to overcome this problem and completely remove the medication error for which the government need to arrange session in which the more experience nurses need to take the class and share their experience.

Limitation

Due to insufficient time and lack of resources our research study is limited to Saidu government teaching hospital Swat KPK and to a sample size of 79 staff nurses. And convenient sampling method is applied because of insufficient time.

One of the main reasons of control medication error rate Is also that majority 73.3% nurses did not administer the medicine prepare by another nurse. And 97% of the participant have check the expiry rate before administering medicine.

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Authors Contributions:

Majid khan: Substantial contrib ution to the conception, design of the work.

Najmus Saqib, Muhammad Awais: Survey and design of the work. Data collection. SPSS computing tool.

Sadia Yahya: Drafting for approval of the final version to be published.

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Original Article

Open Access

Effects of Nurse-led based educational interventional on knowledge and practice for professional communication skill between inter and intra department among internee students

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ABSTRACT

Background and Objectives: Effective communication is crucial in healthcare, yet intern students often struggle with communication skills, leading to errors and adverse events. To Assess the impact of nurse-led educational interventions on knowledge and practice of communication skills among intern students.

METHODOLOGY: A mixed-methods design was used, with a pre-post quasi-experimental study and focus groups. Intern students (n=30) received nurse-led educational interventions, including workshops and simulations, focusing on communication skills. Knowledge and practice were assessed using a questionnaire and observed simulations.

RESULTS: The mean difference of -8.500 shows that post-knowledge scores are, on average, 8.5 points higher than pre-knowledge scores. The confidence interval (-10.031 to -6.969) confirms that this difference is statistically significant and not due to random variation. The t-value of -11.355 and the degrees of freedom (29) further support the statistical significance of the results. The p-value of 0.000 indicates a highly significant difference between pre-knowledge and post- knowledge scores.

CONCLUSION: Key findings from the research suggest that intern nursing students who participated in the nurse led educational program demonstrated marked improvements in their ability to communicate effectively, resolve conflicts, and collaborate with peers and senior staff. This has positive implications for patient care, as effective communication is critical to ensuring safe and coordinated treatment

KEYWORDS: nurse-led base educational information, inter department, inter professional communication, knowledge attitude and practice, intern student, standard deviation, statistical package for the social sciences.

INTRODUCTION

The introduction lays out the importance of effective communication in nursing practice, emphasizing its role in building therapeutic relationships, minimizing errors, and improving patient satisfaction and outcomes. It highlights the need for nursing students to develop strong communication skills to navigate complex clinical environments and address diverse patient needs. The challenges and hesitancies in communication among healthcare professionals, especially in voicing concerns or handling difficult conversations, are also acknowledged.1

The introduction suggests that while communication skills are crucial, nursing students often lack adequate training in this area. It mentions the significance of educational interventions to enhance communication skills among intern students, both within and between departments. The article aims to explore a study focusing on the impact of nurse-led educational interventions, including simulations, on improving the communication abilities of intern students.2

Overall, the introduction sets the stage for the importance of the study in addressing the communication needs of nursing students and its potential implications for patient care and safety. The literature review provides insights into various studies related to communication skills training among healthcare professionals, particularly focusing on nursing students.3

The literature review encompasses several studies

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focusing on various aspects of nursing, including clinical experience, educational qualifications, communication skills, and safety culture within healthcare settings.4

Kim and Sim (2020) conducted a study involving nurses, primarily aged 25-29, with a majority being university graduates. The sample predominantly comprised general nurses with varying levels of clinical experience, primarily working in secondary hospitals.5

Gutierrez-Puertas, Marquez-Hernandez et al. (2020) conducted a systematic review involving studies with a total sample size of 1,295 participants. These studies, mostly conducted in the last decade, covered areas such as mental health, end-of-life care, and maternity.6 The majority of studies utilized quasi-experimental designs, focusing on pre-test and post-test measurements.7

Donovan et al. (2019) aimed to evaluate nursing students' communication skills through practical application in simulated scenarios. The study included undergraduate nursing students, with

Descriptive characteristics indicating a majority of female students, primarily with high school or higher education qualifications.8

Blake et al. (2019) investigated the impact of simulation on nursing students' therapeutic communication skills. Following the simulation, students reported improvements in their ability to communicate therapeutically, with both patients and peers participating in debriefing sessions to discuss strengths and weaknesses.9

Okuyama, Suzukamo et al. (2023) surveyed healthcare staff to assess safety culture, revealing predominance among women with less than six years of experience. The study highlighted areas for improvement, particularly in "no punitive response to errors," with better safety culture observed among more experienced staff and those with lower educational levels.10

Overall, these studies provide insights into various aspects of nursing, from clinical practice to education and safety culture, highlighting areas for further research and improvement in nursing practice.11-13

OBJECTIVE

To assess the effects of nurse- led base educational interventional of knowledge and practice for professional communication skill between inter and intra department among internee students.

METHODOLOGY

The research design utilized in this study is a quasi-experimental approach to investigate the impact of an intervention on the development of communication skills among nurses. Purposive sampling was employed to select participants from a population of 30 student nurses working in a hospital setting.

The study was conducted between February 2024 and June 2024, following approval from the Institutional Review Committee of the Faculty of Nursing at Ali Fatima Hospital. The sample size was determined using the formula n=N/1+N(e^2), with n representing the sample size, N representing the population size, and e representing the margin of error (5%).

Inclusion criteria for participant selection included internee students and those identified as lacking in communication skills. Conversely, exclusion criteria comprised students who displayed a lack

of interest in participating and those who were proficient in communication with patients and staff nurses.

In conclusion, The study employed a quasi-experimental design to assess the impact of an intervention on enhancing communication skills among nurses. Purposive sampling was used to select 30 student nurses from a hospital setting.

RESULTS

Frequency: The number of respondents in the 18-24 years age group is 30. Percent: This represents the percentage of the total respondents, which is 100% in this case since all respondents fall within this age group. Valid Percent: This is also 100%, as all the data is valid and falls within this single age category. Cumulative Percent: This indicates that 100% of the cumulative total falls within the 18-24 years category. The sample consists entirely of females, with no other genders represented. Every individual (30 out of 30) in the sample is female, resulting in 100% for all percentage-based columns. There are no missing or invalid responses, ensuring that the valid percent matches the overall percent. The sample consists of individuals from four different departments. The Medical Surgical department has the highest representation with 33.3%. Pediatrics follows with 30.0%, Gynae with 20.0%, and Psychiatry with 16.7%. The cumulative percent column shows the progressive accumulation of percentages, reaching 100.0% at the final category. The last column shows the count of individuals with each qualification. In this case, there are 30 individuals with a Bachelor's degree.

Table# 1:

		f	%
AGE	18_24YEARS	30	100.0
GENDER	FEMALE	30	100.0
DEPARTMENT	MEDICAL	10	33.3
	SURGICAL		
	PEDIATRICS	9	30.0
	GYNAE	6	20.0
	PSYCIATRY	5	16.7
QUALIFICATION	BACHELOR	30	100.0
CLINICAL	LESS THAN	27	90.0
EXPERIENCE	1 YEAR		
	3 YEARS	3	10.0

mean difference of -8.500 shows that post-knowledge scores are, on average, 8.5 points higher than pre-knowledge scores.

The confidence interval (-10.031 to -6.969) confirms that this difference is statistically significant and not due to random variation.

The t-value of -11.355 and the degrees of freedom (29) further support the statistical significance of the results.

The p-value of 0.000 indicates a highly significant difference between pre-knowledge and post knowledge scores.

Paired Samples Statistics

		Mean	N	Std. Deviation	Value of p
Pair1	PREKNOWLEDGE	57.77	30	8.249	
	POSTKNOWLEDGE	66.27	30	5.614	<.001

DISCUSSION

The study evaluated the impact of a nurse-led educational program aimed at improving communication skills among internee students, focusing on interactions within and between departments. Results showed a significant improvement in communication skills post intervention, with substantial increases in knowledge and skill levels. The study had a response rate of 72.5%, with participants predominantly female and aged between 19 and 33 years. Another study referenced highlighted issues in safety culture among hospital staff, with better results observed among more experienced staff and those with lower educational levels.

The significant difference in pre- and post-knowledge scores, along with large effect sizes, emphasized the effectiveness of the educational program. It was suggested that such structured interventions could enhance communication skills crucial for patient care and interprofessional collaboration, leading to better coordination, reduced errors, and improved efficiency.14

The implications for nursing education and practice are noteworthy, emphasizing the importance of integrating nurse-led educational programs into curricula to improve communication skills. This approach can contribute to better patient outcomes, smoother workflow, and cohesive teamwork among healthcare professionals. Furthermore, the success of the program highlights the potential for nurse-led initiatives to drive educational improvements in various professional development areas.15-19

In summary, the nurse-led educational program had a significant and positive effect on communication skills among internee students, supporting its incorporation into nursing education to enhance collaboration and patient care. Further research is needed to explore the broader applications of nurse-led educational initiatives in healthcare.20

CONCLUSION

The research on a nurse-led educational program targeting communication skills in intern nursing students reveals promising outcomes. Participants showed significant improvements in communication, conflict resolution, and collaboration, suggesting positive impacts on patient care.

However, limitations like small sample size and subjective assessments underscore the need for further robust studies. Despite challenges, the program proves effective, recommending continued investment to foster communication excellence in healthcare teams, thereby enhancing patient outcomes and workplace efficiency.

RECOMMENDATION

- Nurse-led education can foster better collaboration and communication among intern students from different departments, promoting a teamwork approach to patient care.
- Effective communication is critical in healthcare settings. Nurse-led education can improve communication skills, reducing errors and improving patient safety.
- Intern students who participate in nurse-led education may feel more confident in their communication abilities, leading to better interactions with patients, families, and healthcare.

LIMITATIONS

- The number of intern students available for participation might be small, reducing the statistical power and the ability to generalize findings.

- Ensuring informed consent and maintaining confidentiality can be challenging, particularly in a learning environment.
- Obtaining ethical approval for the study may be complex and time-consuming, delaying the research process.

CONFLICT OF INTEREST

. No conflict of interest

ACKNOWLEDGEMENT: None

CONFLICT OF INTEREST: None

GRANT SUPPORT AND FINANCIAL DISCLOSURE: None.

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Original Article

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Impact of the COVID-19 Pandemic on Contact Lens Usage Patterns in Pakistan

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ABSTRACT

Background and Objectives: The COVID-19 pandemic has affected the daily life routine with a reduction in social activities due to lockdown. It has affected the use of contact lenses. The study aimed at evaluating the pattern of contact lens wear and possible explanations for contact lens discontinuation during pandemic in our population.

METHODOLOGY: After taking written informed consent a self-designed printed/online questionnaire was given to study participants. Data was entered and analyzed by SPSS version V.25 software. Frequencies and percentages are given for categorical variables. The continuous data is summarized in the form of mean ±standard deviation or median (IQR) depending upon the distribution. The distribution of data was assessed by Shapiro-Wilk's statistics. To establish relationship between categorical variables Pearson's Chi-square test was applied.

RESULTS: Our study concludes that the individuals had increased the hygiene and replacement schedules for lenses. Almost half of the study subject discontinued contact lens wear during COVID-19 pandemic. The most frequent cause of discontinuation of contact lens wear was social isolation.

CONCLUSION: There is recommendation for contact lens wearers to maintain their contact lens case replacement and cleaning habit. If the wearer is feeling sick because of coronavirus, then they should temporary discontinued their lenses and after recovery resume wearing their lenses but the new ones.

KEYWORDS: Contact lens, COVID-19 impact, Discontinuation, Pattern of CL wear, Contact lens hygiene. CL care, behavior toward CL wear and care.

INTRODUCTION

Contact lenses are the corrective lenses directly placed on the surface of the cornea1. Contact lenses are used to treat refractive error, keratoconus, anisometropia, unilateral aphakia, and also used for therapeutic purposes Quality of life gets improved by using contact lenses because it's not only corrected refractive errors, it also provides a better appearance

1.1. Types: -

There are different types of contact lenses

- Soft bandage contact lenses
  For therapeutic use
- Hard contact lens
- Soft contact lens
- RGP contact lens
- Hybrid contact lens
- Scleral contact lens
- Multifocal contact lens
- Painted contact lenses
  In aniridia, coloboma for cosmetic purpose

Types based on wearing time

Daily wear

Extended wear

Disposable

The prevalence of myopia is increasing day by day. It has been reported that 28 % of the global population was affected by 2010 and nearly 50 % of the global population will be affected by 2050. High myopia is associated with many sight threatening problems and causes permanent visual defects. Although some multifocal and extended depth of focus soft lenses were found effective in slowing down the progression of

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myopia.3 Eye care practitioners or optometrists agree on the importance of myopia management by contact lenses for rapid development or higher myopia in children's .Majority of eye care practitioner in Australia and New Zealand have strong interest in the management of myopia by CL,they think it is the right option and it should be given to everyone. Similarly, it is the common practice in these countries to introduce myopia managing CL in children under 15 year of age. The proportion of ECP's using CL for management of myopia in children more than 10 years of age is much higher (78%) as compared to the ECP's (50%) treating children in less than 8 years of age. Approximately 6 out of 10 eye care practitioners recommend increasing outdoor activities and reduce screen time for pediatric myopes.4,5

COVID-19 Pandemic

The period of COVID-19 Pandemic is considered as March-August 2020.

Contact lens discontinuation

A subject will be considered as having discontinued using the contact lenses if he/she stopped using contact lenses for a week or few days in a week (Pucker & Tichenor, 2020).

The discontinuation will be as

• Temporary

Discontinued the contact lenses temporarily but again continued wearing contact lens during March-August 2020

• Permanent

Never used contact lenses during March-August 2020.

Rationale

Limited data is available describing the pattern of contact lens use changes in COVID-19 pandemic period. Also, the available data show variable results regarding reasons for discontinuation or continuation of CL use during COVID-19. The present study is designed to bridge this gap by investigating the pattern of contact lens wear as well as exploring the reasons for the discontinuation of use if any during the pandemic.

Objectives

• To determine the pattern of contact lens use during COVID -19 pandemic.

• To determine the frequency of patients discontinuing the contact lens wear during the COVID -19 pandemic.

• To determine the causes of stopping contact lens use during COVID -19 pandemic.

METHODOLOGY

1. Study design

This is descriptive study.

2. Place of study

At Nain Sukh Eye Hospital Saddar, Rawalpindi.

3. Study duration

2 months (1/5/2021 – 30/6/2021)

4. Sampling technique

A Convenient sampling technique has been used.

5. Sample size

The following formula (Daniel, 1999) was used for sample size calculation

$$n = Z2\ P\ (1 - P) / d2$$

Where n = sample size,

• Z = Z statistic for a level of confidence, value is 1.96

• P = Expected prevalence or proportion, value is 31.5% (Irfan, et al., 2019).

• d = Precision, value is 0.10

According to this formula, the sample size should be 86.

6. Inclusion criteria

• All contact lens users who are presenting in the eye OPD will be included in this study.

7. Exclusion criteria

• Patients who discontinued their lenses because of any systemic disease or due to ocular pathology i.e. eye trauma or eye infection etc.

8. Data collection procedure

After taking written informed consent a self-designed printed questionnaire was given to walk-in participants and the online version of the self-designed questionnaire was sent to the participants whose data was taken from the register of Nain Sukh eye hospital who visited or attended eye OPD during March to August 2020.

The questionnaire has 4 sections in the Performa used to collect the data i.e. Section 1 representing demographic data of participants (such as name, age, gender, and occupation), and CL history (the type of lenses, wearing time, the purpose of CL wear, and from where they purchased their lenses).Section 2 representing the change in the personal behavior or attitude toward CL wear during COVID-19 if they didn't discontinue their lenses. Section 3 representing the question in which contact lens users tell about how they change the pattern of CL wear and care. Section 4 representing the questions in which contact lens users tell us about possible reasons of contact lens discontinuation.

9. Data analysis

Data was entered and analyzed by SPSS software 25. Frequencies and percentages was given for categorical variables. The continuous data was summarized in the form of mean ±standard deviation or median (IQR) depending upon the distribution. The distribution of data will be assessed by Shapiro-Wilk's statistics. The Pearson's chi-square test was be applied compare the categorical variables.

RESULTS

Our sample comprised of hundred and twenty individuals who were using contact lenses. The incomplete questionnaires were excluded from the results. A total of 99 completed forms were finally used for data analysis. Around two thirds of study subjects were females (n=71, 71.72%) and one third were males (n=28, 28.28%).

The mean age of all study subjects was 25.98±5.78 years. The mean age of females was 26.65±6.39 years and that of males was 24.29±3.33 years.

The results revealed that most of the individuals relied on optical shops for buying contact lenses irrespective of the COVID-19 pandemic. However, there was a significant rise from (6.1%) to (22.2%) in the utilization of online purchasing facilities during the COVID-19 pandemic (p-value = 0.005). In pre COVID era 42 (42.4%) individuals were wearing their lenses for 4-7 hours. The contact lens wearing time did not adequately change due to the COVID-19 pandemic situation (Table 1).

Table 1. Association of various variables describing the pattern of CL use with COVID-19 pandemic

Variables		Frequency		
		During COVID-19 pandemic	Pre-COVID Era	p- value
Contact lens case Replacement duration	1 month	24 (24.2%)	22 (22.2%)	0.973
	3 monthly	18 (18.2%)	18 (18.2%)	
	6 monthly	14 (14.1%)	13 (13.1%)	
	Others	43 (43.4%)	46 (46.5%)	
Contact lens purchase source	optical shop	60 (60.6%)	72 (72.7%)	0.005*
	clinical practitioner	17 (17.2%)	21 (21.2%)	
	Online	22 (22.2%)	6 (6.1%)	
Contact lens wear time	3 hours or less	23 (23.2%)	19 (19.2%)	0.279
	4 to 7 hours	31 (31.3%)	42 (42.4%)	
	7-10 hours	22 (22.2%)	14 (14.1%)	
	more than 10	23 (23.2%)	24 (24.2%)	

Table 2. Frequency distribution of responses given by study subjects who temporarily or permanently discontinued CL usage due to reasons given below during COVID-19 Pandemic

Variables	Discontinuity	Strongly disagree		Disagree		Neutral		Agree		Strongly Agree	
		n	%	n	%	n	%	n	%	n	%
Limited access to purchase the CLs and their solution during lockdown	Temporary (n=23)	1	4.3	0	0	4	17.4	7	30.4	11	47.8
	Permanent (n=26)	0	0	4	15.4	14	53.8	1	3.8	7	26.9
	Total (n=49)	1	2.1	4	8.2	18	36.7	8	16.3	18	36.7
Reduced Social Activity	Temporary (n=23)	1	4.3	0	0	3	13	11	47.8	8	34.8
	Permanent (n=26)	4	15.4	0	0	1	3.8	6	23.1	15	57.7
	Total (n=49)	5	10.2	0	0	4	8.2	17	34.7	23	46.9
Financial restraint	Temporary (n=23)	1	4.3	0	0	5	21.7	1	4.3	16	69.6
	Permanent (n=26)	4	15.4	4	15.4	8	30.8	6	23.1	4	15.4
	Total (n=49)	5	10.2	4	8.2	13	26.5	7	14.3	20	40.8
Fear of acquiring infection	Temporary (n=23)	1	4.3	6	26.1	5	21.7	4	17.4	7	30.4
	Permanent (n=26)	0	0	10	38.5	1	3.8	4	15.4	11	42.3
	Total (n=49)	1	2.1	16	32.6	6	12.2	8	16.3	18	36.7
	Temporary (n=23)	0	0	0	0	4	17.4	6	26.1	13	56.5

***p-value ≤ 0.05 is considered statistically significant**

There were total of 49 (49.5%) individuals who discontinued contact lens usage during COVID-19 Pandemic. It was noted that out of these 49 study subject, 53.1% (n=26) individuals discontinued CL usage permanently from March to August 2020, whereas 46.9% (n=23) individuals temporarily discontinued the CL usage during the same time period. Out of all the study participants, 50.5% (n=50) individuals continued to follow the same contact lens wearing routine as before the COVID-19 pandemic.

When assessing the reasons focusing on either permanent or temporary discontinuation of contact lens usage i.e., 82.6% individuals discontinued their lenses temporarily because they thought spectacles provide protective covering or effect against coronavirus and another reason was the reduced social activities or lockdown. 78.2% individuals responded that limited access was the contributing factor for temporary discontinuation and decrease in the usage of contact lenses. 80.8% individuals discontinued their lenses permanently due to reduced social activities or lockdown and 57.7% individuals were agreed that they discontinued CLs due to fear of infection and spectacle provide protection during COVID-19 Pandemic.

DISCUSSION

Contact lenses have many uses and primarily they are used for vision. Mostly people use contact lenses to look better. COVID-19 has changed a lot of daily practices in almost every aspect of life. Contact lens wear is no exception.

The aim of our study to see the change in pattern of CL wear during pandemic and to find the possible reason of CL discontinuation if they discontinued their lenses during COVID-19 Pandemic.

Another study shows similar results, out of total contact lens users (n= 385, 77%) were females and 75% users use contact lenses to correct refractive error. In current study (n=68, 68.7%) were using CLs for correcting eyesight and out of 99 individual 72 (72.72%) were females and 28 (28.28%) were males (Khan, et al., 2013). There is a little difference because of sample size.6-10

This study conclude that the (n=41, 41.4%) were agreed they reduced their CL wearing time, (n=29, 29.3%) were using their lenses normally as before pandemic and (n=29, 29.3%) individual were showing neutral attitude regarding the statement of reducing CL wearing time during COVID-19 that means few days they are wearing their lenses as usual and few days they changed their wearing time according to their need. Our study results showed an almost similar trend with Morgan, (2020) study where the contact lens wearing decreased a little, however, the ones using the lenses kept the normal routine. In the Morgan (2020) study, a four days survey was conducted on individuals using contact lenses. A response rate of 23 % was enrolled for assessment.11-15 Out of the total sample, eighty-nine percent percent of the cluster described that they were living in a tough 'lockdown' condition with the rest eleven percent reported to spend the life as per routine. Out of the individuals were self-isolated, twenty two

percent reported they were using their lenses like the routine before COVID-19, five (six percent) were using their lenses frequently than normal routine and the remaining sixty-four patients (seventy two percent) were wearing their lenses less than normal routine. Out of those who are living normally eleven individuals, six (fifty five percent) had a usual usage, forty-five percent reported that they were reducing their use of lenses. many replied that they were using their lenses less than usual since they did not have much need or activities that would require the use of lenses. Since the most common activities or occasions of use were reported as when meeting friends or socializing (which wasn't possible due to COVID-19 restrictions). Individuals also reported that they were not much socializing, such as work, parties etc. due to which they did not feel like using lenses. Other reasons for decreased lens wear during lockdown included apprehension about infection (8 %), financial restraints (5 %), glasses being currently more convenient in all the protective measures (three percent), around three percent reported that they were using lenses less due to the inadequacy of availability of the lenses. Around three percent did not have any good reason to stop using lenses in pandemic. The same results were true for our study, where we concluded that the most common concern was a decrease in socializing causing reduced usage of lenses, and risk of infection causing a decrease inclination towards the use. Our results explained that the majority of individuals are lockdown who were using their contact lenses in the past causing a decreased trend in usage16

Our study results revealed that the second common reason for CL discontinuation as documented by 70.7% individuals was the idea of protective effects of the glasses against the ocular transmission of the disease. Literature supports the results

Recommendations are made that non-public protective equipment like eye protection (goggles or safety spectacles), together with face masks should be adopted to cut back the likelihood of infection through either airborne or transmission mechanisms. In the ophthalmology clinic, the employment of slit lamp shields is inspired to decrease the spread of COVID-19 among doctors because of examination.

Similar results were predicted by a study that wiped out Greece. it was reported that in the lockdown in Greece about 42.5% of the individuals believed that the chance of acquiring infection by using contact lenses was less (29%) and discontinuation was extremely effective (13.5%). Only a minority (18 %) of the participants do believe that the use of contact lenses during pandemics increases the chances of COVID-19 infection. This study presented the likelihood of reducing or ceasing the employment of CLs during the COVID-19 pandemic17

Contarty to our results, the study by Cordona (2021) highlighted the contact lens wear behaviors during COVID-19. A total of 247 individuals were included and their responses were analyzed. Around sixty-eight percent replaced their lenses every month, around seventy-five percent used proper cleanliness protocols

and solutions. Around eighty percent possessed the lens casing. These results were slightly different to our results however, our sample did not show a change in preference to a multipurpose solution as such. Due to the COVID-10 pandemic, around twenty-eight percent individuals stopped using lenses, around forty-nine percent reduced the use this was inconsistent with our study results. Patients showed decreased compliance towards

hygiene and maintenance of lenses. Around thirty-six percent individuals did not follow hand hygiene protocols, around thirty two percent avoided changing the lenses. Around twenty-three percent did not clean their cases to place lenses, and twenty-seven percent replied that they were not aware of the maintenance of lenses. They claimed that they were not adequately informed by the health care staff as to how to maintain lenses. There is little difference in these two studies because of study location and awareness in contact lens users.18-20

CONCLUSION

Our study concludes that the individuals had increased the hygiene and replacement schedules for lenses. Almost half of the study subject discontinued contact lens wear during COVID-19 pandemic. The most frequent cause of discontinuation of contact lens wear was social isolation.

8. Recommendation:

The following points should be considered

- Educate the contact lens wearer they should maintain their hand hygiene practice whether there is COVID-19 or not.
- If the wearer is feeling sick then temporary discontinued their lenses and after recovery, resume wearing their lenses but use the fresh ones and dispose of the old contact lenses and their case
- A healthy individual can wear their lenses but should follow the proper cleaning and handling protocol.

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Nida Amin: Survey and design of the work. Data collection. SPSS computing tool. Drafting for approval of the final version to be published

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Original Article

Open Access

Risk factors for shin splints in running sports

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ABSTRACT

Background and Objectives: Shin splints is pain on anterior side of lower leg below knee and above ankle also called medial Tibial stress syndrome (MTSS).Shin splints are common in players participating in running sports. Risk factors for shin splints in these sports are over activity, playing on hard surface, using inappropriate foot wear, foot deformity in players, no warm up and no stretching. To study risk factors for shin splints in running sports in Lahore.

METHODOLOGY: A case control study was conducted in Lahore in 2017 in which 179 players were included and risk factors for shin splints were studied in these players. Data was collected from players, using self-structured questionnaire.

RESULTS: Odds ratio for stretching before running was 0.929, and odds ratio for inappropriate foot wear was 0.971, so they were not proved as risk factors for shin splints. Odds ratio for not warming up before running was 1.383, Odds ratio for players playing on hard surfaces was 1.262, Odds ratio for shin splints in players having any foot deformity was 1.048 and odds ratio for players running more than 100km per week was calculated 1.60 so these are proved risk factors. Mean age for players having shin splints was calculated as 22.2 and the range of age for players was 15 to 30.

CONCLUSION: Odds ratio for over activity, running on hard surface, foot deformity and players not warming up before running were more than 1, so they are proved as risk factors for shin splints. Two risk factors using inappropriate foot wear and stretching before running were not proved as risk factors for shin splints.

KEYWORDS: Shin plates, sports, medial tibial stress syndrome, players

INTRODUCTION

As the involvement of people is increasing in sports, rate of acute and Overuse trauma is also increasing. If a sportsman performs over activity Stress will be on bones and muscles of lower limb (1).Now a days there is much more need to study injuries in running sports.10% cases of injuries caused by over stressing the muscles are frequent in athletes. Pain of shin splints is relieved by resting. Tibial injuries are 75% because of its anatomical importance for runners which may cause leg pain symptoms, medial Tibial stress syndrome MTSS. Shin splints, compartment syndrome, and stress fractures. Feeling of pain is along posteromedial border medially and distally on Tibial surface. On clinical examination tenderness is present at the posterior and medial Tibial borders. Normal pulses on peripheral region and no changes in neurology present (2) .Contributing factors for shin splints includes hard training surface, any deformity in lower extremity, inadequate stretching, inappropriate footwear and inadequate strength. If symptoms overlap diagnosis will be difficult. Pain is localized on medial border of distal third of tibia. For diagnosis of shin pain most common test is palpatory test .shin splints are necessary to diagnosed and rehabilitation is necessary (3).Foot deformities and running style also contributing factors in shin splints. So comparison of players with and without shin pain indicates players with foot deformity and landing on ground with eversion have more shin pain and have abnormal biomechanics. There may be excessive pronation present when causes shin pain. On the other hand training errors ,shoe design ,surface type decreased flexibility and biomechanics contribute in shin splints (4).

The term shin splints was used for many years for pain

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resulting on Tibial region after over activity in running sports .It is also known as medial Tibial stress syndrome .Shin splints is associated with pain after over activity and is exercise induced pain. There are many theories present which explain occurrence and diagnosis of shin splints. Shin splints is mainly diagnosed by periostitis and inflammation (5).Symptoms include pain. Inflammation, discomfort and increased intra compartmental pressure pain increases with activity and relieves with rest. Treatments includes orthotics NSAI,DS and ultrasound(4, 6). Shin splints is a long lasing chronic pain in an athlete causative factors for shin pain are anatomical ,physiological and environmental factors location of shin pain is medial side of tibia and lateral side of tibia on both upper and lower portions of tibia. Intra compartmental pressure is also increased (7).According to American Medical Association(AMA) definition shin splints is also known medial Tibial distress syndrome type2 its diagnosis can be made by following criteria as after repetitive activity on tough grounds player will have pain and discomfort in the leg , or due to over activity of foot flexors. Shin splints is diagnosed on the base of inflammation in shin region in case of fractures or ischemia it is not shin splints (8).

Tearing of muscle fibers at interface of bone and muscle at the muscle-bone interface is a cause inflammation and pain. Therapeutically treatment protocol includes biomechanical interventions (orthotics), NSAID's and ultrasound (9). Shin splints are localized pain in leg and Tibial bone. Shin splints can also mixed with other pathological conditions which cause lack of positive identification of shin splints. A study conducted on multiple aspects of injury of shin splints which included the factors and causes which could lead to shin splints. Investigation of risk factors of shin splints in females is also studied (10).Shin splints are characterized by pain on posteromedial border of tibia.it increases with activity and decreases with rest and on diffused area. On examination there is tenderness all other neurological conditions are normal (11). During running three types of forces act on muscles and these forces are compressive, tensile and shearing. These forces push muscles and deform them (12).

Shin splint is an injury which is very painful and constrains the performance of athlete. Both intrinsic and extrinsic factors causes shin splints. studies indicate that shin splints is not a compartment syndrome so it will not be mixed with compartment syndrome but periostitis is a etiology and it is a medical condition caused by inflammation of the periosteum, a layer of connective tissue that surrounds bone. Some studies indicate changes in bone anatomy can be a cause for chronic shin pain. Shin pain may be felt on tibialis posterior and osseous .Shin splints that are caused by muscle weakness involved muscle may be flexor digitorum muscle. Shin splints may be acute and chronic, acute shin splints may include periostitis and sever pain while chronic shin splints may include minor fracture, muscle tear by compressive forces, and compartmental syndrome (8).

METHODOLOGY

STUDY DESIGN:

Case control study design was used.

STUDY SETTINGS:

In Lahore:

- Football clubs of Lahore registered with Pakistan Football Federation Lahore:

1. Fame football club Lahore.
2. Choung football club Lahore.
3. Township Football club Lahore.

- Hockey clubs of Lahore registered with Pakistan Hockey Federation Lahore:

1. Pakistan national hockey team
2. Quaid -e-Azam hockey club
3. Nobel hockey club
4. Youngster hockey club
5. Johar town hockey club

- Rugby clubs of Lahore registered with Pakistan Rugby union.

1. Pakistan National Rugby team.
2. Rugby Union players

DURATION OF STUDY:

This study was completed in 3months after approval of synopsis.

SAMPLE SELECTION CRITERIA:

Inclusion criteria for cases:

- Players with shin splints.
- Both genders equally included.
- Players' ages should be 15 to 30.

Exclusion criteria for cases:

- Previous history of fracture of tibia.
- Presence of any other neurological or vascular pathology of lower limb.

Inclusion criteria for controls:

- Players without history of shin splints.
- Both genders equally included.
- Age should be 15 to 30.

Exclusion criteria for controls:

- Previous history of fracture of tibia.
- Presence of any other neurological or vascular pathology of lower limb.

METHODOLOGY / DATA COLLECTION PROCEDURE:

A case control study was conducted in Lahore in 2017 in which 179 players were included and risk factors for shin splints were studied in these players. An informed consent was taken from the subjects included in study. Data was collected from players, using self-structured questionnaires.

SAMPLE SIZE:

Sample size was179 USING RAO SOFT with 95% confidence interval and 5% margin of error response distribution is 70% and population will be 400.

Formula is:

x = Z(c/100)2r (100-r).

n = N x/. ((N-1) E2 + x).

E = Sqrt [(N - n) x/n (N-1)].

n= the sample size.

E= margin of error.

r = the fraction of responses that you are interested in.

Z(c/100) is the critical value for the confidence level c.

SAMPLING. TECHNIQUE

Non probability convenient sampling technique was used.

RESULTS

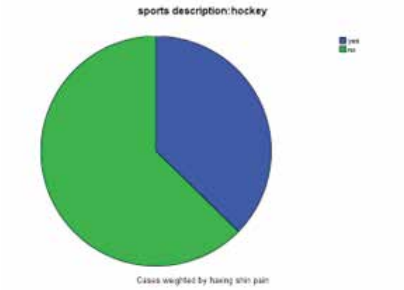
Mean age of players having shin pain 22.6 and mean age not having shin pain 23.7.

Total 179 players from Hockey, Soccer and rugby. Female players were 17 and 162 were male players.

Table 1: Socio-demographic profile of players having Shin Splints:

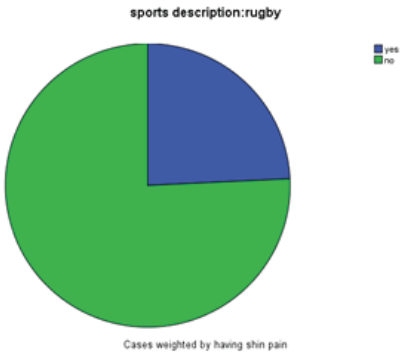
Socio-demographic profile:		Shin pain	
		Yes(cases)	No(controls)
Age(mean±Sd) (15-30)		22.2±3.581	23.7±2.8
Gender	Male	83	79
	female	7	10

This pie chart shows in hockey player's incidence of shin splints very high.



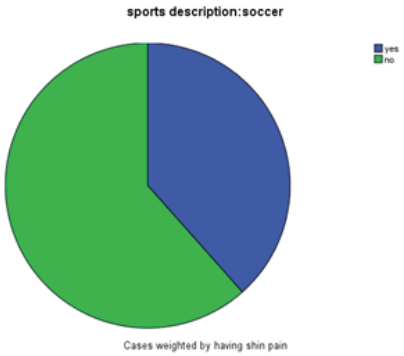
Pie chart1: Incidence of shin splints in hockey players

This pie chart shows in rugby players incidence of shin splints was low.



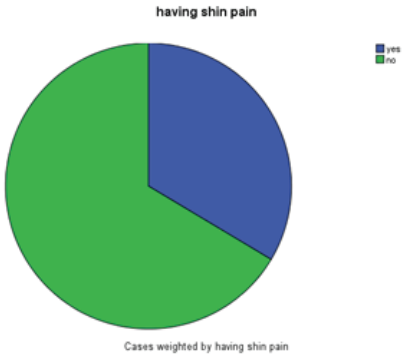
Pie chart2: Incidence of shin splints in Rugby players:

This pie chart shows in soccer players incidence of shin splints is high as hockey players.



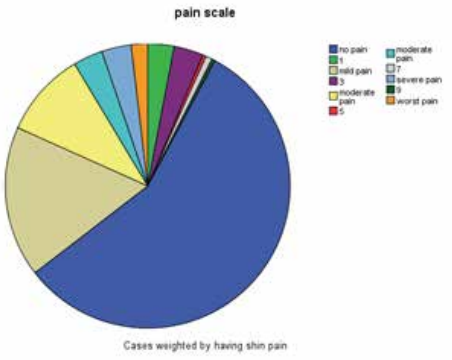
Pie chart3: Incidence of shin splints in soccer players

Large number of Players having shin splints.



Pie chart4.Cases and controls

Pain scale indicates incidence of shin splints pain high percentage of players having mild pain.



Pie Chart5.VAS

Table2. Odds Ratio for relative risk factors

Risk Factors		Shin Having splints		Odd's ratio value
		Yes	No	
1. No warm up	Yes	84	6	1.383(0.460-4.16)
	No	81	8	
2. No Stretching before running	Yes	76	14	0.929(0.409-2.410)
	No	76	13	
3.Hard training surface	Yes	66	24	1.262(0.661-2.410)
	No	61	28	
4.Inappropriate footwear	Yes	74	16	0.791(0.356-1.759)
	No	76	13	

DISCUSSION

Stephen B Thacker in his study in 2002 about risk factors for shin splints found intrinsic and extrinsic risk factors for shin splint, intrinsic risk factors include age, gender, conditioning, physical defects and psychological defects. Extrinsic risk factors include type of sports played, equipment used by the players e.g. shoes, other extrinsic factors are playing surface and type of sports (8). In accordance with my study following risk factors, foot deformity1.098, no warm up before running1.383, and training on hard surface1.262 have odds ratio more than one and were proved as risk factors for shin splints. Using inappropriate foot wear have Odds ratio 0.791 was not proved in my study .On the other hand in hockey players all of them use appropriate footwear while training but there training surface is hard, they train on ground with thin green carpet.

In another study in 2014 on 15 years old lifesaving competitor risk factors identified for shin splints are Foot posture is considered as main risk factor for shin splints. For checking foot deformity foot posture index (FPI) was used in this study (17). Odds ratio calculated for players having foot deformity was 1.04.Foot deformity was proved as Risk factor for shin splints in my study. It was proved if a player having any foot deformity including varus valgus or flat foot he will have shin splints. Those players having any foot deformity shin splints may become chronic.

Other studies in 1985 by Huges et.al and in 2003 by Kvale et.al on risk factors for shin splints identifies symptoms as pain on anterior two third of tibia and Medio lateral region of tibia. In these studies risk factors and etiology of shin splints was studied. Main risk factors identified in this study are excessive running, hard training surface, and gender and foot deformity (10, 12). In accordance with my study following risk factors, foot deformity1.098, hard training surface1.262 and players over training running more than 100 km per week odds ratio 1.86 over training was proved as a strong risk factor in my study. Risk factors identified in this study are approved risk factors and odds ratio calculated was more than one.

Another study in 1994 on incidence of shin splints in contact running sports risk factors were identified. Shin splints incidence increases by forceful contact to ground of players while running and jumping on hard surface (18) . Odds ratio of players running on hard surfaces 1.2 so in accordance with my study this risk factor proved.

A study in 2001 conducted on high school runners in America defines etiology of shin splints as stress injury and it occurs in runners running long distances In this study etiology for shin splints is based on three categories as training errors ,interactions between inappropriate shoes and ground and anatomical deformities (4, 19) .Odds ratio calculated for inappropriate footwear was 0.791 this risk factor not proved in accordance with my study. Foot deformity has odds ratio 1.04 was proved. For players running long distances more than 100 km per week odds ratio was 1.6 this risk factor proved. Training errors include training on hard surfaces, no stretching and no warm up. Odds ratio of players running on hard surfaces 1.2 so in accordance with my study this risk factor proved. Odds ratio for no warm up was 1.383 was proved and no stretching has odds ratio 0.929 was not proved in my study.

According to a study in 2014 by JP Difiori it was difficult to set a limit for over use of muscles .Studies indicate that players running more than 16hours per week having more shin pain average half of a soccer match of equals running 12 km. Average range for overuse of muscles is 100km per week (20) . This risk factor approved strongly as a risk factor in accordance with my study. Odds ratio of players running more than 100km per week was 1.6.

According to study in 2008 shin splints are caused by

over activity and diagnosed by pain at shin bone. Due to stress periostitis may be present a medical condition caused by inflammation of the periosteal, a layer of connective tissue that surrounds bone (3) . Over activity is a proved risk factor in my study having odds ratio 1.6.

Study published by ministry of defense in 2008 in London. According to this study shin splints accounts for 6-16% injuries that occur in running sports. Main risk factors are as following over activity, foot deformity , no warm up, training on hard surfaces and no stretching (5) .In my study odds ratio calculated for over activity running above 100 km per week was 1.6 which indicates that this is a strong risk factor anatomical foot deformities have odds ratio1.098 ,no warm up 1.383,hard training surface 1.262 are proved risk factors and no stretching have odds ratio 0.929 was not proved in my study.

CONCLUSION

This study was conducted to study risk factors for shin splints (MTSS) results shows incidence of shin splints in different age groups and also proves risk factors for shin splints. Mean age for players having shin splints was calculated 22.3years.Players included in study having age range from 15 to 30. Relative risk factors for shin splints were studied in running sports like Hockey, Rugby and Soccer. There were six risk factors included in my study which are following any foot deformity 1.098, over activity running more than 100km per week1.6, warm-up1.382, and running on hard surfaces 1.262, inappropriate foot wear 0.791and no stretching0.929 four of these risk factors having odds ratio more than one and were proved as risk factors two risk factors stretching before running and foot wear have odds ratio less than one and were not proved. If a player runs on a hard surface ground reactional forces were increased and caused shin splints. Foot deformity may contributes to chronic shin splints.

Limitations:

Since shin splints can resemble other disorders, such as stress fractures, diagnosing them can be challenging. Furthermore, psychological issues like the anxiety of losing fitness could keep athletes from completely following rest schedules. Since there is no one-size-fits-all answer, a customized strategy is required. Economical or practical considerations may also restrict access to resources and expert care, such as physical therapy or custom orthotics.

Recommendation:

Athletes should wear suitable footwear, raise their exercise intensity gradually, and frequently stretch and strengthen their lower leg muscles, especially the tibialis anterior and calves, to prevent and manage shin splints. Risk can also be decreased by choosing softer running surfaces, enhancing running form, and implementing cross-training. It's also crucial to treat any muscular imbalances and recuperate properly with rest days.

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Original Article

Open Access

Effects of educational program on Nurses knowledge and practice regarding management of peripheral vascular access at tertiary care hospital

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ABSTRACT

Background and Objectives: In the healthcare industry, effective communication is essential, but intern students frequently struggle with it, which can result in mistakes and unfavorable outcomes. To assess the level of knowledge and practice of nurses regarding the management of peripheral vascular access.

METHODOLOGY: The technical design included research design, setting, participants and tools of data collection. A quasi experimental design was used pre, post and fallow up after 2 months to evaluate the effect of an educational program on nurses' practice regarding management of peripheral vascular acces.the study was conducted in the intensive care units (ICUs) and Medical Departments at Ali Fatima Hospital in Lahore city. Convenient sample of all available nurses (50 nurses) divided into 36 nurses in I.C.U units and 14 nurses in medical departments who are caring patients undergoing peripheral vascular access working in the above mentioned units at the time of the study

RESULTS: Hedges' g and Cohen's d both show that there is a statistically significant and practically significant difference in knowledge between before and after the intervention. This firmly demonstrates the intervention's efficacy.

CONCLUSION: There was significant improvement in nurses' practice between pre and immediately post program implementations. Also there was a significant relation among factors affecting nurses practice and demographic characteristics of all the participants nurses regarding mainly to years of experience, education level and age.

KEYWORDS: Healthcare, communication, nurses, Intensive care unit, knowledge

INTRODUCTION

In both inpatient and outpatient settings, vascular catheters are frequently used to sustain patients' status and are crucial to contemporary healthcare. It's critical to provide nursing care for peripheral vascular lines. To reduce the risks associated with peripheral vascular lines, a thorough understanding of the process is quite beneficial. The principles of safe insertion, injection, dressing change, and flushing procedure must be ingrained in the minds of all staff members.1Assessing how an educational program affects nurses' practice in managing patients receiving peripheral vascular access is the study's main goal. Design of research: Quasi-experimental design was utilized to conduct the study at Ali Fatima hospital and Green International University in Lahore. The study nurses consisted of 50 nurses.2

Peripheral vascular access (PVA) is a commonly used procedure in clinical settings, with a crucial role in the administration of medications, fluids, and blood products. Peripheral intravenous catheters (PIVCs) are typically used for short-term access, yet the procedure, while routine, is not without risks. (Hassanein and Sobh 2021) Improper management of PVA can lead to various complications such as infection, infiltration, phlebitis, and thrombosis, which can significantly affect patient outcomes and increase healthcare costs. Nurses play a central role in the insertion, management, and maintenance of these access devices,

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making their knowledge and skills crucial to patient safety.3

Educational programs designed to improve nurses' competency in managing peripheral vascular access have gained increasing attention in recent years. These programs aim to enhance nurses' knowledge of best practices, boost their confidence, and improve their ability to handle the complexities associated with PVA.(Bahl, Mielke et al. 2025) This is essential because, despite the common nature of PVA procedures, many nurses report gaps in their knowledge and skills, leading to inconsistent practices and potential adverse outcomes.4

The impact of educational interventions on nursing practice is well-documented in the literature, with studies consistently showing positive effects on nurses' knowledge, skills, and ultimately patient care outcome.5 This introduction will explore the effects of educational programs on nurses' practices regarding the management of patients undergoing peripheral vascular access, drawing upon recent research to illustrate the importance of such initiatives.6

Peripheral vascular access, primarily achieved through the insertion of a peripheral intravenous catheter (PIVC), is essential for patient care in various clinical settings. However, despite its frequent use, improper management of PIVCs can result in several complications, such as infection, extravasation, and clot formation.7 According to the Centers for Disease Control and Prevention (CDC), healthcare-associated infections linked to intravenous catheters can lead to prolonged hospital stays, increased healthcare costs, and higher morbidity and mortality rates. Given the critical role of nurses in the insertion and maintenance of these devices, it is crucial that they have comprehensive training to minimize the risks associated with PVA.8

Nurses are required to maintain PIVCs, recognize complications, and intervene appropriately when issues arise. However, studies have shown that there are significant gaps in nurses' knowledge regarding the insertion and management of these devices. A study by found that despite the widespread use of PIVCs, many nurses lacked the knowledge necessary to prevent complications such as infections or phlebitis. These findings highlight the need for structured educational programs to ensure that nurses are adequately prepared to manage PVA effectively.9

Educational programs are designed to address these knowledge gaps and provide nurses with the necessary skills to ensure safe and effective PVA management. These programs can take various forms, including workshops, online courses, simulation training, and hands-on practice sessions. A critical component of these programs is the emphasis on evidence-based practices, infection control, and the prevention of complications associated with PVA. 10

The effectiveness of educational programs has been a subject of numerous studies, with most research showing a clear positive impact on nursing practice. A study by demonstrated that an educational program significantly improved nurses' knowledge and practices regarding the management of PVA in a hospital setting.11 The study, which involved 100 nurses, found that after attending the program, nurses were able to demonstrate increased competence in PIVC insertion, maintenance, and complication prevention. Nurses who received the educational intervention also exhibited a heightened awareness of infection control protocols, which led to a reduction in PVA-related complications such as infections and thrombophlebitis. This study underscores the direct correlation between educational interventions and improved nursing practices in PVA management.12

Another study by (Al-Fadhli et al 2022) focused on the impact of a blended learning program, which combined online training with in-person simulation exercises. The study, conducted in a large teaching hospital, included 150 nurses. After completing the training program, nurses demonstrated a significant improvement in their ability to insert PIVCs correctly and manage complications such as infiltration and phlebitis. The study highlighted that blended learning methods, which offer flexibility and practical experience, can effectively enhance both theoretical knowledge and hands-on skills, making them particularly beneficial for nurses working in busy clinical environment. 13

The ultimate goal of educational programs for nurses is to improve patient care and safety. Evidence from several studies has shown that when nurses are better trained in PVA management, patient outcomes improve significantly. According to a study by Finnegan et al. (2021), hospitals that implemented comprehensive educational programs on PIVC management saw a reduction in PVA-related complications, such as infections and phlebitis, resulting in improved patient outcomes and lower healthcare costs. Nurses who underwent specialized training were better able to detect complications early and intervene promptly, which contributed to faster recovery times and reduced hospital readmission rates 14

Additionally, improved nursing practices through education contribute to higher patient satisfaction. Patients who experience fewer complications related to

PIVCs, such as infections or extravasation, report higher satisfaction with their care. A study by Mann et al. (2022) found that patients whose nurses had completed specialized training in vascular access management reported a more positive care experience, especially in terms of comfort and the perceived safety of their intravenous lines.15

METHODOLOGY

The materials and methods for this research design were utilizes using 4 designs.as follows

(I) TECHNICAL DESIGN:

The technical design included research design, setting, participants and tools of data collection.

(2) Research Design:

A quasi experimental design was used pre, post and fallow up after 2 months to evaluate the effect of an educational program on nurses' practice regarding management of peripheral vascular access.

(3) Study Setting:

The study was conducted in the intensive care units (ICUs) and Medical Departments at Ali Fatima Hospital in Lahore city. The intensive care unit (ICU) contains 18 beds divided into 2 main units: general ICU, and Surgical ICU. The medical departments contain 56 beds divided into: medical disease unit, tropical unit, chest unit, gastric unit and rheumatic disease unit.

(4) Study samples:

Convenient sample of all available nurses (50 nurses) divided into 36 nurses in I.C.U units and 14 nurses in medical departments who are caring patients undergoing peripheral vascular access working in the above mentioned units at the time of the study.

Duration of study: duration of this study is 21 February, 2025 to June, 2025.

Sampling techniques: stratified sampling techniques.

Inclusion criteria: Nursing Novice (interns) and nursing students and nursing officers.

Exclusion Criteria: Doctors and Technicians

Equipment: intravenous line (IVL), cotton swabs, tourniquet, IVL fixer, sticking.

Tool:

Two tools were used to collect data

Tool I was assessment questionnaire and

Tool II was observational checklist to assess the knowledge of nurses.

RESULTS

The frequency distribution of scores among a group of 54 individuals on a variable called "preknowledge" is shown in this table. Fifty participants gave valid answers out of the total, and four (7.4%) were missing.

Table 1: An explanation of the Preknowledge Frequency

Preknowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19.00	1	1.9	2.0	2.0
	20.00	5	9.3	10.0	12.0
	21.00	5	9.3	10.0	22.0
	22.00	8	14.8	16.0	38.0
	23.00	16	29.6	32.0	70.0
	24.00	7	13.0	14.0	84.0
	25.00	4	7.4	8.0	92.0
	26.00	3	5.6	6.0	98.0
	27.00	1	1.9	2.0	100.0
	Total	50	92.6	100.0	
Missing	System	4	7.4		
Total		54	100.0		

The scores, which range from 19 to 27, represent the participants' prior knowledge levels prior to any kind of evaluation or intervention. Below is a summary of the data:

• 16 participants stated that the most common score (mode), which accounts for 32% of all valid responses, was 23.

• The second most common score is 22, observed in 8 participants (16%).

• Scores of 20 and 21 each occurred in 5 participants (10% each).

• Very few participants scored at the extremes:

• Only 1 participant scored 19 (2%).

• Only 1 participant scored 27 (2%).

The cumulative percent column indicates that 70% of the participants scored 23 or below, and 100% scored 27 or below, confirming that this is the upper limit of observed scores. This distribution suggests that the data is slightly concentrated around the mid-to-high range (especially scores from 22 to 24), with fewer participants at the lower and upper extremes. This may indicate that most participants had a moderate to moderately high level of preknowledge

Table 2: Descriptive Summary of the Post knowledge Frequency

post knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	47.00	1	1.9	2.0	2.0
	48.00	1	1.9	2.0	4.1
	49.00	4	7.4	8.2	12.2

	50.00	6	11.1	12.2	24.5
	51.00	6	11.1	12.2	36.7
	52.00	7	13.0	14.3	51.0
	53.00	6	11.1	12.2	63.3
	54.00	2	3.7	4.1	67.3
	55.00	9	16.7	18.4	85.7
	56.00	4	7.4	8.2	93.9
	57.00	3	5.6	6.1	100.0
	Total	49	90.7	100.0	
Missing	System	5	9.3		
Total		54	100.0		

This table presents the distribution of scores on the variable "post knowledge", likely collected after some form of learning or instructional intervention. Out of 54 participants:

• 49 provided valid responses (90.7%)

• 5 responses were missing (9.3%)

Score Range and Distribution:

• Scores range from 47 to 57, which is a wider and generally higher range than the "preknowledge" scores.

• The most frequently observed score is 55, reported by 9 participants (18.4% of valid responses).

• Other relatively common scores include: o 52 (14.3%) o 50, 51, and 53 (each around 12.2%)

Distribution Pattern and Skewness:

• The distribution is centered in the 50–55 range, indicating that the majority of participants performed in this mid-to-high range following the intervention.

• Only six people overall participated in the lower end of the distribution (scores 47–49).

• The data is largely accounted for by the higher scores (55–57) (16 participants, or roughly 32.7%).

Cumulative Percentages:

• About 51% of participants scored 52 or below.

• 85.7% scored 55 or below.

• All valid responses (100%) fall within the 47–57 range.

Overall Interpretation:

Compared to the preknowledge scores, the post knowledge scores appear higher and more concentrated in the upper range, suggesting an improvement in knowledge after an intervention. The most common score (mode) shifted upward, and the frequency of lower scores decreased. This points to a general gain in knowledge among participants

Table 3: Description of the Paired Samples

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	preknowledge - post knowledge	-29.71429	3.12916	.44702	-30.61309	-28.81548	-66.471	48	.000

The table presents the results of a paired samples t-test, used to evaluate whether there is a statistically significant difference between two related means — in this case, the scores before and after an intervention (referred to as preknowledge and post knowledge).

Pair 1 (preknowledge – post knowledge):

This row shows the comparison between the scores before and after the intervention.

• Mean Difference: -29.71

This indicates that post knowledge scores were, on average, 29.71 points higher than preknowledge scores. The negative value shows improvement (assuming higher scores indicate more knowledge).

• Standard Deviation: 3.13

Reflects the variability in the differences between pre and post scores.

• 0.447 is the standard error mean.

The sample mean difference's estimated standard deviation is this. A smaller number denotes a more accurate assessment.

• [-30.61, -28.82] is the 95% CI for the difference.

Since 0 is not included in this interval, the difference is statistically significant. With a 95% confidence level, we can say that the true mean difference is between -30.61 and -28.82.

• T-value: -66.47

A very large negative t-value, suggesting a strong difference between the two conditions.

• Degrees of Freedom (df): 48

Reflects the number of participants minus one, implying data from 49 individuals.

• Significance (2-tailed): .000

the p-value is less than .001, showing a highly significant difference between pre and post scores.

Table 4: The denominator used in estimating the effect sizes

Paired Samples Effect Sizes

			Standardizer	Point Estimate	95% Confidence Interval Lower	Upper
Pair 1	preknowledge - post knowledge	Cohen's d	3.12916	-9.496	-11.407	-7.579
		Hedges' correction	3.15388	-9.422	-11.317	-7.520

a. The denominator used in estimating the effect sizes. Cohen's d uses the sample standard deviation of the

mean difference.
Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.

The Effect Sizes Table for Paired Samples:
- There are two widely used standardized effect size measurements in this table:
- Cohen's d Point Approximation: 3.129
- The confidence interval is [-11.407, -7.579]. [-11.407,-7.579]

Meaning: A very large effect size is indicated by a Cohen's d = 3.13.
In accordance with standard benchmarks:
- 0.2 is little.
- 0.5 is equivalent to medium.
- 0.8 indicates a large
- >2 indicates a very significant

This indicates that the intervention had a significant effect on knowledge.
Hedges' Correction
- Point Estimate: 3.154
- Confidence Interval: [−11.317,−7.520][-11.317, -7.520][−11.317,−7.520]
- Interpretation: Similar to Cohen's d but with a small-sample bias correction.
- Hedges' g is used especially when the sample size is small (as in this case, n=49n = 49n=49).
- The estimate is nearly the same, reinforcing the conclusion of a very large effect.

The negative values in the confidence intervals (e.g., −11.407-11.407−11.407) refer to directionality because preknowledge minus post knowledge is negative — but in terms of magnitude, they still represent a large positive effect (i.e., post > pre).

DISCUSSION

An accurate picture of the success of the instructional intervention given to the participants can be obtained by analyzing the pre knowledge and post knowledge scores. The pre knowledge scores, which were gathered from 54 participants (50 of whom provided valid answers), indicate that the group's baseline level of comprehension before any official training was provided was moderate. Scores varied from 19 to 27, with 16 participants (32% of valid responses) reporting the highest score of 23. There was little variation in starting knowledge, as indicated by the majority of scores clustering closely between 22 and 24. 70% of participants received scores of 23 or lower, according to the cumulative frequency data, indicating that most of the group began with only rudimentary knowledge. Only one participant achieved a score of 19, and another.16

Following the intervention, the post knowledge scores demonstrate a notable upward shift in performance. The post-intervention scores, based on 49 valid responses, range from 47 to 57—a significantly higher and broader range than the pre-intervention scores. The most common score shifted from 23 to 55, with 9 participants (18.4%) achieving this score. Additionally, a large portion of participants scored within the 50–55 range, and 16 participants (approximately 33%) scored between 55 and 57. Only a small fraction of participants remained at the lower end of the distribution (47–49), which included just six individuals in total. This suggests that the intervention was broadly successful in raising knowledge levels, with the vast majority of the group achieving scores near the upper end of the new distribution. The upward trend in both the mode and overall distribution clearly shows that the participants benefited significantly from the instructional content or method.17

The change in distribution from preknowledge to post knowledge reveals a strong positive outcome. Where the preknowledge scores showed a tight concentration in the low-to-mid-twenties, the post knowledge scores are not only higher but also more widely spread, especially toward the upper end of the range. This indicates that the intervention not only improved knowledge on average but also allowed for greater differentiation among participants. Some individuals may have reached a deeper or more advanced level of understanding, as evidenced by the higher scores near the upper limit of the post-test range. Furthermore, the fact that relatively few participants remained in the lower scoring range post-intervention suggests that the instructional method was effective even for those who began with less background knowledge.18

These results collectively support the conclusion that the instructional intervention had a significant positive impact on learning outcomes. The substantial upward shift in scores across the board highlights the success of the intervention in enhancing knowledge retention and comprehension. The data suggest that the majority of participants moved from a moderate pre-existing level of knowledge to a significantly improved post-intervention understanding. In addition, the effectiveness of the intervention appears consistent across the group, with benefits observed at all levels of prior knowledge. This demonstrates not only the instruc-

tional value of the intervention but also its broad applicability and inclusiveness. Future implementations of this approach could continue to yield similar gains, making it a valuable tool for knowledge development in similar populations.19-20

CONCLUSION

There was significant improvement in nurses' practice between pre and immediately post program implementations. Also there was a significant relation among factors affecting nurses practice and demographic characteristics of all the participants nurses regarding mainly to years of experience, education level and age.
Recommendations:

• Providing continuous nursing education to upgrade their practice concerning patients care with peripheral vascular access.

• Conflict between nurses should be solved by nurse administrator to save their efforts toward patient care.

• Replication of the current study on a large probability sample from different geographical areas to achieve more generalized results.

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Kinza babar , Raheela , Sheeza: Substantial contributions to the conception and design of the work.

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Original Article

Open Access

Effects of Modulating Environmental Stimuli on pain experience During IV Cannulation in Neonates in NICUs

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ABSTRACT

Background and Objectives: To assess the nurse's knowledge regarding effects of modulating environmental stimuli on pain experience during IV Cannulation in neonates in NICUs.

To evaluate the nurse's knowledge after nursing interventions of environmental stimuli on pain experience during IV-Cannulation in Neonates in NICUs.

METHODOLOGY: A quasi-experimental study design was conducted in Ali Fatima Hospital Lahore. The study involved 30 participants' female nurses who were chosen using a combination of universal and convenient sampling method. The date collection process involved the use of modifier Questionnaires. Questionnaires section consisted a non-randomized controlled trial with pre and post tests which aimed to assessing the knowledge of nurses and to evaluate the knowledge after nursing interventions. The intervention group (n=30) nurses received the comprehensive knowledge about pain management in Neonates in NICUs. After that, the data was analyzed using the SPSS software.

RESULTS: The sample consists of 30 participants. 56.7% (17 participants) are aged between 20-22 years. 43.3% (13 participants) are aged between 23-25 years. All participants (100%) are female, indicating a gender-specific sample. 33.3% (10 participants) hold a diploma. 66.7% (20 participants) have a degree. The significant increase in knowledge scores from pre-intervention (mean = 9.4000) to post-intervention (mean = 13.9667) indicates that the intervention (modulating environmental stimuli) effectively enhanced nurses' knowledge regarding the management of pain during IV -Cannulation in neonates. The p-value (Sig. 2-tailed) is .000, indicating a statistically significant improvement.

CONCLUSION: The sample consists of 30 participants. 56.7% (17 participants) are aged between 20-22 years. 43.3% (13 participants) are aged between 23-25 years. All participants (100%) are female, indicating a gender-specific sample. 33.3% (10 participants) hold a diploma. 66.7% (20 participants) have a degree. The significant increase in knowledge scores from pre-intervention (mean = 9.4000) to post-intervention (mean = 13.9667) indicates that the intervention (modulating environmental stimuli) effectively enhanced nurses' knowledge regarding the management of pain during IV -Cannulation in neonates. The p-value (Sig. 2-tailed) is .000, indicating a statistically significant improvement.

KEYWORDS: Neonates, nicu, IV cannulation, pain, environmental stimuli, randomized controlled trial.

INTRODUCTION

Neonates admitted to NICUs often undergo various painful procedures as part of their medical care, with intravenous (IV) cannulation being one of the most common. Pain experienced during such procedures not only causes distress to the neonates but can also have long-term physiological and psychological consequences. Therefore, effective pain management strategies are essential in neonatal care settings. Modulating environmental stimuli has emerged as a promising approach to alleviate pain and distress during medical procedures in neonates. Environmental factors such as noise, light, touch, and non-pharmacological techniques can influence the neonate's perception of pain and stress. By optimizing these stimuli, it is possible to create a more conducive environment for pain management.1-4

This literature review provides a summary of the current literature on pain management of neonates.

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Effective pain management presents positive patient outcomes, such as a decrease in length of stay in hospital; reduced incidences of infections; and steady increase in the weight of a child. There is the belief that neonates do not feel pain5-8

The total number of newborns who were candidates to receive a IV-Cannulation was 80, of whom 60 were included in the study. The neonates have no surgery and congenital anomalies. Both genders were included in this study; 24.6% of them suffer from respirato distress syndrome and prematurity simultaneously.9

A study has shown that the nurses' knowledge and attitude are important in implementation of pain management program, guidance on the possible improvement of pain management is instructive in design and hold training courses to inform the Personnel. According to the review, the root causes of insufficient pain management in NICUs are NICU nurses' lack of expertise, lack of collaboration, and ineffective communication10-12

METHODOLOGY

A quasi-experimental study design could be suitable, specifically a non-randomized controlled trial with pre-and post-tests.

The research work was conducted in Ali Fatima Hospital Lahore. Slovin's formula was used to determine the sample size for simple random sampling. The formula is given by n = N / (1 + N (e^2)), where n is the sample size, N is the population size, and e is the desired level of precision.

The sample size was (n= 30) nurses. The population would consist of registered pediatric nurses working in either inpatient or outpatient settings where IV therapy is regularly administered.

Non-Randomized sampling techniques was used. The pre and post results were analyses using paired sample statistics to determine the effects of interventional education. The research setting for this study was the neonatal intensive care unit at Ali Fatima Hospital Lahore. At Hospital, the upgraded neonatal unit can accommodate 20 babies, including provision for kangaroo mother care (KMC). The baseline characteristics of participant was collected with the help of questionnaire after distributing the questionnaire among the participants.

RESULTS

The sample consists of 30 participants. 56.7% (17 participants) are aged between 20-22 years. 43.3% (13 participants) are aged between 23-25 years. All participants (100%) are female, indicating a gender-specific sample. 33.3% (10 participants) hold a diploma. 66.7% (20 participants) have a degree.This literature review provides a summary of the current literature on pain management of neonates.

Table 1: Demographic table shows variable of frequency and percentage.

		Frequency	Percent
Age	20-22	17	56.7
	23-25	13	43.3
Gender	Female	30	100.0
Education	Diploma	10	33.3
	Degree	20	66.7

Statistical Package for the Social Sciences was used to analyze the gathered data which reflect the data as graphical representations.

Pre-Intervention Knowledge: The mean score is 9.4000, with a standard deviation of 3.71019.

T test (paired sample test)

Paired Samples Statistics				
		Mean	N	Value of p
Pair 1	Pre Knowledge	9.4000	30	<0.001
	Post Knowledge	13.9667	30	

The pre-training results showed a moderate to high level of understanding across various aspects related to modulating environmental stimuli for pain management during IV cannulation in neonates. However, there were some areas of uncertainty or misunderstanding, as indicated by incorrect responses ranging from 16.7% to 50.0%.

The post-training results demonstrated a significant improvement in understanding, with the majority of respondents correctly answering questions across all aspects covered in the training. Correct responses ranged from 86.7% to 100%, indicating a comprehensive grasp of the material.

Before the training program, there were notable knowledge gaps and inconsistencies among participants, with incorrect responses observed in several questions.

The training program effectively addressed these knowledge gaps and uncertainties, resulting in a substantial improvement in understanding and proficiency among participants. The training program had a positive and significant impact on participants' understanding of modulating environmental stimuli for pain management during IV cannulation in neonates.

DISCUSSION

There are great opportunities for neonatal nurse to improve their knowledge and skills, and highly training in the management of pain by performing non-pharmacological methods that have proven to be powerful aids in reducing procedural pain in neonates. 13-14 Regarding the nurses' characteristics, the present study results revealed that, This suggests that the intervention

successfully addressed knowledge gaps and provided valuable insights into pain management for neonates.

The 95% confidence interval for the mean difference does not include zero, indicating that the improvement in knowledge is statistically significant.15-16 The findings suggest that the intervention of modulating environmental stimuli significantly improves nurses' knowledge regarding pain management during IV cannulation in neonates. This improvement in knowledge is likely to contribute to better pain management practices, enhancing the overall care and comfort of neonates in the NNU.

These results highlight the importance of interventional education regarding environmental factors in pain perception and management in neonates. By creating a supportive environment with reduced sensory input, it is possible to minimize the pain and distress associated with medical procedures such as IV cannulation. This has significant implications for neonatal care practices in NICU settings, where optimizing pain management is paramount.17-20

CONCLUSION

Providing education to nurses regarding Modulating environmental stimuli during IV cannulation in neonates admitted to NICUs can effectively improve their understanding of neonatal pain and management. Implementation of such interventions may contribute to enhanced neonatal care practices in NICU settings. Further research is warranted to validate these findings and explore additional strategies for optimizing pain management in neonates.

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Original Article

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Effect of Nursing Intervention for Management and Prevention of Needle Stick Injuries among Student Nurses

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ABSTRACT

Background and Objectives: Needle stick injuries (NSIs) are a significant occupational hazard among student nurses. This study evaluates the effectiveness of a nursing intervention program designed to manage and prevent NSIs. NSIs pose a serious threat of infection transmission, including hepatitis B contagion (HBV), hepatitis C contagion (HCV), and mortal immunodeficiency contagion (HIV)(Al-Mugheed, Farghaly et al. 2023).

METHODOLOGY: A quasi-experimental design was employed involving student nurses from Nursing School. The intervention included education sessions, hands-on training.

RESULTS: Post-intervention data showed a significant reduction in the incidence of NSIs among the participants. Additionally, there was an improvement in knowledge and practices related to NSI prevention and management. The post survey showed the significant result of (<0.001).

CONCLUSION: The nursing intervention program was effective in reducing NSIs and enhancing preventive measures among student nurses.

KEYWORDS: Needle stick injuries (NSIs),Student nurses,Nursing intervention program, Prevention Hepatitis B (HBV) , Hepatitis C (HCV), HIV, Quasi-experimental design ,Education sessions

INTRODUCTION

Needle stick injuries (NSIs) are a significant occupational health concern, particularly for nursing internee students. NSIs pose a serious threat of infection transmission, including hepatitis B contagion (HBV), hepatitis C contagion (HCV), and mortal immunodeficiency contagion (HIV)1. Although the majority of sharp object injuries are reported in developing countries, in developed countries, where advanced forestallment measures similar as real- time injury monitoring systems and standardized operating protocols are in place, sharp object injuries continue to do, and numerous reports coming from developed countries, which signifying that sharp objects injuries might be a global concern. Encyclopedically, 32.4 to 44.5% of healthcare professionals report passing at least one accidental sharp injury or needle stick annually. In the United States, an estimated 385,000 sharp object injuries do among healthcare workers annually 2. Needle stick injuries (NSIs) pose a serious risk for transmission of bloodborne pathogens. Student nurses are particularly vulnerable due to inexperience and lack of training.On a global position, according to World Health Organization (WHO), 3 million nurses and nursing student are exposed annually to percutaneous fluid defiled with at least hepatitis B about exposures), HIV (roughly 170,000 exposures), and hepatitis C 9 about 900,000 exposures 3. Futhermore, A global meta- analysis set up that 42.8 % of nurses and 46.4% of physicians reported sharps injuries. The overall prevalence of NSIs among nursing students was found to be 14.1% in a study involving 300 undergraduate nursing students in Saudi Arabia 4.Despite the presence of preventive measures, needle stick injuries continue to occur among nursing students, highlighting the need for a interventional study to explore and understand the effects of s influencing the preventive measures and advance management of needle stick injuries.The incidence of needle stick injuries is higher among nurses with a low level of knowledge on the prevention of needle stick injury, and who have not received the relevant training during their undergraduate study. The aim of this study is to provide nursing intervention

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and check the effects of it in management and in preventive measures among the students of nursing in Ali Fatima Hospital. The high incidence of needle stick injuries among nursing students indicate a gap in current prevention and management stratagies. There is a critical need to evaluate and enhace nursing interventions aimed at reducing needle stick injuries5.

The high incidence of needle stick injuries among nursing students indicate a gap in current prevention and management stratagies. There is a critical need to evaluate and enhace nursing interventions aimed at reducing needle stick injuries.

METHODOLOGY

A quasi-experimental study was conducted at a private hospital in Lahore from February 2024 to June 2024, aiming to assess the impact of preventive measures on the incidence of needle stick injuries among nursing internee students. The study involved a sample of 30 participants, selected through purposive sampling. The sample size was determined using the formula $n = N / (1 + N(e^2))$ with a 5% margin of error, as referenced from Statology. The dependent variable of the study was needle stick injuries, while the independent variable was the implementation of preventive measures. The work environment was considered a control variable to maintain consistency across participants. The interventional component of the study included 30 registered nurses working across various hospital wings. Data collection spanned five months, and a specialist committee comprising three members from the Safety Department of AFH was responsible for administering and evaluating the data. The inclusion criteria required participants to be internee nursing students and those engaged in malpractice practices, while the exclusion criteria ruled out students with health or emotional conditions that could hinder their safe or effective participation.

RESULTS

The study involved 30 female participants, all of whom had four years of study experience. Regarding injury history, 63.3% reported no history, 30% reported having a history, and 6.7% were uncertain. During tasks, injuries occurred primarily during the disposal of needles (50%), followed by recapping needles (26.7%), suturing (13.3%), and passing needles (10%). The causes of these injuries were attributed to time pressure (46.7%), lack of experience (23.3%), and equipment failure (30%).

Category	Score	Frequency	Percent%
poor	49%	11	39
average	50% -80%	10	33
good	80%-100%	7	25

The p test table shows that the mean pre-knowledge percentage is 51.20 with a standard deviation of 16.988.The mean post-knowledge percentage is 68.07 with a standard deviation of 6.918. The p-value associated with the comparison of pre and post knowledge percentages is less than 0.001, indicating statistical significance.

Paired Samples Test

pre and post	Mean	Std. Deviation	95% Confidence Interval of the Difference		t	df	Sig
			Lower	Upper			
	15.71429	4.49664	13.11800	18.3105	13.076	13	<.001

DISCUSSION

The study sample consisted of 30 female student nurses, representing 100% of the participants. This uniformity ensures that the findings are specifically applicable to female nursing students at a similar stage in their education.

The distribution of tasks during which needlestick injuries occurred was the disposal of needles was the most common activity (50.0%), followed by recapping needles (26.7%), suturing (13.3%), and passing needles (10.0%). This indicates that routine and frequent tasks like needle disposal and recapping pose the highest risk. These findings suggest that interventions should focus particularly on these high-risk activities, perhaps by revising protocols, enhancing training, and promoting the use of safer needle disposal systems. The educational intervention aimed at improving knowledge about needlestick injury prevention showed significant effectiveness.

The pre-intervention mean knowledge score was 51.20 (SD = 16.988), which increased to 68.07 (SD = 6.918) post-intervention. The paired samples t-test revealed a statistically significant improvement ($t(29) = -8.398$, $p < .001$), with a mean increase of 16.867 points. Whereas A total of 43 articles were included in the analysis. Results showed that females (OR = 1.30, 95 % CI 1.06–1.58, P value = 0.009), younger age (OR = 2.75, 95 % CI 2.27–3.33, P value < 0.001, rotated shift work-

ers (OR = 2.16, 95 % CI 1.47–3.15, P value < 0.001), not attending training courses (OR = 1.30, 95 % CI 1.07–1.56, P value = 0.006), working in the surgery ward (OR = 1.83, 95 % CI 1.33–2.50, P value < 0.001), less work experience (OR = 1.43, 95 % CI 1.04–1.95, P value = 0.025) apposed a greater risk factors for NSI among healthcare workers 6. Additionally The study by (Alfulayw, Al-Otaibi et al. 2021) revealed that the Incidence of NSIs over 26 months was 8.4% among all participants. Nurses were the most affected staff (52.5%) resulted commonly from disposing syringes (58.9%). In contrast, the incidence of NSIs among physicians was 24.9% where surgical devices were the primary source of NSIs among them (40%). Failure to complete all required hepatitis B vaccination was common among expatriates of the participants of this study. Needle recapping was the leading cause of sharp object injuries (36.30%), followed by medical waste treatment (21.92%). The left hand was the most commonly affected body part (56.84%)7. All injured individuals reported the incidents promptly, and no seroconversions were documented during the study period Ibrahim, Kannan et al. 2024. The average age of the participating nurses was 29.7 years. The following 3 themes were identified: various needlestick injury experiences, post-needlestick injury coping, and expectations regarding needlestick injuries 8. Additionally Paramedical Workers and Staff Nurses constitute the highest percentages of NSIs at 27% and 12%, respectively. The locations where NSIs frequently occur include the Emergency Ward (26%) and Intensive Care (27%). Hypodermic needles are identified as the primary cause (39%), with procedures (38%) and recapping (22%) being the leading activities linked to NSIs. Lack of awareness about the reporting process is identified as a significant reason, with 6.38% of participant were not aware of the reporting procedures9. The study by (Al Qadire, Ballad et al. 2021) showed that , Of the participants, 81.2% were females; mean age was 23.3 (SD=4.5) years. The mean total knowledge score was 6.6 out of 10 (SD=2.1). In addition, 18.2% (n=32) of the students experienced needle stick injury. Most of the injuries 71.9% (n=24) occurred during medication preparation and administration. The main cause of NSI as reported by students was recapping the needles (59%, n=19). The study findings revealed that the participants that are nursing internee students, showed relatively good mean scores in knowledge test (Mean=6.4, SD=1.4), and the students held positive attitudes towards the learning program (Mean=27.1, SD=4.12). Students showed the low degree of handling the practice of needle stick (Mean=14.10, SD =2.0). The sample totaled 14.1% prevalence which was needle stick injuries. About 65.1% of them either had one of those two in the past 12 months, and 24.4% of them are those who had two of the injuries in the same period10.

CONCLUSION

The nursing intervention program significantly reduced needle stick injuries and enhanced the management and preventive practices among student nurses. Continued emphasis on education and training is essential for protecting healthcare workers from occupational hazards. This research on prevention of needle stick injury among students highlight several critical insights and practical recommendations. Needle stick injury represents a significant occupational hazard, with potiential consequences of both physical and mental well being of nursing students. This study findings the underscore the importance of comprehensive educational programs that emphasize the needle handling techniques, the use of safety engineered devices and adherence to standard precautions.

Recommendation

We recommend focusing on the effectiveness of safety-engineered devices, the impact of comprehensive training and simulation programs, the role of supervision and mentorship, the development of clear protocols for injury management, and the influence of environmental controls on injury rates. Exploring these areas can provide valuable insights for reducing NSIs.

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Original Article

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Enhance the knowledge and practice of nurses regarding disaster management in public hospital in Lahore.

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ABSTRACT

Background and Objectives: Disasters, both natural and man-made, pose significant challenges to healthcare systems worldwide. Nurses, as frontline responders, play a crucial role in disaster management and patient care. Despite their essential role, studies highlight a gap in disaster preparedness among nurses, especially in developing countries. This study aimed to evaluate the impact of a disaster management training program on the knowledge and practice of nurses working in a public hospital in Lahore, Pakistan.

METHODOLOGY: An interventional study using a descriptive correlational design was conducted at Ali Fatima Hospital, Lahore. A total of 30 nurses, selected through simple random sampling, participated. Data were collected using a validated adaptive questionnaire comprising demographic variables and multiple-choice questions assessing knowledge and practice related to disaster management. Pre- and post-intervention assessments were analyzed using SPSS (version 25). Descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics (paired t-test) were applied, with a significance level set at $p<0.05$.

RESULTS: Participants were all female nurses, evenly distributed between the 20–25 and 26–30 years age groups. Pre-intervention knowledge scores averaged 43%, indicating moderate preparedness. Following the training intervention, mean knowledge and practice scores significantly improved to 83% ($p=0.000$). Improvements were noted across all core domains, including triage, disaster response, patient care priorities, and recovery planning. The paired t-test confirmed a statistically significant difference between pre- and post-intervention mean scores (6.53 ± 1.22 vs. 12.43 ± 1.54).

CONCLUSION: The disaster management training program significantly enhanced the knowledge and practice of nurses in disaster preparedness and response. Integrating such programs into continuous professional development and nursing curricula is essential to strengthen the healthcare system's readiness during emergencies. Expanding the sample size and applying this intervention across multiple institutions is recommended for broader applicability.

KEYWORDS: Disaster management, nursing education, preparedness, training, Lahore, public hospital.

INTRODUCTION

Disasters pose complex challenges for healthcare systems worldwide, including a variety of natural events like earthquakes, hurricanes, and floods, as well as human-induced occurrences such as industrial mishaps or terrorist acts. In the midst of the disorder and immediacy of these occurrences, nurses emerge as frontline heroes, shouldering the responsibility of delivering prompt care and assistance to those impacted.1

Additionally, the World Health Organization (WHO) highlights the vital importance of nurses in disaster preparedness and response initiatives.In its recent publication on disaster nursing and emergency preparedness, the WHO emphasizes the need for continuous education and training to enhance nursing capabilities in disaster settings (WHO, 2020)2. A disaster is a dangerous occurrence that impairs society's or community's ability to function and results in losses to people, property, the environment, and the economy. Disasters occur in four stages: mitigation, readiness, response, and recovery.3 There are three categories for the disasters, which include: Natural

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catastrophes include floods, droughts, earthquakes, and disease outbreaks; technological mishaps like fires, building collapses, and radioactive accidents; and political and civil unrest like bombings, terrorism, and biological warfare3

.Since the term "disaster" describes the occurrence of unexpected and regrettable events, managing them is a continuous concern that calls for greater focus and cooperation on a worldwide scale .Physicians, pharmacists, and nurses are among the healthcare professionals who are crucial in reducing adverse effects on community health.4

The occurrence and intensity of disasters are increasing worldwide. The majority of healthcare professionals are nurses, and they play important roles in disaster response and care. They need to have sufficient knowledge, skill competencies, and preparedness in responding to disasters. The objective of this review was to assess the psychological, skill-based, and knowledge aspects of nursing preparedness for catastrophes.5 In the last decade, an increasing number of serious disasters have impacted more individuals. Globally, there were more reported disasters in 2018. Out of 315 natural disaster incidents, 11,804 individuals lost their lives, 68 million people were impacted, and 131,7 billion USD worth of economic damage was sustained. India scored first in terms of the number of affected individuals (35%) while Indonesia recorded nearly half of all deaths (47%). 5An increasing number of countries recognize the critical necessity to reduce disaster risks and build resilient communities as the frequency and diversity of disasters that can produce both direct and indirect impacts have risen Millions of individuals experience severe disasters every year as a result of either a lack of coping mechanisms or the existence of such mechanisms but their failure to translate into knowledge about threatened communities that could save lives.6 This is one of the main reasons why disaster management practices are now doing poorly. This in particular pointed to a deficiency in the exchange of knowledge and the development of practical disaster management plans.7 Hospitals receive patients and their families during a crisis within a very tight time frame. As a result, hospital administrators and decision-makers need to train nurses so they should react to emergencies quickly and efficiently.8 Hospitals and other healthcare facilities play a crucial role in times of crisis. Among the initial centers are hospitals. Providing prompt, excellent care is essential to lowering death rates, raising the proportion of survivors, minimizing complications, preventing disability, and providing relief from both physical and psychological suffering.8 At every step of a crisis, nurses take on a variety of tasks, such as managers, educators, coordinators, rescuers, and caregivers and There is evidence linking a wide range of criteria, including department type, educational attainment, experience responding to disasters, and training linked to disasters, to nurses' preparedness for disasters.

Based on the guidelines provided by the World Health Organization, all nations should be ready for emergencies, and the majority of nurses having inadequately prepared for emergencies.9 In an attempt to equip nurses and nursing students with the knowledge and abilities needed for disaster management, there is a dearth of evaluation on the current disaster nursing education and training programs to pinpoint the gaps in curriculum development and ongoing education. Nursing leaders and educators have been aware of the need to provide education and training for nursing students and nurses after the 911 attacks in 2001.10-12

Study design: An interventional study uses in this project. The design for this project was be descriptive correlational approach in which a group of newly graduated nurses hire by the health system in Ali Fatima Hospital, Lahore was ask to complete the survey.

Setting: The setting for this project was in Lahore, Ali Fatima Hospital.

Sample size: The sample was 30 nurses which were calculated by the solvin’s sample formula.

Sampling Technique: in this study the simple Random sampling technique was be used.

Sampling formula:

Random sample= n = N/ 1+N (e^2)

Where:

N=population size

n= sample size

e=acceptable margin of error

Inclusion criteria:

- The nurses who are currently working in hospital setting.
- The nurses who is willing to participate.

Exclusion criteria:

- The nursing students are excluded.
- The nurses who are working in academic setting.

Study Tool:

With data collection permission from institute researcher use a adaptive questionnaire used that contain a demographic part and MCQS part to assess the knowledge of participants regarding disaster management.

Data Analysis:

The data collection was analyzed by using SPSS. Frequency distribution, cross tabulations used to describe the results of the study Descriptive Statistics; were analyzed through percentage (%) and frequency distribution table. Inferential Statistics; For this data analysis, we computed the mean and standard deviation. T-test can be applied to compare the effectiveness of the strategies applied to nurses to see whether there is an improvement in the dependent variable of stratification. Paired T test can be used to analysis the categorical data such as degree of satisfaction among nurses from the training program.This study will use a significance level of 0.05 ($p < 0.05$) to indicate the statistical significance. This shows that the statistical significance p-value is less than 0.05 consequently results with the value below 0.05 are deemed to be statistically significant.

RESULTS

In this chapter data analysis and interpretation was discussed by the tables and graphs. A table show demographic data with their frequency and percentage.

Table: 1 show the Demographic data

STATISTICS OF VARIABLES		
	Frequency	**Percent**
AGE	20_25	15
	26_30	15
GENDER	FEMALE	30
EDUCATION	BACHELOR	12
	POST GRADUATE	17
	DIPLOMA	1
EXPERIENCE	LESS THAN 1 YEAR	16
	1-3	9
	3-5	3
	MORE THAN 5 YEARS	2

This table shows that the sample consists of 30 female participants with an even split between the age groups of 20-25 years and 26-30 years. Education levels vary, with 40.0% holding bachelor's degrees, 56.7% holding postgraduate degrees, and 3.3% holding diplomas. In terms of experience, 53.3% have less than 1 year of experience, 30.0% have 1-3 years, 10.0% have 35 years, and 6.7% have more than 5 years of experience.

The pre-data table presents a detailed analysis of participants' initial perceptions regarding various aspects of their knowledge and skills in patient care, communication, and decision making.

Table 2: Pre knowledge of participants

PRE-DATA			
	PRE Q1		
	Frequency	**Percent**	
FALSE	14	46.7	
TRUE	16	53.3	
Total	30	100.0	
	PRE Q2		
	Frequency	**Percent**	
FALSE	19	63.3	
TRUE	11	36.7	
Total	30		100.0
	PRE Q3		
	Frequency	**Percent**	
FALSE	**15**	**50**	
TRUE	15	50	
Total	30	100.0	
	PRE Q4		
	Frequency	**Percent**	
FALSE	18	60	
TRUE	12	40	
Total	30	100.0	
	PRE Q5		

	Frequency	**Percent**
FALSE	**18**	**60**
TRUE	12	40
Total	30	100.0
	PRE Q6	
	Frequency	**Percent**
FALSE	14	46.7
TRUE	16	53.3
Total	30	100.0
	PRE Q7	
	Frequency	**Percent**
FALSE	13	43.3
TRUE	17	56.7
Total	30	100.0
	PREQ8	
	Frequency	**Percent**
FALSE	19	63.3
TRUE	11	36.7
Total	30	100. 0
	PREQ9	
	Frequency	**Percent**
FALSE	**20**	**66. 7**
TRUE		33.3

The table indicates the number and percentage of participants who answered "TRUE" or "FALSE" for each question. For example, in PREQ1, (What is the primary goal of disaster management in a hospital setting?)14 participants (46.7%) answered "FALSE", while 16 participants (53.3%) answered "TRUE".

Only one question PREQ3,(What is the first step in disaster response in a hospital setting?) has an exact 50-50 split between "TRUE" and "FALSE" answers

Table 2: Pre knowledge of participants

POST DATA			
	POSTQ1		
	Frequency	Percent	
FALSE	1	3.3	
TRUE	29	96.7	
Total	30		100.0
	POSTQ2		
	Frequency	Percent	
FALSE	**3**	**10.0**	
TRUE	27	90.0	
Total	30	100.0	
	POSTQ3		
	Frequency	Percent	
FALSE	3	10	
TRUE	27	90	
Total	30	100.0	
	POSTQ4		
	Frequency	Percent	
FALSE	5	16.7	
TRUE	25	83.8	
Total	30	100.0	
	POSTQ5		
	Frequency	Percent	
FALSE	5	16.7	
TRUE	25	83.3	
Total	30	100.0	

The table indicates a notable enhancement in understanding and application of disaster management prevention between the pre-training test and the post-training test. The knowledge score was 43% before training and after the training program it improved up to 83%. The results indicate the number and percentage of participants who answered "TRUE" or "FALSE" for each

Question. POSTQ5, (What is the purpose of triage in disaster response?) 5 participants (16.7%) answered "FALSE", while 25participants (83.3%) answered "TRUE"

In pre intervention the of primary goal of disaster management the number of mean0.53 but after intervention increase by the 0.97 as well as hospital disaster preparedness the number of mean increase by 0.37 to 0.90 same as first step in disaster management preparedness the number of mean increase by

0.50 to 0.90 same as critical aspects of patient care during disaster the number of mean increases by 0.37 to 0.83 as well as the purpose of triage in disaster response the number of mean increases by 0.40 to 0.83 same as key considerations for nurses in disaster response the number of mean increases by 0.40 to 0. 80 although the role of nurses in disaster recovery the number of mean increases by 0.43 to 0.80 similarly critical aspects of disaster preparedness for nurses the number of mean increases by 0.37 to 0.77 as well as the purpose of debriefing after disaster response the number of mean increases by 0.53 to 0.73 same as key consideration for nurses in disaster management the number of mean increases by 0.57 to 0.97 similarly the role of nurses in disaster mitigation the number of mean increases by 0.35 to 0.83 in addition to key consideration for nurses in disaster recovery the number of mean increases by 0.57 to 0.83 moreover role of nurses in disaster preparedness the number of mean increases by 0.40 to 0. 80 as well as purpose of disaster drills and simulations the number of mean increases by 0.33 to 0.77similar to support services were available to staff after disaster the number of mean increases by 0.43 to 0. 70

The data indicate a notable enhancement in nursing expertise and practice during disasters. administration after the intervention

This suggests the success of training or educational programs in disaster management for nurses. The results highlight the significance of ongoing education and training for nurses to improve their readiness and response skills in effectively handling disasters and emergencies. Additional studies might examine particular elements of the intervention that played a significant role in the enhancement and assess the long-term retention of knowledge and abilities. Additionally, efforts should be made to ensure that such training programs are accessible to nurses of all educational backgrounds and age groups to enhance overall disaster preparedness within the nursing workforce.

This table presents that the mean score before the intervention for disaster management knowledge and practice is

6.5333.After the intervention, the mean score significantly increased to 12.4333.

The p-value of 0.000 signifies a statistically meaningful difference between pre-intervention and post- intervention results.This suggests that the intervention, likely a disaster management training program or educational intervention, had a substantial positive impact on nursing knowledge and practice in disaster management.

In the evaluation of participants reaction carried out immediately after the end of the teaching session it was found that a significantly increase in the percentage of before and after training in most questions. Which remain above 80%.

Tables show of participants reaction in relation of training.

DISCUSSION

Disasters, whether they are natural or caused by humans, necessitate a healthcare workforce that is

well-prepared to effectively address the needs of impacted communities. Nurses, as essential healthcare providers, have a vital function in disaster management, requiring ongoing efforts to improve their expertise and practice in this field.In our study most of the participants consists of 30 female participants with an even split between the age groups of 20-25 years and 26-30 years.

Education levels vary, with 40.0% holding bachelor's degrees, 56.7% holding postgraduate degrees, and 3.3% holding diplomas. In terms of experience, 53.3% have less than 1 year of experience, 30.0% have 1-3 years, 10.0% have 3-5 years, and 6.7% have more than 5 years of experience. Most of the participants were female(68%),with diploma in Nursing(59.2%),mostly were clinicians(82.5%),while regarding mostly had experience(59%).It is revealed that reason for moderate knowledge, nurses holding diploma in young age with minimum experience. On the other hand nurses with Bachelor degree have maximum knowledge due to their 5 years degree experience.13-16 Our study significantly contributes to enhancing nursing knowledge in disaster management by investigating

the effectiveness of simulation-based training in improving nurses' preparedness for disaster response. This aligns with findings from Smith et al. (2022), who similarly demonstrated the positive impact of simulation exercises on nurses' confidence, communication skills, and triage abilities during simulated disaster scenarios. Johnson et al. (2023) also support these findings, showing that simulation training led to significant improvements in nurses' knowledge, skills, and confidence in managing disasters. Our study contributes by examining the specific impact of simulation training on nurses' preparedness within your unique context or population, thereby providing valuable insights into tailored interventions to optimize nursing readiness for disaster response. However, while existing research underscores the benefits of simulation-based training, challenges such as resource constraints and logistical barriers have been identified.17 In our study, we delve into the effectiveness of simulation-based training in enhancing nurses' preparedness for disaster response, whereas focused on cultural competence and its significance in disaster settings. While the two studies may appear to address different aspects of disaster management, there are important intersections between them. The results of this research show the impact of nursing intervention on knowledge and practice of catastrophe management. The outcome indicates a notable increase in knowledge and practice scores following the intervention, suggesting that the training program effectively enhanced nurses' understanding and abilities in disaster management prevention. The results of the study align with earlier research that emphasizes the significance of continuous education and training for nurses to enhance and preserve their clinical skills. The significant improvement in knowledge and practice scores also supports the idea that targeted interventions can lead to positive changes in nursing practice. 18-20

CONCLUSION

The education programs significantly enhance nurses' ability to accurately triage patients, ensuring that

Patients are directed to the appropriate level of care. This improvement reduces the risk of both over triage and under triage, leading to better patient outcomes.

Performance and clinical assessment level regarding disaster management. The findings also indicated that the student satisfaction and self-confidence higher after the training program.

This confidence translates to better communication with patients and other healthcare professionals, fostering a more collaborative and effective emergency care environment. Therefore, integrating such educational programs into nursing curricula and ongoing professional development is highly recommended.

Recommendation:

Current study suggests the following recommendations on the bases of findings:

- Future research should focus on increasing the sample size to improve the statistical strength and applicability of the results
- Experimental studies should be applied across two or more hospitals to improve the applicability of the research outcomes.
- Nursing intervention such as workshops, training programs, and mentor ship should be implanted to improve knowledge and practice of nursing student.

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