

IMPACT OF TRAINING IN CLINICAL PRACTICE STANDARDS ON EYE CARE FOR SEDATED PATIENTS: A PRE-POST INTERVENTIONAL STUDY AMONG INTENSIVE CARE UNIT NURSES

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ABSTRACT

Background: Vision is one of the most critical senses for humans, particularly in the intensive care unit (ICU) setting. Inadequate eye care for sedated patients can lead to significant ocular problems, including blindness. Nursing knowledge, attitudes, and abilities are essential for delivering effective eye care in the critical care unit. **Objectives:** To determine the impact of training ICU nurses on clinical practice standards for eye care in sedated patients on their knowledge, attitudes, and practices regarding eye care. **Study Design:** A pre-post interventional study was conducted on 40 ICU nurses. **Setting:** The study was conducted in the intensive care units of Bahria International Hospital, Lahore, Pakistan. **Duration of Study:** This study was conducted from July 2022 to February 2023. **Material and Methods:** The experimental group received clinical guideline training for eye care for sedated patients over three sessions. Data collection utilized an eye care questionnaire assessing nurses' clinical competence, with domains including knowledge, attitude, and practice. Nurses self-assessed their competence before and three months after training. Data analysis was performed using SPSS 21. **Results:** Following the intervention, a significant difference was observed in the mean score of overall eye care clinical competence (ECCC) between the experimental and control groups ($P \leq 0.05$). The experimental group's mean scores for knowledge, attitude, and practice significantly improved before and after the intervention ($P \leq 0.05$). **Conclusion:** Training ICU nurses on clinical principles for eye care in sedated patients leads to improvements in their knowledge, attitudes, and practices. Ongoing training and supervision based on clinical guidelines are crucial for implementing evidence-based eye care practices in the ICU.

Keywords: Attitude, Clinical competence, Eye care, Intensive care unit, Knowledge

INTRODUCTION

Most human knowledge and thought processes are derived from sight, one of the most significant and essential senses (1). Patients in the intensive care unit (ICU) receive care for life-threatening illnesses (2) and are not often admitted to hospitals for ocular injuries (3). However, in ICU-admitted patients with lower consciousness levels, the risk of ocular problems rises because the eyes' standard defense mechanisms—such as decreased tear production and blinking reflexes—are lost. While all bodily systems must be supported during ICU in-patient care, the majority of nursing care is directed toward life-threatening issues; this can cause the medical team to focus less on other organs, such as the eyes (4, 5) thus that even an essential nursing treatment like eye care (EC) is readily overlooked (6). Contrarily, most ICU patients require nursing care to preserve their eyes' pathophysiological and natural health, and they should not have to deal with the consequences of subpar treatment (3).

Inadequate medical attention can result in severe eye problems and possibly blindness. Nonetheless, preserving the integrity and health of the cornea is essential to avoid infection and corneal damage. The prevalence of ocular surface problems can be decreased to 8% with regular EC techniques, highlighting the significance of EC in ICU care (4). Due to its emphasis on treating organ failures, EC in ICUs is not given priority and instead becomes a secondary concern (3, 7). In some nations, the use of EC in nursing care is not supported by evidence (8, 9). Ensuring adequate EC in the ICU is crucial to nursing care for critically unwell patients (10). Nurses have a pivotal role in preventing, detecting, and treating eye conditions. When a patient is

first admitted to the intensive care unit, nurses must provide extra attention to their eyes (7). In light of this, evaluating the expertise and abilities of nurses providing eye care (EC) in the ICU is imperative. (11) According to certain studies, ICU staff members lack the information, attitudes, and abilities necessary to give EC, and this lack of understanding can act as a barrier to doing so (12). Nonetheless, delivering high-quality care largely depends on ICU nurses' knowledge and abilities (13). Evidence-based care appears to be the result of clinical practice guidelines being taught. However, there is a shortage of research on enhancing nurses' proficiency and understanding of EC in the intensive care unit, particularly for intubated patients experiencing loss of consciousness.

The current study looked into how nurses' knowledge, attitudes, and EC practice were improved after they received education on the Eye Care Clinical Guidelines (ECCG) for ICU patients. The final results can help improve and provide the ICU's EC.

METHODOLOGY

This interventional study used a pre-post design to assess ICU nurses' scores before and after ECCG training. The study included both control and experimental groups. The investigation was conducted in intensive care units of Bahria International Hospital, Lahore from 2022 July to February 2023. Nurses with bachelor's degrees and at least six months of experience in intensive care units were eligible for the study. Criteria for exclusion involved part-time work in ICUs, transfer of nurses to other sections, many absences from class sessions, and an unfinished questionnaire. Using the software, a

purposive sample strategy was used to choose 40 randomly assigned nurses to experimental and control groups.

The data collecting tool contained demographic information such as age, gender, job experience in the ICU, type of ICU, degree of education, infection control course completion, and specialist critical care certification.

The eye care clinical competency (ECCC) questionnaire developed by Ebadi et al. (2015) served as the data collection method. The tool includes the following areas: knowledge, attitude, and practice. The knowledge domain has 18 five-point items, each with one correct answer. - The potential score range is 0 to 18. The attitude domain includes seven questions rated on a 5-point Likert scale: Very High, High, Moderate, Low, and Very Low. The available score range is 0–28. The practice category consists of 10 items rated on a five-point Likert scale: Always, Often, Sometimes, Rarely, and Not. The potential score range is 0-40, with higher values suggesting a better scenario. The potential score range for total clinical competence was 0-86. Internal consistency testing approaches proved content validity and dependability.

The experimental and control group nurses self-assessed the knowledge and attitude categories of the EC clinical competency test before attending courses. At the same time, an educational supervisor observed the practice session. To allow nurses to attend classes, the educational supervisor and ward administrators worked together to schedule necessary shifts and preparations for lessons including determining the location, time, instructional program, and catering. - Educational information was delivered through lectures, seminars, and Q&A sessions throughout three weeks. The educational supervisor watched nurses in the intervention group throughout ward rounds to ensure compliance with EC standards following training sessions. After months of education, the questionnaire was re-evaluated in two groups. The training supervisor and head nurse evaluated each nurse's practice items in the experimental group throughout three work shifts. Additionally, the control group reviewed practice items throughout a single shift.

The hospital's Research Ethics Committee authorized the current investigation. The enrolled nurses provided written informed permission after being informed of the study's aims and anonymity. The data was analyzed using SPSS 21. We employed descriptive statistics such as absolute and relative frequency, mean (M), and standard deviation (SD). The inferential statistics utilized were independent t-test, paired t-test, and chi-square with 95% confidence intervals.

RESULTS

The study involved 40 nurses, 20 in the experimental and 20 in the control group. According to the findings of the study, the mean age and work experience of the participants in the experimental and control groups were 37.71 ± 6.40 and 9.25 ± 6.45 years and 35.5 ± 92.21 and 7.25 ± 5.24 years, respectively. Detailed demographic information about the individuals is provided in Table 1. The chi-square and independent t-test results revealed no significant differences between the two groups regarding gender, age, ICU job experience, type of ICU, educational attainment, infection control course completion, and specialized critical care course participation.

The results showed no significant difference in the mean scores of knowledge, attitude, practice, and the overall ECC score between the experimental and control groups before the interventions; however, the independent t-test demonstrated a significant difference following the intervention ($P \leq 0.05$). Following the intervention, there was a noteworthy difference among the experimental and control groups for the mean score of the overall ECCC ($P \leq 0.05$). The experimental group's mean scores for knowledge, attitude, and practice changed significantly before and after the intervention, as indicated by a paired t-test ($P \leq 0.05$). A paired t-test indicated a significant difference ($P \leq 0.05$) in the mean overall ECCC score among the two groups (Table 3).

Table 1: Demographics of study population

Variable	Experimental Group		Control Group		P-Value
	Frequency	%	Frequency	%	
Sex					
Male	4	20	3	15	0.254
Female	16	80	17	85	
Level Of Education					
MSN	3	15	18	90	0.38
BSC	17	85	2	10	
Ward					
General ICU	12	60	14	70	0.47
Surgical ICU	8	40	6	30	
Passing The Specialized Critical Care Course					
Yes	2	10	1	5	0.14
No	18	90	19	95	
Passing The Infection Control Course					
Yes	13	65	14	70	0.84
No	7	35	6	30	

Table 2: Schedule an EC course for the experimental group.

Variable	Lecturer	Educational content
1st session	Optometrist	The educational goals cover eye anatomy and function, eye diseases and pathophysiology, risk factors for eye diseases, examination of the eyes, eyelid posture, and medicines.
2nd session	Nursing supervisor	The prevalence of eye illnesses, the significance of EC, eye issues in ICU patients, and a summary of current research on ocular disorders in the intensive care unit.
3rd session	Educational supervisor	Topics covered include EC methods, eye cleanliness, eyelid closure, eye examination, and eyelid posture.

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Table 3: Analysis of the individuals' pre- and post-intervention mean scores for knowledge, attitude, practice, and the overall EC score

Group	Knowledge			Attitude			Practice			Competency		
	M±SD (0–18)			M±SD (0–28)			M±SD (0–40)			M±SD (0–86)		
	Before	After	P value	Before	After	P value	Before	After	P value	Before	After	P value
Control	11.47 ± 3.47	12.14 ± 2.8	0.147	22.25 ± 4.41	23.17 ± 4.41	0.622	26.95 ± 5.2	29.45 ± 6.14	0.014	59.47 ± 9.41	62.45 ± 10.24	0.01
Experimental	11.45 ± 2.3	13.54 ± 3.12	0.012	24.44 ± 3.21	26.24 ± 4.47	0.01	26.24 ± 4.14	34.15 ± 5.85	0.002	59.98 ± 7.25	62.78 ± 10.29	0.01
P value	0.5	0.01		0.32	0.02		0.92	0.01		0.71	0.01	

DISCUSSION

This study examined how ECCG training affected the clinical proficiency in EC in ICU nurses placed in experimental groups (clinical EC training) or control groups (regular training). The majority of the people in both groups were found to be female, had a bachelor's degree, and worked in the neurological intensive care unit. Furthermore, most people in both groups had completed the infection control course but had not completed the specific critical care course or received EC instructions for the ward. There was no statistically significant difference between the experimental and control groups regarding demographic data.

92.2% of ICU nurses stated they had never had EC training before, and every participant admitted they lacked an EC procedure to adhere to, according to Liem(14). - The overall clinical competence rating and the mean score of EC clinical competence in the knowledge, attitude, and practice domains were nearly identical before the intervention in both the experimental and control groups, indicating that there proved no statistically significant difference between the two groups. Given that intensive care units (ICUs) employ the most skilled nurses and that the eye is regarded as an essential organ in addition to the sense of sight, it is expected of ICU nurses to possess a high degree of EC knowledge, attitude, and practice for patients who are sedated.

In a study of ICU nurses' EC knowledge and practice, Alghamdi et al. found that nurses' overall EC knowledge score was less than 50% and that they knew enough about EC of patients receiving mechanical ventilation; however, nurses' attitudes toward EC procedures in these patients were positive, but this finding did not imply that the nurses had good EC clinical practice(15).

To ascertain the ICU nurses' degree of knowledge and practice patterns regarding exposure keratopathy in patients requiring mechanical ventilation, Vyas et al. (2018) looked into EC knowledge and practice patterns. Despite having a high degree of general EC knowledge, nurses did not practice appropriately; hence, EC knowledge and practice need to be improved through training programs(16). Khalil et al.'s (2019) investigation into nurses' EC knowledge and practice also revealed that while nurses possess adequate EC knowledge, their EC practice is lacking(17). It appears that EC training is necessary for ICU nurses based on the results of this study and others. It can be the result of inadequate regulation or lack of compliance.

The results also showed that, in the post-intervention phase, both groups' mean ECCC scores in each of the three domains and their overall clinical competence score had increased. Nonetheless, the experimental group experienced a more considerable rise and a statistically significant difference; hence, the ECG training has improved nurses' knowledge, attitudes, and practices. In this context, Cho et al. Observed a substantial improvement in EC-related knowledge, awareness, and practice scores following the execution of

the training program in a study of the establishment and evaluation of an EC training program. (18). Demirel et al. (2014) found that exposure to keratopathy substantially decreased before and after training courses. Increasing nurses' awareness of EC enhances EC in ICU patients with lower levels of consciousness undergoing ventilation. This study examined the impact of EC training on the incidence of corneal surface complications in ICU patients. (19) Additionally, Fashafshah et al. (2013) discovered an essential distinction in the nurses' knowledge and practice scores after training, as well as a substantial decrease in the incidence of exposure keratopathy in patients following training, in a study examining the impact of teaching the EC protocol to 260 ICU nurses(3). In this context, Dawson (2005) notes that raising awareness of surface eye disorders and clinical signs of EC in ICUs will encourage nurses to pay attention to eye problems and EC. However, she also emphasizes the importance of providing information on these topics(20). This research supports the current study's conclusions about the beneficial effects of training on nurses' knowledge, attitudes, and ensuing practice improvement. These studies support the efficacy of training and are in line with the findings of the current investigation. Additionally, the results demonstrated that in the post-intervention and pre-intervention periods, the experimental group's mean scores on knowledge, attitude, practice, and overall clinical competence considerably rose. This result indicates that patients' knowledge, attitudes, and practices have been impacted by training.

One of the research's drawbacks is that both the experimental and control groups of nurses had direct ICU experience, which may have helped the control group's performance and allowed for effective learning of EC. Another drawback is the tiny sample size of the study.

CONCLUSION

In general, the EC training course has raised the ICU nurses' EC clinical competency when caring for patients who have been put to go unconscious; yet, a continual training program is required to receive the best score. Therefore, it is advised that one of the subjects of continuing education for nurses be ECCG training. In this sense, training programs should be repeated per the most recent ECCG revisions to retain their efficacy. Also, undergraduate and graduate nursing students should be taught the ECCG. Based on accepted clinical recommendations, raising the standard of nursing care and evidence-based practice across various domains is also advised.

DECLARATIONS

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department Concerned.

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Consent for publication

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CONFLICT OF INTEREST

The authors declared absence of conflict of interest.

AUTHOR CONTRIBUTION**RIZWAN PERVAIZ***Coordination of collaborative efforts.**Conception of Study, Development of Research Methodology Design, Study Design,, Review of manuscript, final approval of manuscript.***SUPRINKA AKASH***Conception of Study, Final approval of manuscript.**Manuscript revisions, critical input.***SHAH BANO***Study Design, Review of Literature.**Data entry and Data analysis, drafting article.***MAHNOOR MALIK***Data acquisition, analysis.**Manuscript drafting.***AZKA ZAHRA RIZVI***Conception of Study, Development of Research Methodology Design, Study Design,, Review of manuscript, final approval of manuscript.***MOHAMED IBRAHIM SHOAB***Coordination of collaborative efforts.**Study Design, Review of Literature.***HUSSEIN KANDEEL***Manuscript revisions, critical input.**Coordination of collaborative efforts.***SITARA RAZA***Coordination of collaborative efforts.***REFERENCES**

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