

A CLINICAL AUDIT ON EYE CARE PRACTICES BY NURSES FOR MECHANICALLY VENTILATED PATIENTS ADMITTED TO THE INTENSIVE CARE UNIT OF A SELECTED HOSPITAL

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ABSTRACT

A clinical audit was conducted to evaluate the current eye care practices of nurses for mechanically ventilated patients admitted to the Intensive Care Unit (ICU) of a selected hospital and to compare these practices with established standard guidelines and protocols.

Objectives:

Primary Objective:

- To assess the current practices of nurses regarding eye care for mechanically ventilated patients.

Secondary Objective:

- To compare existing nursing practices with standard eye care guidelines and protocols.

Introduction:

Mechanically ventilated patients admitted to ICUs are at high risk of developing ocular complications due to impaired protective mechanisms such as reduced blink reflex, incomplete eyelid closure, and decreased tear production. Despite the availability of standard eye care guidelines, adherence among nurses is often inconsistent. This audit evaluates existing practices and identifies gaps to promote patient safety and quality of care.

Methodology:

A quantitative descriptive clinical audit was conducted in the ICU of a selected hospital. A total of 50 nurses were included using total enumeration sampling. Data were collected using a structured observational checklist consisting of 25 steps related to eye care practices (pre-procedure, during procedure, and post-procedure). Each step was scored as performed or not performed. Data were analyzed using frequency and percentage.

Results:

High compliance was observed in practices such as hand hygiene (92%), use of sterile gloves (98%), patient identification (94%), and eye cleansing techniques (92%). Moderate compliance was noted in explaining procedures (72%), maintaining privacy (68%), and patient comfort (60%). However, low compliance was observed in critical areas such as eye assessment (24%), patient positioning (18%), adequate lighting (8%), and reassessment (22%). Overall, 74% of nurses demonstrated poor practice, 24% average practice, and only 2% good practice.

Conclusion:

Although basic infection control practices are well followed, there is inadequate adherence to essential eye care procedures. This indicates a gap between existing practices and standard guidelines. Structured training programs, regular clinical audits, and strict protocol enforcement are essential to improve the quality of eye care for mechanically ventilated patients.

Keywords: Eye care, Mechanical ventilation, ICU nurses, Clinical audit, Ocular complications, Nursing practice, Compliance

I. INTRODUCTION

Intensive Care Units (ICUs) are specialized hospital areas designed to provide continuous and advanced care for patients with life-threatening illnesses or injuries. Patients admitted to ICUs often require close monitoring and interventions that cannot be provided in general wards. One of the most common interventions in critical care is mechanical ventilation, which assists or replaces natural breathing in patients who are unable to maintain adequate oxygenation or eliminate carbon dioxide on their own.

Ocular complications in critically ill patients are frequently overlooked, even though they can have serious consequences. Sedation, unconsciousness, and the use of neuromuscular blockers often impair natural eye-protective mechanisms such as blinking and eyelid closure. When eyelids do not close properly, the cornea remains exposed to the environment, resulting in lagophthalmos. Exposure can lead to dryness, irritation, infection, corneal abrasions, and conjunctivitis. If left untreated, these complications may progress to exposure keratitis or, in severe cases, permanent visual impairment.

Nurses, as the primary caregivers in ICUs, play a critical role in preventing these ocular complications. Their responsibilities include regular assessment of the eyes, application of lubricants, ensuring eyelid closure, and using protective devices like moisture chambers or eye shields. Evidence-based guidelines, including those from NICE and AACN, provide detailed protocols for eye care in critically ill patients. Despite these guidelines, research has shown wide variation in adherence to recommended practices.

Factors contributing to this variation include high patient-to-nurse ratios, lack of standardized protocols, limited training on eye care, and inadequate awareness about ocular risks. A clinical audit is an effective tool to evaluate current practices against established standards. Through audits, healthcare institutions can assess compliance, identify gaps, and implement interventions to improve patient outcomes. This study focuses on a clinical audit of ICU nurses' eye care practices, aiming to evaluate adherence to standard guidelines and suggest areas for improvement to enhance patient safety and quality of care.

Need for the Study

Patients receiving mechanical ventilation are particularly vulnerable to ocular complications due to multiple physiological and treatment-related factors. Critical illness, sedation, and certain medications can reduce tear production, while unconsciousness or neuromuscular blockers may prevent complete eyelid closure. A reduced blink reflex further compromises the natural protective mechanisms of the eyes, making the cornea highly susceptible to drying and injury.

Studies indicate that approximately 40–60% of mechanically ventilated patients may develop exposure keratitis if preventive eye care is not applied consistently. Other complications include corneal abrasions, conjunctivitis, and, in severe cases, permanent vision loss. These complications not only threaten the patient's vision but can also prolong ICU stays, increase healthcare costs, and affect overall recovery and quality of life.

Despite the availability of evidence-based protocols, audits and research studies have revealed inconsistent application of these practices in ICUs worldwide. Conducting a clinical audit provides a structured approach to identifying gaps in nursing practice, evaluating compliance with recommended protocols, and developing strategies for improvement. Regular audits help ensure that ICU patients receive standardized, high-quality eye care, reducing the incidence of preventable ocular complications and improving overall patient outcomes.

II. MATERIAL AND METHOD

Objectives of the Study

Primary Objective:

- To assess the current practices of nurses regarding eye care for mechanically ventilated patients.

Secondary Objective:

- To compare existing nursing practices with standard eye care guidelines and protocols.

Research Question

What is the level of compliance of nurses regarding eye care practices for mechanically ventilated patients in the ICU?

Operational Definitions

Clinical Audit: A structured review of clinical practices to determine whether they align with established standards for patient care. In this study, it refers to the review of eye care practices among staff nurses caring for mechanically ventilated patients.

Eye Care: Interventions aimed at maintaining ocular health in mechanically ventilated patients, including lubrication, eyelid closure, use of moisture chambers, and regular assessment.

Mechanically Ventilated Patients: ICU patients who are on ventilatory support due to the inability to maintain adequate spontaneous breathing.

Standard Guidelines: Evidence-based recommendations developed by recognized health organizations such as NICE and AACN to ensure quality and safe patient care.

Delimitations

The study is confined to:

- Nurses working in the Intensive Care Unit
- Nurses providing care to mechanically ventilated patients
- A single selected hospital
- Data collection over a defined six-month period

Research Approach and Design

Parameter	Details
Research Approach	Quantitative Research Approach
Research Design	Descriptive Clinical Audit Design
Setting	Intensive Care Unit (ICU) of a selected tertiary care hospital
Population	All staff nurses working in the ICU caring for mechanically ventilated patients
Sample Size	50 nurses
Sampling Technique	Total Enumeration (Non-probability sampling)

Inclusion Criteria

Nurses who are:

- Currently working in the ICU
- Providing care to mechanically ventilated patients
- Willing to participate in the study

Exclusion Criteria

Nurses who are:

- Student nurses or nursing interns
- On leave during the data collection period
- Not directly involved in patient care
- Not willing to participate

Description of Tool

The data collection instrument was a structured observational checklist comprising 25 steps related to eye care practices, divided into:

- Section 1: Demographic variables of staff nurses (age, gender, educational qualification, clinical experience, and working area)
- Section 2: Observation checklist including pre-procedure, during-procedure, and post-procedure steps

Scoring: Each correctly performed step was scored '1' and each not performed step was scored '0'. Total score was out of 25 and interpreted as: Good Practice (16–25; 64–100%), Average Practice (11–15; 44–60%), and Poor Practice (<10; <40%).

Validity was established through expert review. Reliability was assessed using the inter-rater reliability method, yielding $r = 0.8$, indicating good consistency.

III. ANALYSIS

Section 3.1

Description of samples (ICU nurses) based on their demographic characteristics in terms of frequency and percentage.

Demographic Variable	Frequency	Percentage (%)
Age (years)		
20–25 years	34	68%
25–30 years	16	32%
30–40 years	0	0%
40–50 years	0	0%
Gender		
Male	7	14%
Female	43	86%
Educational Qualification		
GNM	23	46%
B.Sc Nursing	23	46%
Post B.Sc Nursing	4	8%
M.Sc Nursing	0	0%
Total Clinical Experience		
>1 year	20	40%
2–3 years	22	44%
4–5 years	8	16%
Working Area		
EMS ICU	17	34%
MICU	14	28%
SICU	11	22%
RICU	8	16%

Table 3.1 shows the demographic characteristics of ICU nurses (N=50). Most nurses were aged 20–25 years (68%), predominantly female (86%). Regarding educational qualifications, 46% held GNM and 46% had B.Sc Nursing. Majority had 2–3 years of clinical experience (44%). Distribution across ICU areas showed 34% in EMS ICU, 28% in MICU, 22% in SICU, and 16% in RICU.

Section 3.2

Assessment of current eye care practices among nurses for mechanically ventilated patients.

Sr. No.	Checklist Item	Performed (Yes) %	Not Performed (No) %	Interpretation
Pre-Procedure				
1	Verifies physician's order	32%	68%	Low
2	Identifies patient correctly	94%	6%	High
3	Explains procedure to patient	72%	28%	Moderate
4	Ensures privacy	68%	32%	Moderate
5	Collects and prepares articles	90%	10%	High
6	Positions patient comfortably (HOB 30–45°)	18%	82%	Low
7	Ensures adequate lighting	8%	92%	Low
8	Performs hand hygiene	92%	8%	High
9	Dons clean or sterile gloves	98%	2%	High
10	Assesses eyes (redness, edema, crusting)	24%	76%	Low
During Procedure				
11	Treats uninfected eye first	12%	88%	Low
12	Closes eyes gently and cleanses eyelids	20%	80%	Low
13	Moistens sterile swab with saline	88%	12%	High
14	Cleanses eye inner to outer canthus	92%	8%	High
15	Uses separate swab for each eye/stroke	88%	12%	High
16	Gently removes discharge or crust	22%	78%	Low
17	Instils ophthalmic drops/ointment	20%	80%	Low
18	Ensures eyelid closure after procedure	30%	70%	Low
19	Applies eye protection (taping/moisture chamber)	42%	58%	Low
20	Removes excess solution from periorbital skin	8%	92%	Low
Post-Procedure				
21	Ensures patient comfort and eye positioning	60%	40%	Moderate
22	Discards materials per biomedical waste protocol	92%	8%	High

23	Removes gloves and performs hand hygiene	86%	14%	High
24	Reassesses eyes and reports abnormalities	22%	78%	Low
25	Documents procedure	54%	46%	Low

The table reveals varying levels of compliance among ICU nurses. High compliance was observed in infection control steps such as donning sterile gloves (98%), hand hygiene (92%), patient identification (94%), and eye cleansing from inner to outer canthus (92%). Moderate compliance was seen in explaining the procedure (72%), maintaining privacy (68%), and patient comfort (60%). However, low compliance was observed in critical aspects including eye assessment (24%), proper patient positioning (18%), adequate lighting (8%), treating uninfected eye first (12%), instillation of ophthalmic drops (20%), eyelid closure post-procedure (30%), and reassessment (22%).

Section 3.3

Overall level of eye care practice among nurses for mechanically ventilated patients.

Level of Practice	Frequency	Percentage (%)
Good (Score 16–25; 64–100%)	1	2%
Average (Score 11–15; 44–60%)	12	24%
Poor (Score <10; <40%)	37	74%

The above table shows that 74% of ICU nurses demonstrated poor practice, 24% showed average practice, and only 2% demonstrated good practice regarding eye care for mechanically ventilated patients.

DISCUSSION

The findings of this clinical audit reveal a significant gap between current nursing practice and established standard guidelines for eye care in mechanically ventilated patients. While nurses demonstrated high adherence to basic infection control measures — including hand hygiene, sterile glove use, and proper eye cleansing techniques — critical clinical steps such as eye assessment, proper patient positioning, eyelid closure, and instillation of ophthalmic medications were poorly performed.

The high compliance with infection control practices (hand hygiene 92%, sterile gloves 98%) reflects awareness of standard safety precautions in the ICU. However, the alarmingly low compliance in eye assessment (24%) and reassessment (22%) suggests that nurses do not consistently recognize ocular complications as a priority in their routine care of mechanically ventilated patients. These findings are consistent with published literature indicating that eye care is often neglected in ICU settings due to competing clinical priorities and inadequate training.

Low compliance with patient positioning (18%) and adequate lighting (8%) during the eye care procedure further suggests a lack of structured approach to the procedure. Similarly, the low compliance with instillation of prescribed ophthalmic drops (20%) and application of eye protection such as moisture chambers (42%) indicates that preventive interventions are not consistently implemented.

The finding that 74% of nurses demonstrated poor overall practice and only 2% demonstrated good practice is a matter of serious concern. These results underscore the urgent need for structured training programs, regular clinical audits, and strict enforcement of evidence-based protocols. Introducing standard operating procedures (SOPs) for eye care in the ICU and incorporating eye care into nursing checklists may significantly improve adherence and patient outcomes.

CONCLUSION

The majority of ICU nurses demonstrated poor compliance with standard eye care guidelines for mechanically ventilated patients. While basic infection control practices were followed effectively, several critical aspects of eye care — including patient positioning, eye assessment, eyelid closure, ophthalmic medication instillation, and reassessment — were inadequately performed. The overall level of practice was found to be poor among 74% of nurses.

These findings highlight a significant gap between existing nursing practices and recommended standards. There is a clear need for structured training, proper implementation of standard protocols, regular clinical audits, and skill-based education to enhance the quality of eye care in ICU settings. Strengthening nurses' knowledge, awareness, and clinical skills in ocular care will help prevent avoidable complications and improve overall outcomes for mechanically ventilated patients.

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