Appendix 1: Consent Form

A study to determine the impact of a comprehensive training plan about eye care in unconscious patients on knowledge and performance of intensive care unit (ICU) Nurses in Ghana**.**

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Introduction to the research:

Patients admitted to the ICU often have compromised ocular protective mechanisms as a result of the disease itself or some methods of treatment, which expose them to the risk of developing ocular surface diseases (OSDs). Nurses have responsibility to provide a holistic eye care for their patients, based on standard guidelines. However, it is evident that ICU nurses lack adequate knowledge about eye care in unconscious patients and hence, perform ocular care poorly. Therefore, educational initiatives and protocol-based approaches to improve the knowledge and performance of eye care of nurses are necessary. The purpose of this study is to determine the impact of a comprehensive training plan about eye care in unconscious patients on knowledge and performance of ICU nurses in Ghana.

What will be done in the study?

After ensuring that you understand the objectives and an informed consent signed following an acceptance to take part, you will be assessed on your knowledge and performance of eye care in unconscious patients in the ICU through a self-report questionnaire and a performance checklist.

You will then be taken through comprehensive eye care training about unconscious patients. This will include lectures about eye diseases in the critically ill patients, assessment of the eye and eye care in unconscious. Two weeks after training, you will again be followed up for second assessment. It involves the same format and information will be collected as done before training.

Risks and confidentiality:

The study does not involve any invasive procedures; therefore, no physical harm on your body is expected. The study is also purely for academic purposes, all your responses will be confidential, with any effect on your status at work place.

Benefits of participating:

No economic benefit is attached to participation however the information obtained from this study will be important to policy makers, healthcare providers, patient and their family in improving care delivery especially to unconscious patients admitted ICUs and other acute care centres in Ghana.

For any inquiries and clarifications:

Please contact the researcher on +233249210827/+989059701946 (text, Whatsapp, telegram messages) and via email: shahamudeenzakari@gmail.com or the study supervisor via m_imanipour@tums.ac.ir/ m_imanipour@hotmail.com

Meaning of your signature: Upon signing on this form, it means you have clearly understood the study procedures and objectives, benefits and risks involved in the study.

Informed consent statement: The study information described in this form has been clearly read, explained to me and I understood. I therefore agree to voluntarily participate in this study.

Participants initials	Signature/thumb print	Date
……	…….	……
Witness's Initials	Signature/thumb print	Date
……	…….	……
Researcher's Initials	Signature/thumb print	Date
…….	……	…….

Appendix 2: Demographic and Professional questionnair

We do not need your personal identifications such as name or staff code. This questionnaire is anonymous.

	Demographic data (D)	
D1	Gender:	Female [ ] Male [ ]
D2	How old are you now?	……. (years)
D3	Marital Status:	Single [ ] Married [ ] Separated/Divorced [ ] Widow/er [ ]
D4	How long have you been working in the ICU?	…… (months) …… …(years)
D5	Highest level of education attained:	Certificate Nursing [ ] Diploma Nursing [ ] BSc Nursing [ ] MPhil/MSc Nursing [ ] PhD [ ]
D6	Where do you work currently?	Tamale Teaching Hospital [ ] Komfo Anokye Teaching Hospital [ ]
D7	In Which type of adult ICU are you working now?	General ICU [ ] Medical ICU [ ] Surgical ICU [ ] Neurological ICU [ ] Burns ICU [ ] Other [ ], specify ……..

D8	What is your area of specialization?	General nursing [ ] Critical/Intensive care nursing [ ] Emergency nursing [ ] Perioperative nursing [ ] Paediatric nursing [ ] Others [ ], specify …….
D9	Have you received any formal training on eye care in unconscious patients?	Yes [ ] No [ ]
D10	If yes,	In school [ ] During in-service training workshop (CPD) [ ] As part of my orientation in the ICU [ ]

Appendix 3: Knowledge Questionnaire

QUESTIONNAIRE ON NURSE'S KNOWLEDGE ABOUT EYE CARE IN UNCONSCIOUS PATIENTS

This questionnaire is a survey on nurses' knowledge about eye care in unconscious patients. Your participation in this survey will be valuable and can help to recognize the current status of nurses' knowledge and try to improve it, if necessary.

The survey usually takes 15-20 minutes to complete. Participation in this survey is voluntary, however, your full involvement will be appreciated since your views are important.

Note your responses are purely for academic purposes and will be treated with the strictest confidentiality. So, NO identification information is necessary. Please answer the questions just based on your own knowledge and DO NOT consult with anybody else or DO NOT use scientific resources.

We would like to appreciate you for your valuable contribution and hope the results help us to improve quality of patients' care.

THANK YOU,

1. What is the most suitable time for eye assessment in newly admitted patients?	1 [ ] at the time of admission 2 [ ] in every working shift 3 [ ] once daily 4 [ ] whenever the eye has a problem
2. How often it is necessary to assess ocular surface disease (OSD) in patients identified at risk?	1 [ ] at the beginning of every shift 2 [ ] 6 hourly 3 [ ] once daily 4 [ ] at the discretion of the nurse
3. Which of the patients are NOT at risk for OSD?	1 [ ] patients who have undergone neurosurgery 2 [ ] patients with general sepsis 3 [ ] patients on mechanical ventilation 4 [ ] patients who need suctioning
4. What is the meaning of Lagophthalmos?	1 [ ] swelling of conjunctiva

	2 [ ] torsion of eye lashes 3 [ ] incomplete eye closure 4 [ ] dull and cloudy cornea
5. What grade would you assign to an eye that is open with only sclera visible?	1 [ ] grade 0 2 [ ] grade 1 3 [ ] grade 2 4 [ ] grade 3
6. What grade would you assign to an eye that is open with cornea visible?	1 [ ] grade 0 2 [ ] grade 1 3 [ ] grade 2 4 [ ] grade 3
7. What is the correct care for an open eye with cornea visible?	1 [ ] only tapping with a Micropore tape 2 [ ] cleaning the eye with warm water every shift 3 [ ] applying ointment and tapping the eye 4 [ ] lubricating the eye every 6 hours
8. Bright light (a pen torch) uses in unconscious patients for:	1 [ ] measuring severity of eye infection 2 [ ] looking corneal dullness or opacity 3 [ ] assessing vision loss in the patient 4 [ ] better vision for the nurse during eye assessment
9. How often the eye of unconscious patient with respiratory infection, and copious eye discharge/ copious sputum should be cleaned?	1 [ ] every hour 2 [ ] 2 hourly 3 [ ] 4 hourly

	4 [ ] 12 hourly
10. Which of the following is probable result of prone positioning in the eye of patients?	1 [ ] hypopyon 2 [ ] exposure keratopathy 3 [ ] microbial keratitis 4 [ ] increased intraocular pressure
11. Which item is the manifestation of exposure keratopathy?	1 [ ] pus in the eye 2 [ ] sticky eye discharge 3 [ ] dried eyes 4 [ ] dilated pupils
12. Which of the following items is the best way to assess corneal abrasion?	1 [ ] fluorescein dye 2 [ ] white light 3 [ ] ophthalmoscope 4 [ ] eye pressure measurement
13. How do exposure keratopathy and corneal abrasions cared for?	1 [ ] washing with warm/sterile water 2 [ ] administer chloramphenicol ointment for 5-7 days 3 [ ] only lid taping 4 [ ] administer antifungal eye drops
14. What is the meaning of chemosis?	1 [ ] swelling of conjunctiva 2 [ ] eye redness 3 [ ] eye dryness 4 [ ] fixed pupils
15. Which of the following is risk factor for developing conjunctival edema?	1 [ ] suctioning 2 [ ] hypotension 3 [ ] PEEP > 5cmH_2O 4 [ ] sedation

16. Lagophthalmos is a common problem in patients with:	1 [ ] conjunctiva swelling 2 [ ] microbial keratitis 3 [ ] conjunctivitis 4 [ ] exposure keratopathy
17. Which of the following can NOT be cause of ischemic optic neuropathy in ICU patients?	1 [ ] prolonged prone position 2 [ ] prolonged positive mechanical ventilation 3 [ ] severe or recurrent hypotension 4 [ ] severe or recurrent hypertension
18. What is the appropriate eye care during tracheal suctioning?	1 [ ] suction pressure should set at the lowest 2 [ ] eyes should be covered 3 [ ] lubricating eyes with chloramphenicol before suctioning 4 [ ] administering antibacterial eye drops after suctioning
19. Cloudy and grey cornea and the fixed pupil at a mid-dilated position with no response to light are alerting signs of:	1 [ ] ischemic optic neuropathy 2 [ ] endogenous endophthalmitis 3 [ ] fungal eye infection 4 [ ] bacterial keratitis
20. Which of the following is NOT appropriate care in conjunctivitis?	1 [ ] take a swab of the eye discharge for microbial culture 2 [ ] administering chloramphenicol for lubrication and antibacterial function 3 [ ] cleaning eye discharges with warm water 4 [ ] applying ointment before eye drop

21. What is the proper way for cleansing patient's eyes?	1 [ ] from the inner canthus to outward 2 [ ] from the outer canthus to inward 3 [ ] lateral head position with the involved eye upper 4 [ ] the use of sterile technique is important, not the direction
22. What item is correct about administering eye drops/ointments?	1 [ ] the ordering of different eye drops is not important 2 [ ] ointment should apply at first 3 [ ] no interval is necessary between eye drops 4 [ ] the drugs should instill between lower lid and conjunctiva
23. In which of the following condition, ophthalmological consult should be sought immediately?	1 [ ] for every clinical manifestation in patient's eye 2 [ ] for eye assessment at the time of admission 3 [ ] in red but not sticky conjunctivitis 4 [ ] in incomplete closure of eye

Appendix 4: Observational Checklist For Performance

OBSERVATIONAL CHECKLIST FOR PERFORMANCE OF EYE CARE IN UNCONSCIOUS INTENSIVE CARE UNIT PATIENTS

DATE: ……

NURSE CODE: ……..

PRE TEST ☐ POST TEST ☐

NUMBER OF FILLED CHECKLIST: First ☐ Second ☐

THE NUERSE DOES THESES:	Performs correctly	Performs but not correctly	Not performs	Not needed
1. Physically examines, takes history and documents the risk factors of ocular surface diseases (OSDs) for newly admitted ICU patients including information from family				
2. Assesses and documents grade of lid closure				
3. Checks corneal clarity with bright light				
4. Documents any signs of OSD in his/her nurses' note or ICU sheet (lid swelling, chemosis, hyperemia, lid margin crusting, corneal clouding, redness, discharge, etc.)				
5. Performs 2 hourly assessment for patients with eye/ or respiratory infection with copious eye discharge or ample sputum suction				
6. Removes debris, secretions, dried ointment and/or other ocular medications with swabs				
7. Cleans eyelids with sterile water/saline soaked gauze, in once-swab-once manner, from inside to outside				
8. Performs more frequent lid cleansing in patients identified to have eye/respiratory infection and in those requiring frequent suctioning				

9. Performs lid cleansing at least 6 hourly for patients with incomplete and unclean eyelids				
10. Collects and sends swabs to lab. for culture in patients with sticky or discharging eyes				
11. Applies watery lubricants and eye taping to incompletely closed eyelids/dry ocular surface				
12. Applies transparent covers on clean eyes horizontally, from eyebrows to cheekbones, with Micropore tape				
13. Administers eye drops/ointments correctly (by pushing lower lid and instillation medicine in a small hole inside the eye)				
14. Applies eye drops, before applying eye ointment in patients who require both				
15. Considers 1-5 minutes interval between eye drops during administration				
16. Applies eye covers during open tracheal suctioning for patients with respiratory infection				
17. Withdraws suction catheter from the side and not across patient's face after suctioning				
18. Performs hand hygiene according to the protocol especially throughout eye care (FIVE moments of hand hygiene)				
19. Arranges for medical/ophthalmological consult for patient infected eyes and those who do not respond to other interventions				