12-2019

Assess Knowledge and Practice Eye Care for Patients of Intensive Care Unit Nursing Staff

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UNIVERSITY OF NORTHERN COLORADO

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ASSESS KNOWLEDGE AND PRACTICE EYE CARE FOR PATIENTS OF INTENSIVE CARE UNIT NURSING STAFF

A Thesis Submitted in Partial Fulfillment
of the Requirements of the Degree of
Master of Science

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Collee of Natural and Health Sciences
School of Nursing
Advanced Nurse Generalist

December 2019

This Thesis by: Le Hong Liem

Entitled: *Assess Knowledge and Practice Eye Care for Patients of Intensive Care Unit Nursing Staff*

Has been approved as meeting the requirement for the Degree of Master of Science in College of Natural and Health Sciences in the School of Nursing, Advanced Nurse Generalist program

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ABSTRACT

Liem, Le Hong. *Assess Knowledge and Practice Eye Care for Patients of Intensive Care Unit Nursing Staff*. Unpublished Master of Science thesis, University of Northern Colorado, 2019.

Eye care for intensive care unit (ICU) patients is still flawed as surface eye diseases are reported to be frequent in these patients. As nurses focus on saving patients, this process has been easily overlooked. This researcher proceeded with this study to initially evaluate the current knowledge and practice of ICU nursing care and create a proposal to develop a standardized procedure for eye care for patients in the ICU.

The sample in this study consisted of 14 female nurses working at Becamex International Hospital. The data collection took place during a one-week period. The educational program was conducted twice a week so all nurses could attend the training. The training time was about 90 minutes including pretest, the researcher's presentation, questions from nurses, discussion, and posttest.

The mean age of nurses was 27 years with a range from 23 to 34 years. Education level was reflected 21.4% the diploma nurse level, 36.7% at the associate nurse level, and 42.9% at the Bachelor of Science in Nursing level. Thirteen (92.9%) of the nurses reported caring for 12 patients per shift. Worthy of note was 92.9% (n = 13) of the nurses reported having no previous eye training courses. The educational intervention significantly increased the nurse's knowledge about eye care in the ICU environment. All of the ICU nurse participants thought eye care was an important part of nursing care and thought there were clear expectations for eye care practices; however, nurses did not

have an eye care protocol to follow. Indeed, a majority of participants (71.4%) reported eye complications had occurred on patients. A barrier to eye care practice was lack of education, which accounted for 75% of participants. After the education program, the participants were satisfied with the education program overall and all nurses indicated plans to change existing eye care practices.

The sample size was relatively small, which meant the results of the study would be only relevant and applicable to the study participants. The results were seen to be consistent with previous educational intervention studies that increased nurses' knowledge about eye care in the ICU. The findings of this study suggested the need for the development of an eye care practice guideline for ICU patients.

ACKNOWLEDGEMENTS

I would like to thank all of the University of Northern Colorado faculty members for their great support in helping me complete my master's degree in nursing. I would like to express my sincere appreciation to Dr. Alison Merrill who worked tirelessly with me on making this possible. You have been wonderful mentors and I thank you for being patient with me through my entire program. I will always be grateful for your assistance and support. Finally, I would like to express my deep thanks to my family who always supported me in any situation to help me have more motivation to successfully complete this program.

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CHAPTER I

INTRODUCTION

Background and Significance of Problem

Previously, treating patients with life-threatening conditions was of prime concern in an intensive care unit (ICU); hence, ICU nurses would be normally focused on caring for patients to save their lives, paying little attention to tracking other serious problems (Burns & Day, 2012). It is important to note that critically ill patients admitted to a hospital often depend on technology and use of essential medication to sustain life. These patients are at risk for corneal injury due to many factors, the most prominent of which is ocular exposure (Dawson, 2005). However, work in an ICU might exclusively consist of taking care of patients with life-threatening conditions, making simple procedures such as eye care overlooked by nurses (Güler, Eşer, & Fashafsheh, 2016).

Ocular surface disease was reported to occur in up to 60% of patients with severe disease; the primary mechanism was believed to be caused by lagophthalmos or incomplete eyelid closure (Johnson & Rolls, 2014). Eye complications such as conjunctivitis, corneal abrasion, and corneal ulcers range from 42% to 60% in ICU patients as eye complications (Narmawala & Jani, 2017). Previous studies reported the incidence of eye diseases in ICU patients ranged from 3.6% to 89.3% and corneal abrasion rates in patients with mechanical ventilation ranged from 3% to 60%. The incidence of eye disorders in ICU patients occurred an average of 6.8 days after admission to the ICU (Cho, Yoo, Yun, & Hwang, 2017).

Thus, the incidence rate of eye complications in ICU patients can be high. In the Becamex Hospital (BIH), general ICU eye injury is a frequent event. This unfortunate situation is most likely caused by a lack of specific guidelines regarding care and prevention of eye diseases for patients in ICU. Lack of eye care procedures for ICU patients causes many difficulties for nursing care as well. The eye care procedure at BIH is mainly based on the nurses' experience caring for patients with ophthalmological issues and personal judgment. However, the effectiveness of such care has not been measured. To minimize adverse events for the patient's health, the World Health Organization (WHO, 2009) described a patient's safety by reducing to an acceptable minimum the risk of harm related to health care. Therefore, the lack of proper procedures of eye care in an ICU is a serious issue that must be addressed promptly to deliver the best care to patients in BIH.

Guidelines developed by Johnson and Rolls (2014) were designed for the provision of intensive care clinicians with best practice recommendations for evidence-based treatment and care that could be transferred and applied. In addition, a universal protocol proposed for the prevention of eye complications in critically ill patients should be followed (Comisso, Lucchini, Bambi, Giusti, & Manici, 2018). This researcher introduced these instructions to nurses at an exchange meeting where a safe eye care process for the patients at ICU was provided. Then the researcher proceeded with this study to evaluate the current knowledge and practice of ICU nursing care and create a proposal to develop a standardized procedure for eye care for patients in the ICU.

Problem Statement

Existing guidelines and procedures of BIH ICU nursing staff were analyzed with a special focus placed on identifying the level of knowledge of proper eye care for ICU patients. Additionally, the researcher examined nurses' practical skills related to eye care of ICU patients in BIH.

Purpose of the Thesis

The purpose of the study was to determine the current level of theoretical and practical knowledge of BIH nurses regarding eye care of ICU patients. Moreover, the study investigated if an educational program specifically designed to inform the nursing staff regarding proper eye care procedures and established guidelines could improve the level of ophthalmological care provided for ICU patients at BHI.

Research Questions

The following research questions guided this study:

Q1 What is the current level of knowledge and practical application of eye-care guidelines of BIH ICU nurses?

Q2 Can eye-care training program for ICU nurses improve their knowledge and current practices of providing ophthalmological care to ICU patients in BIH?

Theoretical Framework and Relevance to the Thesis

The Neuman (1995) systems model was chosen as a framework for this quality improvement project. Neuman (2002) explained his model as follows:

> The philosophic base of the Neuman Systems Model encompasses wholism, a wellness orientation, client perception and motivation, and a dynamic systems perspective of energy and variable interaction with the environment to mitigate possible harm from internal and external stressors, while caregivers and clients

> form a partnership relationship to negotiate desired outcome goals for optimal health retention, restoration, and maintenance. This philosophic base pervades all aspects of the model. (p. 12)

According to Smith and Parker (2015), one of the most essential responsibilities of nursing staff is to ensure that patients are provided with proper and effective care by analyzing and identifying potential issues and addressing them promptly. This approach is referred to as prevention and intervention. Smith and Parker further described Neuman's model as "primary prevention as intervention, secondary prevention as intervention, and tertiary prevention as intervention" (p. 172). Primary prevention is to reduce possibility of encounter with stress factors and strengthen flexible lines of defense (Smith & Parker, 2015). Secondary prevention is referred to as preliminary identification and treatment of symptoms; whereas, tertiary prevention is implementation of necessary procedural adjustments and reeducation of medical personnel to minimize or completely eliminate recurrence of undesirable events related to patient care (Neuman, 1995). The intervention can be done before or after the disease occurs (Neuman, 1995). Therefore, Nueman's model ensured the vital link between nurses and patients that is essential for the entire healthcare system (Smith & Parker, 2015).

Definition of Variables and Relevant Terms

Definition of Variables

Dependent variables. Practical skills of nurses related to providing eye care.

Independent variables. Knowledge of proper eye care procedures.

Variables. Age, gender, years of experience in ICU, and level of education.

Relevant Terms

Barriers for delivering eye care in intensive care unit. Hospital policy, eye care procedures, timeline of providing care, number of staffs, and procedural documentation in writing.

Intensive care unit. Number of hospital beds, number of patients.

Ophthalmology. Anatomy and physiological eye diseases.

Assumptions

The initial assumption in this study was related to a potential lack of knowledge or skills of medical personnel (nurses) regarding prevention and treatment of eye injuries in ICU patients at BIH. This assumption was based on the current lack of written guidelines regarding eye care provision for ICU patients at BIH. Finally, this researcher believed an educational program designed to educate BIH nursing staff on the topic of evidence-based eye care guideline would increase the knowledge and practical abilities of eye care practices.

Limitations

Fourteen nurses were involved in this study. Having a small study sample directly impacted this researcher's ability to generalize the findings and meant the results of the study would be only relevant and applicable to study participants. Further research involving a larger number (statistically significant sample) would be necessary to attempt to generalize the outcomes related to the effectiveness of the independent variable.

Conclusion

The aim of this study was to assess intensive care nurses' knowledge and practice regarding eye care procedures and determine if it was based on evidence-based eye care

practice guidelines. Interest in this topic originated after discovering previous studies found patients had frequent eye injuries while in ICU (Cho et al., 2017; Dawson, 2005; Milutinović, Cvijanović, Ćirić, Jovanović, & Andrijević, 2017; Narmawala & Jani, 2017). Eye problems were also frequently encountered in the ICU of BIH hospital but there was no specific procedure to guide the care and prevention of eye complications for patients. Therefore, it was necessary to continue investigating this issue in order to develop appropriate procedures and guidelines that would ensure the availability of consistently high-quality eye care for ICU patients at BIH.

CHAPTER II

LITERATURE REVIEW

Literature Search

For the purpose of reviewing available research on the topic, the researcher used the following keywords alone and in combination to search various databases: eye care, intensive care unit, ICU, critical care, critical patient, guideline, keratopathy, dry eye, ocular, eye injury, and eye problems. The following databases were searched: Cumulative Index to Nursing and Allied Health Literature (CINAHL), MEDLINE, Cochrane Library, Nursing & Allied Health Database, and Google scholar.

Summary of Normal and Physiological Anatomy of the Eye

The visual organ allows a person to perceive the world beyond the visual stimulus in the form of images and colors. It consists of three parts: eyelid extensions, eyeball, and visual pathways (Chương, Năm, Thu, Mẫn, & Lập, 2016). The eyelid is a continuation of the skin, blinking continuously to keep the surface of the eye lubricated and to remove dirt (Peate, 2016). Eyelashes are firm hairs that hold foreign matter out of the eye; they are combined with the tarsal glands to produce a lipid-rich substance that helps prevent eyelids from sticking together (Peate, 2016). The conjunctiva is a thin, transparent membrane that contains lymphoid tissue and extra tear glands. The function of the eyelids and the conjunctiva is to cover and protect the front of the eyeball by blinking or by reflexing; eyelids create dampness and evenly spread the tear film on the

cornea surface and prevent too much light from damaging the cornea. However, the upper eyelid is more active than the lower eyelids. When both of them are closed, they completely cover the cornea (Chương et al., 2016). Finally, tears have the function of preventing infection, reducing friction on the surface of the eyeball, removing debris, as well as providing oxygen and nutrients to the conjunctival parts. The average amount of tears humans produces a day is approximately 1 ml (Peate, 2016).

The eyeball is spherical with a front diameter of about 23mm and a volume of about 6.5 ml. It has three layers: the cornea, the uveal, and the retina (Chương et al., 2016). The cornea is a transparent, bloodless, and nerve-centered vessel, occupying one fifth of the front, 0.5 to 1 mm thick, with a diameter of about 12 mm (Chương et al., 2016). The sclera is very tough—about 1 mm thick, white, with small blood vessels, occupying 4/5 behind. It is connected to the front cornea and is composed of collagen fibers arranged irregularly for eye protection (Chương et al., 2016).

The complexity of the eye is truly remarkable. The wall of the eye has three layers: fibrous tunic, vascular tunic, and neural tunic (Peate, 2016). The fibrous tunic is the outermost layer of the eye that includes the sclera and cornea. It has three main functions: containing support structures during focus, providing support and protection, and serving as an attachment for the outer muscles of the eye (Peate, 2016).

Most of the eye surfaces are covered with sclera (the white part of the eye), which is composed of dense fibrous connective tissue that contains collagen and elastic fibers. Numerous blood vessels and nerves comprise the surface of sclera. The cornea is transparent throughout with sclera and is made up of a dense matrix of fibers laid down so they do not interfere with the transmission of light (Peate, 2016).

The vascular tunic is the middle of the three layers of the eye and contains many blood vessels, lymphatic vessels, and smooth muscles related to the activity of the eye. Functions of this class include providing a structure for the blood vessels and lymph, providing the tissues of the eye, adjusting the amount of light entering the eyes, releasing and re-absorbing aqueous humor, as well as controlling the shape of the lens (Peate, 2016). The vascular tunic is composed of the iris, ciliary body, and choroid, with the iris being in the center. It controls the amount of light entering the eye by adjusting the size of the pupil (Peate, 2016).

Eye Injuries

Eye injuries in the ICU can vary and damage the systemic and ocular systems of the eye due to metabolic depletion, multiorgan disorders, invasive and non-invasive mechanical ventilation, hypotension, reduced levels of consciousness, and high volumetric filling (Comisso et al., 2018). In a healthy person, the eyelid acts as a mechanical barrier to keep the eyes safe from injury, dehydration, and adhesion of the organism. The corneal reflexes are needed for the full distribution of tears on the eye surface. Corneal moisture is maintained by a lipid membrane; when eyes are closed while sleeping, tears are the means to transport leucocytes (Comisso et al., 2018). Corneal and conjunctival epithelial tissues enhance the retention of tears in the eye. Their continuous evaporation allows the conjunctiva to keep an appropriate temperature to avoid bacterial proliferation. Corneal reflexology is protection from physical threats; whereas, rapid eye movement is essential during sleep to ensure distribution of watery humor behind closed eyelids (Comisso et al., 2018).

Epidemiology of Ocular Complications in Critically Ill Adults

Eye complications can affect different areas of the eye such as the cornea, sclera, and conjunctiva. The pathology might include micro corneal perforation, usually associated with dry eye syndrome, corneal abrasion, erosion, ulceration, infection, or scarring (Johnson & Rolls, 2014). Acute corneal inflammation, which is any abnormality on the surface of the eye, in the ICU population has been found to be capable of corneal epithelial infection (keratitis). This infection might appear as bacteria or of fungal origin (Johnson & Rolls, 2014). When it spreads to the entire cornea, corneal inflammation has been found to be a major factor in the development of ocular surface diseases. It might also lead to serious complications such as loss of vision, corneal disruption, and a need for corneal transplants (Johnson & Rolls, 2014).

Incidence of eye problems was significantly associated with ICU length of stay, concurrent illness, and gastrointestinal or respiratory problems. These issues were also found to be significantly related to the level of consciousness of the patient, the use of artificial airways, tracheostomy, positive end-expiratory pressure, the presence of bronchial secretion, and history of sedative and muscle relaxant use (Comisso et al., 2018). The risk of developing eye problems was shown to increase by 2.8 times in patients with an ICU length of stay longer than seven days, seven times in patients with depression, and 10.8 times in coma patients (Comisso et al., 2018).

Finally, the neural tunic or retina is the innermost layer of the eye consisting of a thin outer layer, the pigment, and a thicker inner layer, which is called the nerve. Pigmentation of the retina absorbs light passing through the nerve. This prevents light from passing through the nerve, which causes visual echoes. Nerve endings of the retina

contain light receptors, supporting cells, and are responsible for preliminary processing and integrating visual information (Peate, 2016).

Practical Recommendations

Historically, specific eye care practices have included eye cleaning regimens with sterile water or normal saline every two to four hours. It could be conducted once or twice a day by putting a liquid on top of the eye. Moisturizing agents, such as methylcellulose eye drops, have also been used effectively to prevent dry eyes. Additionally, eye ointments have been applied to high-risk patients or when there is evidence of eye injury (Johnson & Rolls, 2014).

Comisso et al. (2018) recommended the following methods to prevent eye complications including assessment of individual patients to determine risk factors for ophthalmological complications and implementing daily assessment of the patients' abilities to keep eyelids closed. For patients who cannot close their eyes and are unconscious or sedated, maintaining eyelid closure by mechanical methods might be required. It would be necessary to repeat the regimen every two hours (Comisso et al., 2018). Similarly, Marshall, Elliott, Rolls, Schacht, and Boyle (2008) stated all patients who could not achieve eyelid closure or those who were unconscious or heavily sedated should receive eye care every two hours. The study additionally emphasized nursing staff are responsible for cleaning patients' eyes with saline soaked gauze and administering eye-specific lubricants. A grading of incomplete eyelid closure included three grades: grade 0—eyes completely closed; grade 1—eyes open, sclera, or conjunctiva visible; and grade 2—eyes open, cornea visible. The recommendation for

grade 0 was no action, grade 1 required lubrication and grade 2 mandated lubrication and taping of the lids with the tape along the lash margin (Johnson & Rolls, 2014).

Application of the Neuman Model

Developing and applying nursing theories are very important in guiding the practice of nursing since promoting evidence-based practices in nursing is one of the important ways of developing professionalism and independence in nursing (Fawcett & Desanto-Madeya, 2012). In addition, utilizing newly available theoretical knowledge related to nursing practices leads to increasing efficiency of clinical nursing staff (Nasiry Zarrin Ghabaee, Bagheri-Nesami, & Abbaspour, 2015).

This study aimed to influence the knowledge and awareness of nursing care for ICU patients at BIH. The primary goals of this research were to measure the existing level of expertise related to eye care among nurses at BIH as well as raise their awareness of the standard protocols of providing ophthalmological care to ICU patients. The interventions could occur at a primary level to strengthen solid protection. For instance, nurses were asked to identify all patients who used sedative or mechanical ventilation or those patients who could not close their eyelids. Every two hours, they also assessed the condition of eyelid closing with a flashlight to make sure the eyes were completely closed. Additionally, they had to lubricate both eyes at least four times a day. Afterwards, the nursing staff continued to assess the eyelid position every two hours (Comisso et al., 2018).

At the secondary level, the participants would help restore ICU patients to equilibrium by treating symptoms that occurred after infiltrating the body. If one or both eyelids did not completely close, the nurse was required to lubricate both eyes and close

the eyelids by using hydrogel dressing. After the intervention, if the eyelid closed successfully, the nurses would continue to evaluate the eyelid position every two hours, reapply the lubricant, and replace the old hydrogel dressing with a new one every four hours. It would also be necessary to change the dressing as soon as the gauze dried up or the eyelid opened below the dressing after successful closure. If after the intervention above the eyelid was not fully closed, the nurses must refer the patient to ophthalmology (Comisso et al., 2018).

At the tertiary level, it would be necessary to prevent further damage and maintain stability after recovery had occurred. Every time the nurses applied lubrication to the eye of the patient, they would be required to check the eye to see if it was red or if there was any danger or injury to the cornea. If the nurses suspected a potential injury, they would immediately refer the patient to ophthalmology (Comisso et al., 2018)

CHAPTER III

METHODOLOGY

In this chapter, the methodology used to carry out the study is presented. Included are descriptions of the design, setting, sample, procedure, instruments, analysis, and ethical considerations.

Design

A non-experimental field study approach was used to conduct this investigation. Such an approach was appropriate for the purpose of determining the current level of theoretical and practical knowledge of BIH nurses regarding eye care of ICU patients. Additionally, the study investigated whether an educational program, specifically designed to inform the nursing staff about correct eye care procedures and established guidelines, would improve their knowledge and current practices of providing ophthalmological care to ICU patients at BIH.

Setting

The setting for this study was the ICU at BIH. This hospital has 300 beds including 10 ICU beds. This hospital is located in Go Cat Area, Lai Thieu Ward, Thuan An Town, Binh Duong Province, Vietnam. This researcher is currently a nurse at this hospital.

Sample

For this exploratory study, nurses who worked in the ICU at BIH were asked to participate in this study. Participation was voluntary and involved the completion of a survey.

Procedure/Data Collection

Interested nurses who worked at BIH were asked to participate in the study. First, educational lectures were scheduled and invitations were sent out to hospital nurses to register. Second, data collection took place during a one-week period. The educational program was conducted twice a week so all nurses could attend the training. The training was about 90 minutes in length including pretest, the researcher's presentation, questioning, discussion, and posttest. Instructional materials included a journal article and PowerPoint presentations. When collecting data, participants completed a consent form (see Appendix A) to participate in the study before conducting the survey to ensure participation in the study was completely voluntary.

The researcher developed the educational program based on evidence-based practice. The course materials included manuscripts and PowerPoints presentations.

Data Collection Tool

The study utilized a survey tool including a pretest (see Appendix B) and a posttest (see Appendix C) that consisted of demographics, basic knowledge about the eye, and self-reporting on eye care practices. The instrument consisted of 29 questions of which eight questions were dedicated to identifying nurses' satisfaction level with the training program. The demographics section of the survey included six questions to collect information about participants' gender, age, number of years of work experience,

years of experience in ICU, educational level, and previous training in eye care (number of eye care training courses).

Basic knowledge about the eye portion was composed of 13 questions to collect basic information about the anatomy and physiology of the eye, function of tears and blinking mechanism, abnormal physiology, and ocular complications. This section also assessed participants' knowledge regarding most frequent reasons why ICU patients were at increased risk of ocular surface disorders. Each question was awarded one point and no point was awarded for providing incorrect answers or skipping items. The higher the the score, the higher eye care related knowledge the participants possessed.

The self-reported eye care practice sub-section included 10 questions designed to identify eye care methods performed by ICU nurses. Specifically, the questions were in regard to nursing awareness about the importance of eye care for ICU patients, nurse expectations, self-assessment of eye care knowledge, eye complications of ICU patients they or their colleagues had discovered, and frequency of eye problems/barriers preventing them from practicing eye care for ICU patients.

Satisfaction with the educational program part of the survey consisted of eight questions. This portion of the instrument was administered after the participants completed the education program. The questions were related to the program time, content, methods, expertise, learning materials, and awareness of participants who evaluated the lesson. The last question reflected participants' plan to adjusting eye care practices after taking the course. Each question received one point for *Not satisfied at all* and five points for *Very satisfied*. Higher scores reflected a greater satisfaction level of participants with the eye care education program. In particular, question 7 was used to

determine future participants' plans for changing eye care practices and question 8 collected other comments of participants.

Analysis

The data were analyzed in two stages. The first stage was analysis and computation of the descriptive statistics of the data for each variable. The second stage was to describe the relationship of the pretest and post-test. The third stage of the data analysis was an exploration of the associations among study variables.

Data were analyzed using the Statistical Package for the Social Sciences computer programs. A Type I error of 5% was used for all tests of statistical significance. Due to the low number of subjects for this study, non-parametric statistical tests were used. Statistical analysis was conducted to compare the differences between the pretest and posttest results of the survey. Effects of the eye care educational program and satisfaction with the educational program are presented in the form of descriptive statistics (means, standard deviations, *p*-values, etc.). The researcher also provides an explanation of the numerical data. All data were collected by the researcher in July 2019.

Ethical Considerations

Approval for this study by the University of Northern Colorado's Institutional Review Board was granted on July 3, 2019 (see Appendix D and Appendix E for approval from Becamex International Hospital). Precautions and safeguards were taken to ensure the safety and comfort of the subjects. All subjects identified as eligible to participate in this study were approached by the researcher and the study was explained. Before an interested subject was asked to sign the consent form (see Appendix A), the researcher ensured the subject was comfortable with participating in the study. At no

time was any undue pressure applied to any of the subjects for their participation or continued participation in the study. Before each procedure or data collection point, the subject was given a brief description of exactly what would be occurring.

Data sought were not considered confidential. Nonetheless, data regarding subjects were coded and maintained in project files under a number rather than a name. Only project personnel had access to the project files. At the completion of the study, all data will be shredded and destroyed.

CHAPTER IV

DATA ANALYSIS AND RESULTS

The findings of this study are presented in separate sections. The first section provides a brief description of the demographic data of the sample. The second section addresses the results of the pretest and posttest knowledge of eye care from the study survey tool.

Description of the Sample

Demographic data are summarized in Table 1. The sample included 14 nurses who worked in the ICU at BIH. The nurses were all female and ranged in age from 23 to 34 years (n = 14). Regarding years working as nurses, 21.4 % of nurses had been working as nurses for one to two years, 57.2% had worked for three to four years, and 21.4 % had worked for 8 to 10 years. Of the nurses who worked in the ICU, 42.8% of the nurses had worked for one year or less and 57.2% had worked for three to five years in the ICU. Education level was reflected by 56.7% of the nurses having a Diploma, 21.4% had an associate's degree, and 42.9% had a bachelor's degree. the BSN level. Thirteen (92.9%) of the nurses reported caring for 12 patients per shift. Worthy of note was 92.9% (n = 13) of the nurses reported no previous eye training courses.

Table 1

Demographic Statistics of Sample

Characteristic	*n*	%
Years in Nursing		
1	2	14.3
2	1	7.1
3	4	28.6
4	4	28,6
8	1	7.1
10	2	14.3
Years in ICU		
0.25	1	7.1
0.50	2	14.3
1.00	3	21.4
3.00	4	28.6
4.00	3	21.4
5.00	1	7.1
Nursing Education		
Diploma	5	36.7
Associate	3	21.4
BSN	6	42.9
Number of previous eye training courses		
0.0	13	92.9
2.0	1	7.1
Number of patients cared for per shift		
8	1	7.1
12	13	92.9

$N = 14$

Nurses' Knowledge and Practice of Eye Care for Patients in Intensive Care Unit

In this section, nurses' knowledge and practice of eye care for patients in the ICU is reported. The topic area of nurses' knowledge of eye care was evaluated prior to and after a planned education program. In addition, information about the self-reported eye care practice and satisfaction with the educational program were specifically surveyed

during the planned education program to assist with the future planning of education programs for ICU nurses.

Knowledge of Eye Care

The Knowledge of Eye Care section of the study survey tool contained 13 multiple choice questions. The pretest and posttest correct and in-correct responses for each question are provided in Table 2. There appeared to be improvement (a positive difference) between the scoring of the correct answer for 10 of the 13 questions in this section from the results of the pretest to the results of the posttest. A paired samples *t*-test was conducted to assess if there was an increase in the nurse knowledge after the education program by an increase in the number of correct "test" responses from the pretest to the posttest. In summary, the score for Educational Intervention showed a significant increase in nurses' knowledge about eye care in the ICU environment. The nurses gained an average of 5.54 points (95% confidence interval, 2.87, 8.21) on the knowledge test. This gain was statistically significant at $p <$ .001 for the paired *t* test (two tailed).

Table 2

Results of the Pretest and Posttest for Knowledge of Eye Care

Question	Pre-Test			Post-Test		
	N	*n*	%	*N*	*n*	%
Does the visual organ include?	14			14		
Correct		13	92.9		13	92.9
Incorrect		1	7.1		1	7.1
Which of the following statements is incorrect about eye conjunctiva?	14			14		
Correct		8	57.1		8	57.1
Incorrect		6	42.9		6	42.9
Which part of the eye blinks constantly keeping the surface of the eye lubricated and removing dirt?	14			14		
Correct		10	71.4		12	85.7
Incorrect		4	28.6		2	14.3
What are the functions of tears?	14			14		
Correct		3	21.4		12	85.7
Incorrect		11	78.6		2	14.3
How many milliliters of tear create from tear glad per day?	14			14		
Correct		2	14.3		10	71.4
Incorrect		12	85.7		4	28.6
Which of the following statements is incorrect?	14			14		
Correct		9	64.3		13	92.9
Incorrect		5	35.7		1	7.1
How many layers of eyeball?	14			14		
Correct		10	71.4		14	100.0
Incorrect		4	28.6		0	0.0
Which of the following statements is correct about the sclera?	14			14		
Correct		5	35.7		14	100.0
Incorrect		9	64.3		0	0.0
Which of the following statements is correct?	14			14		
Correct		2	14.3		13	92.9
Incorrect		12	85.7		1	7.1
Which of the following statements is correct about the lens?	14			14		
Correct		2	14.3		14	100
Incorrect		12	85.7		0	0.0
The basic mechanism causing dryness, abrasion, eye corneal infections related to?	14			14		
Correct		7	50.0		12	85.7
Incorrect		7	50.0		2	14.3
In ICU, what is the main cause of eyelid reflex disorder?	14			14		
Correct		12	85.7		11	78.6
Incorrect		2	14.3		3	21.4
Common eye complications in the ICU?	14			14		
Correct		4	28.6		13	92.9
Incorrect		10	71.4		1	7.1

Self-Reported Eye Care Practice

The Self-Reported Eye Care Practice section of the study survey tool contained 10 questions. These questions were presented to the nurses participating in this study during the planned educational offering on eye care practices in the ICU. The information gained from this portion of the survey would be helpful in planning additional education sessions for nurses about eye care for ICU patients. The results of this section of the survey are provided in Table 3.

Table 3

Result of Self-Reported Eye Care Practice

Question	*n*	%
Do you think eye care is an important part of your nursing care?		
Yes	14	100
No	0	0.0
Do you think there are clear expectations on eye care practice?		
Yes	14	100
No	0	0.0
How would you rate your knowledge and understanding of eye care?		
Very Good	0	0.0
Good	2	14.3
Acceptable	10	71.4
Poor	2	14.3
Very Poor	0	0.0
Do you have an eye care protocol or policy for unconscious patients?		
Yes	0	0.0
No	14	100.0
Is eyelid closure assessed in your ventilated, sedated patients?		
Always	2	14.3
Very Often	7	50.0
Sometimes	5	35.7
Rarely	0	0.0
Never	0	0.0
Open ended question: How is the eye protected from exposure? List all of the methods used in your unit.		
Artificial eye drops, tape eyes	4	28.6
Cover the eyes with gauze	1	7.1
Eye drops	3	21.3
Eye drops, cover eyes	4	28.6
Eye hygiene	2	14.2
How often is the eye care delivered?		
Always	1	7.1
Very Often	9	64.3
Sometimes	4	28.6
Rarely	0	0.0
Never	0	0.0
If you had to give an estimate, how many ocular complications have you seen in the last year?		
0	4	28.6
1.0	4	28.6
2.0	2	14.3
3.0	2	14.3
4.0	1	7.1
5.0	1	7.1
What is the last complication you or your colleagues have encountered?		
0	3	21.4
Chemosis	1	7.1
Chemosis, Conjunctivitis	2	14.3
Chemosis, Conjunctivitis, corneal ulcers	1	7.1
Conjunctivitis	4	28.6
Dry cornea	1	7.1
Keratitis	1	7.1
Pink eye	1	7.1
What are the barriers in your eye care practice?		
Lack of education	9	75.0
Unclear escalation process when there were concerns about a patient's eyes.	3	25.0
No response	2	

Satisfaction with the Education Program

The Satisfaction with the Educational Program section of the study survey tool contained seven questions and a comments section. These questions were presented to the nurses participating in this study during the planned educational offering on eye care practices in the ICU. Information gained from this portion of the survey would be helpful in planning additional education sessions for nurses about eye care for ICU patients. The results of this section of the survey are provided in Table 4.

Table 4

Results of Satisfaction with Education Program

Question	*N*	*n*	%
1. How satisfied are you with the time of the training session?	14		
Very Satisfied		0	0.0
Satisfied		12	85.7
Neither		2	14.3
Dissatisfied		0	0.0
Very Dissatisfied		0	0.0
2. How satisfied are you with the content of the training session?	14		
Very Satisfied		1	7.1
Satisfied		9	64.3
Neither		2	14.3
Dissatisfied		1	7.1
Very Dissatisfied		1	7.1
3. How satisfied are you with the teaching methods of the training session?	14		
Very Satisfied		2	14.3
Satisfied		7	50.0
Neither		5	35.7
Dissatisfied		0	0.0
Very Dissatisfied		0	0.0
4. How satisfied are you with the instructor of the training session?	14		
Very Satisfied		6	42.9
Satisfied		5	36.7
Neither		3	21.4
Dissatisfied		0	0.0
Very Dissatisfied		0	0.0
5. How satisfied are you with the learning materials and the knowledge you have learned during the training session?	14		
Very Satisfied		2	14.3
Satisfied		10	71.4
Neither		1	7.1
Dissatisfied		1	7.1
Very Dissatisfied		0	0.0
6. How satisfied are you with improving the practice session?	14		
Very Satisfied		0	0.0
Satisfied		8	57.1
Neither		6	42.9
Dissatisfied		0	0.0
Very Dissatisfied		0	0.0
7a. Do you plan to change current eye care practices for patients?	14		
Yes		14	100
No		0	0.0
7b. If yes, how do you plan to do it?	13		
Discuss with colleagues		11	
Talk to the head nurse		4	
Find out more information about eye care for ICU Nurses		9	
Request an additional eye care training session for nursing		6	
Need a guideline for eye care clinical practice		10	
8. Other comments			
Eye care for patients in clinical practice is required, nurses need more knowledge			
Nurses need more specific and detailed information			
The nurse education should be provided with an eye care procedure (demonstration)			

CHAPTER V

DISCUSSION

The purpose of the study was to determine the current level of theoretical and practical knowledge of BIH nurses regarding eye care of ICU patients. This study investigated if an educational program specifically designed to inform the nursing staff regarding proper eye care procedures and established guidelines could improve the level of eye care knowledge of nurses. Additionally, feedback was sought from ICU nurses who participated in this study about their satisfaction with the education session and if they planned to change current eye care practices for the patients in the ICU and how they planned to make those changes.

Sample Characteristics

The research sample was conducted at BIH with an initial 15 nurses working in the ICU department. Among them, one participant was excluded and the remaining 14 participated in the validation study.

Setting Characteristics

The results of the study showed all (100%) of the nurses who worked in the ICU were women with an average age of 25.5 years. The highest age was 34-years-old and the lowest age was 23-years-old. Three and four years (28.6%) of experience accounted for more than 50% of nurses. Ten years (14.3%) of experience accounted for the highest number of experienced nurses. The longest time nurses had worked in the ICU was five years, accounting for 7.1% (the lowest); next was four years in the ICU, accounting for

21.4%, three years accounted for 28.6% (highest), one year accounted for 21.4%, and less than one year accounted for 21.4%. The educational level of nurses was bachelor's degree (42.9%), diploma (21.4%), and associate degree (36.7%). The number of nurses who had attended eye care classes was 7.1%; the highest number of visits was two times. Meanwhile, the number of nurses who had not attended any eye care session was quite high (92.9%). The number of nurses working 12 hours per shift accounted for the highest proportion (92.9%) and only 7.1% worked eight hours per shift.

Major Finding

In general, the educational intervention significantly increased nurses' knowledge of eye care in the ICU environment, which was similar to Cho et al.'s (2017) research that eye care related knowledge was enhanced. The research results showed many nurses (92.1%) had not participated in the eye care training program for patients in the ICU, which greatly affects eye care for patients at ICU. All of the nurses recognized eye care was essential and through a survey they completed, they still did not have an eye care procedure for patients. Knowledge and understanding of eye care for patients was assessed by the nurses at an acceptable level of 71.4%. Eye care measures provided by nurses have not been uniform. This suggested a standardized procedure was needed for nurses to follow as 71.4% of nurses reported eye abnormalities had occurred on patients in the past year. A barrier 75% of participants faced in eye care practice was lack of education. After the educational intervention, most participants were satisfied with the program and 100% of participants planned to change eye care practices for patients. In the options section, 11 participants chose to discuss with colleagues, 10 selected a guide for eye care clinical practice, and six wanted to learn more about eye care for ICU nurses.

This information will be foundational for the next planned education for ICU nurses. Also, the interest in a guideline for eye care was a major finding as well as a recommendation.

Strengths and Limitations of the Study

Validity and Reliability

This was an exploratory study conducted at one hospital. The survey was in the language of the study participants (Vietnamese). Although the reliability and validity of the study's data collection instrument was previously assessed, the information attained in this study was thought to be reliable and valid. However, in the future as the education program for the ICU nurses continues to grow, further validity and reliability should be formally re-assessed.

Generalizability

Generalizability of the findings of this study might be limited by several factors. The major limitation was this exploratory study was limited to one setting. Therefore, conclusions were based on this limited sample size and must be generalized with caution. Another limitation was it was not possible or desirable to randomly select subjects at more than one setting. The study sample cannot be considered representative of eye care in the ICU setting. Thus, the findings are limited to similar population groups.

Implications for Practice

Due to the lack of a standard procedure to guide eye care (without eye care procedure), nurses had difficulty accessing training programs on eye care (92.9% of nurses could not attend eye care courses). Therefore, it is necessary to unify the promulgation of an eye care process for nurses to implement and organize eye care

programs for nurses to obtain updated knowledge. Thus, eye care for ICU patients will be performed well and nurses will not miss basic eye care needs for patients. It will bring valuable benefits to patients as well as prevent eye diseases that might occur during treatment in the department, thereby reducing cost and duration of treatment for patients. In addition, it is necessary to carry out a program to evaluate the results of nursing practice to evaluate the effectiveness of the programs already implemented.

Recommendations for Research

1. Update and provide additional education for nurses regarding eye care in the ICU. Assess the impact of this education on patient outcomes.
2. Currently no guideline exists at the study hospital for eye care in ICU patients. Additional exploratory research is needed to construct and evaluate a guideline for nursing care in ICU that specifically addresses eye care.
3. A future study might evaluate whether or not the nurses actually changed their practices to incorporate the guidelines they had just learned.

Conclusion

This study provided rich data regarding nurses' knowledge about eye care in the ICU. Major findings of this exploratory foundational study were as follows: (a) after a planned educational offering, eye care knowledge for ICU nurses significantly increased; (b) overall, nurses were satisfied with the educational offering and requested additional educational opportunities; and (c) the nurses attending the educational offering and participating in this study specifically noted the lack of an eye care guideline for ICU patients. The results of this study will lay the groundwork for further research.

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APPENDIX A

INFORMED CONSENT—NO SIGNATURE

Institutional Review Board

INFORMED CONSENT-NO SIGNATURE DOCUMENT

Project Title: Assess knowledge and practice eye care for patients of ICU nursing staff
Student Researcher: Le Hong Liem
Research Advisor: Alison S. Merrill, PhD, RN, CNE School of Nursing
Purpose: Evaluate the initial impact of the educational program for nurses on the knowledge and practice of eye care for ICU patients and develop an eye care procedure for patients at ICU.

Objective: This project sets to

- Evaluate of current knowledge of ICU nurses before teaching.
- Re-evaluate knowledge of ICU nurses after teaching.
- Evaluate the level of satisfaction and the plan of changing the practice of the research participants on the program.
- Compare the number of nurses with the right knowledge and practice habits.
- Identify possible relationships between age, experience, years of work, qualifications knowledge and practice of nursing care for patients at ICU.

The training time is about 90 minutes including pretest, the researcher's presentation, questioning, discussion and post-test. Instructional materials included: article, PowerPoints presentations. When collecting data, participants will read a consent form to participate in the study before conducting the survey to ensure participation in the study is completely voluntary.
For the quizzes and questionnaires, you will not provide your name, but will be asked to provide your class section, gender, and overall grade point average. Therefore, your responses will be anonymous. Only the researcher and the other course instructors will examine individual responses.

Risks to you are minimal. You may feel anxious or frustrated taking the quizzes, but we are trying to minimize these feelings because the results will have no bearing on your current job. The benefits to you include gaining practice in taking quizzes, especially with respect to the material in this course.

If you have any concerns about your selection or treatment as a research participant, please contact the Office of Research, Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-1910.

Committee Contact information:
Student Researcher: Le Hong Liem, Master's -student
Research Advisor: Alison S. Merrill, PhD, RN, CNE School of Nursing
Email: alison.merrill@unco.edu
Phone: 970-351-1389

APPENDIX B

DATA COLLECTION TOOL: PRETEST

Pretest

Demographics

1. Gender:
   - □ Male
   - □ Female
2. Age:

3. Years in Nursing:
   .....
4. Years in ICU nursing:
   .....
   .....
   .....
   .....
5. Generic Nursing Education (check highest level attained)
   - □ Diploma
   - □ Associate
   - □ Bachelors
   - □ Masters
   - □ Doctorate
6. History of previous training of eye care course (number of eye care training courses):
   .....
7. How many patients do you take care of per shift?
   .....
8. How many hours do you work in a shift?
   .....
   .....

Knowledge on eye care

9. Does the visual organ include?
   a. Eye sockets, eyelashes and conjunctiva, lacrimal, eyeball
   b. Visual Pathways
   c. Ears
   d. a, b is correct
   e. a, b, c is correct
10. Which of the following statements is incorrect about eye conjunctiva?
    a. Bulbar conjunctiva: covering the front of the eyeball except the cornea.
    b. Palpebral conjunctiva: this portion covers the inner surface of both the upper and lower eyelids
    c. Forniceal conjunctiva is the transition place of the two types of conjunctiva.
    d. **Controls the size of pupil regulating the light that reaches the retina**
    e. The conjunctiva is the clear, thin membrane that covers part of the front surface of the eye and the inner surface of the eyelids.

11. Which part of the eye blinks constantly keeping the surface of the eye lubricated and removing dirt?
    a. Eyelash
    b. Eyebrow
    c. Eyelid
    d. Conjunctiva
    e. a, b, c, d correct
12. What are functions of tears?
    a. Reducing friction
    b. Preventing infection and dirt
    c. Supplying oxygen and nutrients to the eyes
    d. a, b is correct
    e. a, b, c is correct
13. How many milliliters of tear create from tear gland per day?
    a. 1 mL
    b. 2 mL
    c. 3 mL
    d. 4 mL
    e. 5 mL
14. Which of the following statements is incorrect?
    a. The function of the eyelid and conjunctiva is to cover and protect the front part of the eyeball by a blinking or reflexive eye movement.
    b. Eyelid creates wetness and evenly spread tear film on the cornea, preventing too strong light.
    c. The upper eyelid is less mobile than the lower eyelid; when closed, it completely covers the cornea.
    d. Blinking eyelids constantly keep the surface of the eye lubricated and remove dirt.
    e. Eyelids act as a mechanical barrier to protect the eyes from injury, dehydration and adhesion of microorganisms.
15. How many layers of eyeball?
    a. Sclera
    b. Choroid
    c. Rentina
    d. a, b is correct
    e. a, b, c is correct

16. Which of the following statements is correct about the sclera?
    a. It is a thin, transparent membrane, containing lymphatic organization and auxiliary tear glands.
    b. The shell is very tough, about 1 mm thick, white, with little blood vessels, accounting for 4/5 after, connected with the cornea in front, is composed of unevenly arranged collagen fibers, responsible for protecting protect the eyeball.
    c. It is a transparent sphere, no vascular and rich in nerves, accounting for 1/5 before, 0.5 to 1 mm thick, horizontal diameter about 12 mm.
    d. There is a spherical shape, the front diameter of about 23 mm, volume of about 6.5 ml, the inside contains transparent environments: aqueous humor, vitreous chamber and lens.
    e. It is a transparent, bi-convex lens, without blood vessels, behind the iris and in front of the lens. Horizontal diameter is about 9 mm, about 4 mm thick.
17. Which of the following statements is correct about the cornea?
    a. It is a thin, transparent membrane, containing lymphatic organization and auxiliary tear glands.
    b. The shell is very tough, about 1 mm thick, white, with little blood vessels, accounting for 4/5 after, connected with the cornea in front, is composed of unevenly arranged collagen fibers, responsible for protecting protect the eyeball.
    c. It is a transparent sphere, no vascular and rich in nerves, accounting for 1/5 before, 0.5 to 1 mm thick, horizontal diameter about 12 mm.
    d. There is a spherical shape, the front diameter of about 23 mm, volume of about 6.5 ml, the inside contains transparent environments: aqueous humor, vitreous chamber and lens.
    e. It is a transparent, bi-convex lens, without blood vessels, behind the iris and in front of the lens. Horizontal diameter is about 9 mm, about 4 mm thick.
18. Which of the following statements is correct about the lens?
    a. It is a thin, transparent membrane, containing lymphatic organization and auxiliary tear glands.
    b. The shell is very tough, about 1 mm thick, white, with little blood vessels, accounting for 4/5 after, connected with the cornea in front, is composed of unevenly arranged collagen fibers, responsible for protecting protect the eyeball.
    c. It is a transparent sphere, no vascular and rich in nerves, accounting for 1/5 before, 0.5 to 1 mm thick, horizontal diameter about 12 mm.
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    e. It is a transparent, bi-convex lens, without blood vessels, behind the iris and in front of the lens. Horizontal diameter is about 9 mm, about 4 mm thick.

19. The basic mechanism causing dryness, abrasion, eye corneal infections related to?
    a. Eyelid closing
    b. Interruption of reflexes flashing eyelids
    c. Eyelid flashing frequency
    d. a, b is correct
    e. a, b, c is correct
20. In ICU, is the main cause of eyelid reflex disorder?
    a. Due to the care of nursing
    b. Due to sedative effects
    c. Due to coma
    d. b, c is correct
    e. a, b, c is correct
21. Common eye complications in the ICU?
    a. Chemosis
    b. Corneal abrasion/exposure keratopathy
    c. Conjunctivitis
    d. Bacterial keratopathy
    e. a, b, c, d is correct

Self-reported eye care practice

22. Do you think eye care is an important part of your nursing care?
    □ Yes
    □ No
23. Do you think there are clear expectations on eye care practice?
    □ Yes
    □ No
24. How would you rate your knowledge and understanding of eye care?
    □ Very Good
    □ Good
    □ Acceptable
    □ Poor
    □ Very Poor
25. Do you have an eye care protocol or policy for unconscious patients?
    □ Yes
    □ No
26. Is eyelid closure assessed in your ventilated, sedated patients?
    □ Always
    □ Very Often
    □ Sometimes
    □ Rarely
    □ Never

27. How is the eye protected from exposure?
    List all the methods that you use in your unit
    .....
    .....
    .....
    .....
    .....
    .....
    .....
    .....

28. How often is this eye care delivered?
    - ☐ Always
    - ☐ Very Often
    - ☐ Sometimes
    - ☐ Rarely
    - ☐ Never

29. If you had to give an estimate, how many ocular complications have you seen in the last year? (“Don’t know” is allowed)
    .....

30. What is the last complication you or your colleagues have encountered? (“Don’t know” is allowed)
    .....

31. What are the barriers in your eye care practice?
    Choose multiple answers
    - ☐ Lack of education
    - ☐ Unclear escalation process when there were concerns about a patient’s eyes
    - ☐ Eye care perceived as being low priority when patients are acutely unwell
    - ☐ Others:
      .....
      .....
      .....

APPENDIX C

DATA COLLECTION TOOL: POSTTEST

Posttest

Knowledge on eye care

9. Does the visual organ include?
    a. Eye sockets, eyelashes and conjunctiva, lacrimal, eyeball
    b. Visual Pathways
    c. Ears
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    e. a, b, c is correct
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    c. The upper eyelid is less mobile than the lower eyelid; when closed, it completely covers the cornea.
    d. Blinking eyelids constantly keep the surface of the eye lubricated and remove dirt.

e. Eyelids act as a mechanical barrier to protect the eyes from injury, dehydration and adhesion of microorganisms.

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    c. Rentina
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16. Which of the following statements is correct about the sclera?
    a. It is a thin, transparent membrane, containing lymphatic organization and auxiliary tear glands.
    b. The shell is very tough, about 1 mm thick, white, with little blood vessels, accounting for 4/5 after, connected with the cornea in front, is composed of unevenly arranged collagen fibers, responsible for protecting protect the eyeball.
    c. It is a transparent sphere, no vascular and rich in nerves, accounting for 1/5 before, 0.5 to 1 mm thick, horizontal diameter about 12 mm.
    d. There is a spherical shape, the front diameter of about 23 mm, volume of about 6.5 ml, the inside contains transparent environments: aqueous humor, vitreous chamber and lens.
    e. It is a transparent, bi-convex lens, without blood vessels, behind the iris and in front of the lens. Horizontal diameter is about 9 mm, about 4 mm thick.
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21. Common eye complications in the ICU?
a. Chemosis
b. Corneal abrasion/exposure keratopathy
c. Conjunctivitis
d. Bacterial keratopathy
e. a, b, c, d is correct

Satisfaction with the educational program

22. How satisfied are you with the time of the training session?
□ Very satisfied
□ Satisfied
□ Neither
□ Dissatisfied
□ Very dissatisfied

23. How satisfied are you with the content of the training session?
□ Very satisfied
□ Satisfied
□ Neither
□ Dissatisfied
□ Very dissatisfied

24. How satisfied are you with the teaching methods of the training session?
□ Very satisfied
□ Satisfied
□ Neither
□ Dissatisfied
□ Very dissatisfied

25. How satisfied are you with the instructor of the training session?
    - ☐ Very satisfied
    - ☐ Satisfied
    - ☐ Neither
    - ☐ Dissatisfied
    - ☐ Very dissatisfied
26. How satisfied are you with the learning materials and the knowledge you have learned during the training session?
    - ☐ Very satisfied
    - ☐ Satisfied
    - ☐ Neither
    - ☐ Dissatisfied
    - ☐ Very dissatisfied
27. How satisfied are you with improving the practice session?
    - ☐ Very satisfied
    - ☐ Satisfied
    - ☐ Neither
    - ☐ Dissatisfied
    - ☐ Very dissatisfied
28. Do you plan to change current eye care practices for patients?
    - ☐ Yes
    - ☐ No

    If yes, how do you plan to do it?
    Choose multiple answers
    - ☐ Discuss with colleagues
    - ☐ Talk to the head nurse
    - ☐ Find out more information about eye care for ICU patients
    - ☐ Request an additional eye care training session for nursing
    - ☐ Need a guideline for eye care clinical practice
    - ☐ Others:

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      .....
      .....
      .....
29. Your other comments:

    .....
    .....
    .....

APPENDIX D

INSTITUTIONAL REVIEW BOARD APPROVAL

UNIVERSITY OF
NORTHERN COLORADO

Institutional Review Board

DATE:	July 3, 2019
TO:	Liem Le Hong
FROM:	University of Northern Colorado (UNCO) IRB
PROJECT TITLE:	[1447188-2] Assess knowledge and practice eye care for patients of ICU nursing staff
SUBMISSION TYPE:	Amendment/Modification
ACTION:	APPROVAL/VERIFICATION OF EXEMPT STATUS
DECISION DATE:	July 3, 2019
EXPIRATION DATE:	July 3, 2023

Thank you for your submission of Amendment/Modification materials for this project. The University of Northern Colorado (UNCO) IRB approves this project and verifies its status as EXEMPT according to federal IRB regulations.

We will retain a copy of this correspondence within our records for a duration of 4 years.

If you have any questions, please contact Nicole Morse at 970-351-1910 or nicole.morse@unco.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.

APPENDIX E

BECAMEX INTERNATIONAL HOSPITAL APPROVAL

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

ĐƠN XIN PHÉP THU THẬP SỐ LIỆU

Kính gửi: - Giám Đốc Bệnh Viện Quốc Tế Becamex

- Phòng Điều Dưỡng Bệnh Viện Quốc Tế Becamex

- Tôi tên là: Lê Hồng Liêm
- Ngày sinh: 16/07/1990
- Địa chỉ: 51/762 tỉnh lộ 7, ấp Xóm Trại, xã An Nhơn Tây, huyện Củ Chi, TP Hồ Chí Minh.
- Đơn vị công tác: Bệnh viện Quốc Tế Becamex.
- Là học viên lớp thạc sĩ Điều dưỡng trường Đại Học Bắc Colorado (University of Northern Colorado), Mỹ.
- Đề tài nghiên cứu: Đánh giá kiến thức và thực hành chăm sóc mắt cho người bệnh của điều dưỡng khoa hồi sức tích cực chống độc.

Để triển khai thu thập số liệu và hoàn thành luận văn tốt nghiệp theo quy định của Đại Học Bắc Colorado, Mỹ. Tôi làm đơn này kính mong Ban Giám Đốc bệnh viện Quốc Tế Becamex xem xét, tạo điều kiện cho tôi được thu thập số liệu tại khoa hồi sức tích cực chống độc trong thời gian từ tháng 05/2019 đến 06/2019.

Tôi xin chân thành cảm ơn!

Bình Dương, ngày 23 tháng 05 năm 2019

XÁC NHẬN
CỦA GIÁM ĐỐC BỆNH VIỆN

CÔNG TY CỔ PHẦN BỆNH VIỆN ĐA KHOA QUỐC TẾ BECAMEX

TỔNG GIÁM ĐỐC
Nguyễn Văn Trương

NGƯỜI LÀM ĐƠN

Lê Hồng Liêm