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## Eye changes in the intensive care unit: a cohort study

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### ABSTRACT

**Objective:** identify risk factors significantly associated with corneal injury in intensive care unit patients; estimate the recurrence of risk factors associated with corneal injury in intensive care unit patients; propose a logistics regression model capable of estimating the risk of corneal injury in intensive care unit patients. **Method:** This is a prospective cohort study conducted in a private network hospital located in the state of Rio de Janeiro with patients in the intensive care unit, using an instrument, and participants will be evaluated using the Fluorescein 1% test. The data will be processed by the Statistical Package for the Social Sciences, version 22.0 and by the Microsoft Excel 2007 application. The main tests applied will be Chi-square Test, Fisher's Exact Test, Kolmogorov-Smirnov and Shapiro-Wilk. The logistic regression analysis will be performed.

**Descriptors:** Corneal Injuries; Dry Eye Syndromes; Intensive Care Units.

## INTRODUCTION

The dynamics of the intensive care environment may lead to prioritization of immediate and complex care for critically ill patients over other basic but essential care<sup>1</sup>. In this directive, scientific evidence has proven that procedures considered of low complexity are placed in the background due to the high technology linked to the care practice in the Intensive Care Unit (ICU)<sup>(1)</sup>.

The mechanisms responsible for lubrication and eye protection may be compromised in critically ill patients. Eye exposure is the most relevant cause of corneal injury<sup>(2)</sup>. There are many factors that can trigger the reduction of the patient's eye defense mechanisms and lubrication in the intensive care environment<sup>(1,3)</sup>. Eye care is a simple and effective strategy in the prevention of eye complications<sup>(3)</sup>. Therefore, early clinical judgment becomes a determining factor in nursing care to prevent and identify early eye changes. However, a body of knowledge about the main eye alterations and risk factors of the patient in the ICU is necessary to reduce ophthalmic damage to a minimum, as they are events that can be prevented<sup>(1,2)</sup>.

Based on the problem situation presented, the research aims to identify risk factors significantly associated with corneal injury in intensive care patients; to estimate the recurrence of factors associated with risk of corneal injury in intensive care patients; to propose a logistic regression model capable of estimating the risk of corneal injury in ICU patients.

## METHOD

This is a quantitative, epidemiological, observational prospective cohort type survey.

The research field is a private network hospital with a Joint Commission International (JCI) accreditation seal of excellence. The intensive care unit is composed of 18 active beds arranged in two intensive care units. To compose the research sample the following eligibility criteria will be used: patients over 18 years of age admitted to the ICU during the data collection period that do not present previous corneal injury, which will be verified by the Fluorescein sodium 1% test, and who agree to participate in the study by signing the free and informed consent form. After the sample calculation, the estimated casuistry for this work was 77 patients. The evaluation instrument includes: sociodemographic data, clinical data, ocular alterations, factors associated with the risk of corneal injury and the Fluorescein 1% test. The preparation of this instrument is based on previous studies in the current literature.

The cornea of the participants will be evaluated daily by a nurse trained by an ophthalmologist, who will instill a drop of fluorescein in each eye and, after three minutes, will perform the evaluation with the aid of a cobalt light ophthalmoscope and record the data in the data collection instrument. If the participants present cells that have been de-epithelialized, they will be removed from the research and the team on duty will be notified so that the appropriate measures can be instituted. The data will be processed by the Statistical Package for the Sciences (SPSS) program. The descriptive analysis will be done by calculating the mean, median, standard deviation, coefficient of variation, correlation coefficient, proportions, and risk measures (odds ratio and relative risk). In

the inferential analysis, the tests applied will be the chi-square test, Fisher's Exact, Kolmogorov-Smirnov, Shapiro-Wilk, Student's t, Mann-Whitney, ANOVA, and Kruskal Wallis. To evaluate the relationship between variables associated with corneal injury, the logistic regression analysis will be performed. Through ethical-legal issues, referred by the National Health Council, this study was approved by the Research Ethics Committee of the Anna Nery School of Nursing and the hospital where the research was held under CAAE: 13942519.0.0000.5238.

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