

Semantic validation of nursing outcome dry eye severity in intensive care

Validação semântica do resultado de enfermagem gravidade do olho seco em terapia intensiva

Validación semántica del resultado de enfermería severidad del ojo seco en cuidados intensivos

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Abstract

Objective: To semantically validate the indicators of the nursing outcome Dry Eye Severity in adult patients admitted to the intensive care unit. **Methods:** Methodological study of semantic validation developed with 15 nurses from an adult general ICU of a public university hospital located in the Northeast of Brazil. Data collection took place between the months of February and April 2019. For data analysis, the Kappa test was used with a value equal to or greater than 85% agreement. A value of $p < 0.05$ was used to indicate statistical significance when the proportion was less than 85%. **Results:** After evaluating the nurses in relation to the constitutive and operational definitions and operational magnitudes of the indicators, all presented agreement ≥ 0.85 . As all indicators that presented statistically significant p values ($p < 0.05$) presented a cutoff point with perfect agreement, all were admitted. In addition, the nurses' comments and suggestions were taken into account for the final version of the analysis. **Conclusion:** In the general evaluation of the NO Dry Eye Severity by the nurses, it was observed that they considered it as understandable, easy and clear. Thus, all indicators were semantically validated by presenting a cutoff point of the agreement index above 85%.

Descriptors: Dry Eye Syndromes; Evaluation of Patient Care Outcomes; Nursing Evaluation; Validation studies; Intensive Care Units.

Whats is already known on this?

It is recommended the construction of constitutive, operational definitions and operational magnitudes referring to the indicators of nursing outcomes and validation of these definitions to enable a more reliable and continuous evaluation.

What this study adds?

The results of the present study highlight that the indicators of the nursing outcome Dry Eye Severity are semantically valid in adult patients admitted to the intensive care unit.



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Resumo

Objetivo: validar semanticamente os indicadores do resultado de enfermagem Gravidade do Olho Seco em pacientes adultos internados em unidade de terapia intensiva. **Métodos:** estudo metodológico de validação semântica desenvolvido com 15 enfermeiros de uma UTI geral adulto de um hospital universitário público localizado no Nordeste do Brasil. A coleta de dados ocorreu entre os meses de fevereiro a abril de 2019. Para análise dos dados, utilizou-se o teste de Kappa com valor igual ou superior a 85% de concordância. Utilizou-se valor de $p < 0,05$ para indicar significância estatística quando a proporção era inferior a 85%. **Resultados:** após a avaliação dos enfermeiros em relação às definições constitutivas, operacionais e magnitudes operacionais dos indicadores, todos apresentaram concordância $\geq 0,85$. Como todos os indicadores que apresentaram valores de p estatisticamente significantes ($p < 0,05$) apresentaram ponto de corte com concordância perfeita, todos foram admitidos. Ademais, os comentários e sugestões dos enfermeiros foram levados em consideração para a versão final da análise. **Conclusão:** na avaliação geral do RE Gravidade do Olho Seco pelos enfermeiros, observou-se que estes o consideraram como compreensível, fácil e claro. Deste modo, todos os indicadores foram validados semanticamente ao apresentarem ponto de corte do índice de concordância acima de 85%.

Descritores: Síndromes del ojo seco; Evaluación de los resultados de la atención al paciente; Evaluación de enfermeira; Estudios de Validación; Unidades de cuidados intensivos.

Resumén

Objetivo: Validar semánticamente los indicadores de resultados de enfermería Severidad del ojo seco en pacientes adultos ingresados en una unidad de cuidados intensivos. **Métodos:** Estudio metodológico de validación semántica desarrollado con 15 enfermeros de una UCI general de adultos de un hospital público universitario ubicado en el Nordeste de Brasil. La recolección de datos se realizó entre los meses de febrero y abril de 2019. Para el análisis de los datos se utilizó la prueba Kappa con un valor igual o superior al 85% de concordancia. Se utilizó un valor de $p < 0,05$ para indicar significación estadística cuando la proporción era inferior al 85%. **Resultados:** Después de evaluar a los enfermeros en relación a las definiciones constitutivas, operativas y magnitudes operativas de los indicadores, todos mostraron concordancia $\geq 0,85$. Como todos los indicadores que presentaron valores de p estadísticamente significativos ($p < 0,05$) presentaron un punto de corte con perfecta concordancia, todos fueron aceptados. Además, los comentarios y sugerencias de las enfermeras fueron tomados en consideración para la versión final del análisis. **Conclusión:** En la evaluación general del RE de Severidad del Ojo Seco por parte de los enfermeros, se observó que lo consideraron comprensible, fácil y claro. De esta manera, todos los indicadores fueron validados semánticamente al presentar un punto de corte del índice de concordancia superior al 85%.

Descritores: Síndromes del ojo seco; Evaluación de los resultados de la atención al paciente; Evaluación de enfermeira.; Estudios de Validación; Unidades de cuidados intensivos.

INTRODUCTION

In the Intensive Care Units (ICU), hospitalized patients are more likely to develop eye disorders, due to the need for complex care, such as ventilatory assistance, use of various drugs, such as sedatives and neuromuscular blockers, and invasive procedures to maintain the severe clinical condition.⁽¹⁾

A study carried out with mechanically ventilated patients treated with neuromuscular blockade observed an incidence of 26.7% of dry eye.⁽²⁾ Another study with 130 patients observed a 25.8% incidence of dry eye and corneal abrasion, with a mean onset time of 4 days after ICU admission.⁽³⁾ Dry Eye can be considered an adverse event in the ICU and, due to its high prevalence, it is necessary for nurses to act through specific promotion and prevention strategies against this threat, establishing effective patient safety.⁽¹⁾

Nursing plays a fundamental role in providing direct care to patients, in order to avoid serious injuries resulting from eye dryness and ensure the integrity of the cornea.⁽⁴⁾ Thus, it is essential to develop care plans aimed at eye care through the Nursing Process (NP), according to the taxonomies for language standardization, such as the NANDA-International (NANDA-I) classifications (nursing diagnoses), Nursing Outcomes Classification (NOC) and Nursing Intervention Classification (NIC).⁽⁵⁻⁷⁾

Nursing Outcomes (NOs) are defined as actual states, behaviors, or perceptions of individuals, families, or communities. The measurement of NOs through the NOC classification allows nurses the ability to quantify changes in health status after the implementation of nursing interventions, effectively monitoring their progress.⁽⁶⁻⁸⁾ Despite its importance, research related to the use of NOC is still in its infancy, leaving an important knowledge gap in the field of nursing, especially linked to standardized language classification systems.

In this sense, this study has as its starting point the ND (00219) Risk of Ocular Dryness of the NANDA-I taxonomy, in which it is defined as: "Susceptibility to inadequate tear film, which can cause discomfort and/or cause damage to the ocular surface, which can compromise health".⁽⁵⁾ And especially the NO (2110) Dry Eye Severity of the NOC 5th edition taxonomy, defined as: "severity of signs and symptoms of tear insufficiency".⁽⁶⁾

The Dry Eye Severity NO provides nurses with a set of information to guide decisions, establish goals, uniformly classify the assessment of patients' health status and direct the provision of care.⁽⁶⁻⁸⁾ However, the indicators of this ND may not be sufficient to estimate the real health conditions of the patient

in a concrete way, as they are scored from the perspective of each evaluator and make the evaluation still abstract. Therefore, in order to materialize and standardize the scores attributed by more than one evaluator on the health status of the same patient, it is recommended to construct constitutive and operational definitions and operational magnitudes for each of the indicators of the selected NO, and that these definitions be validated to enable a more reliable and continuous evaluation.⁽⁶⁾ In this sense, the construction of these definitions was carried out in a previous study and to contribute to the improvement of clinical nursing practice based on scientific evidence, it is necessary to validate the indicators of the referred NO.⁽⁹⁾

Given the above, this study aims to semantically validate the indicators of the nursing outcome Severity of Dry Eye in adult patients admitted to the intensive care unit.

METHODS

This is a methodological study to validate the Nursing Outcome. To ensure rigor in the validation process, a model based on psychometrics was adopted, based on the model proposed by Pasquali (2015).⁽¹⁰⁾

According to the adopted framework, this validation process is based on three major procedures, called Theoretical Procedures, Empirical Procedures (Experimental) and Analytical Procedures (Statistical), carried out through 12 steps. These steps are operationalized in recommended stages, such as context analysis, concept analysis, content validation, semantic validation and clinical validation.⁽¹⁰⁾

Thus, a concept analysis stage of the indicators and content validation were carried out in previous studies and support the present study, where the semantic validation stage of the indicators of the nursing outcome Dry Eye Severity was carried out.^(9,11)

Semantic validation is performed with the target population to verify the understanding of the indicators and must be presented to this group to discuss the relevance and resolve possible doubts.⁽¹⁰⁾ Thus, it consisted of the adequacy of indicators regarding intelligibility based on the evaluation of the constitutive, operational definitions and operational magnitudes, which were built in a previous study.⁽⁹⁾

The research was developed in an adult general ICU of a public university hospital located in the Northeast of Brazil and data collection took place between February and April 2019.

The population consisted of nurses from the clinical practice of the adult general ICU of that hospital. The recruitment of professionals was carried out due to the need for the contribution of clinical practice professionals when analyzing the understanding and refinement of the indicators.

The sampling process in the present study was intentional and considered the monthly scale of the nursing professionals distributed in the three shifts on duty in the adult general ICU. Invitation letters were sent to 23 clinical practice nurses. Of these, the return of 15 who composed the final sample was obtained.

The following inclusion criteria were considered: nurses who were interested in discussing the research topic; be described in the staff of the institution; and have at least one year of experience as an ICU nurse. Nurses who were on leave from their work duties in the unit were excluded.

The instrument was delivered containing two parts: the first related to the characterization of the nurse with profile information such as: sex, age, state in which he/she resides, place in which he/she was titled, year and place of completion of the graduation, area of activity, time of experience, performance with the themes related to the Nursing Process and its Classification Systems; the second part consisted of the NO Dry Eye Severity with the 14 indicators and their respective constitutive, operational definitions and operational magnitudes already validated regarding its content.

In this sense, to measure the responses indicated by the nurses regarding the understanding and refinement of the indicators in relation to the use of the appropriate term, a five-point Likert scale was used, namely: (1) not characteristic; (2) very uncharacteristic; (3) not very characteristic; (4) considerably characteristic; (5) very characteristic. It is noteworthy that at the end of each element evaluated in the instrument, space was made available for suggestions and considerations. In addition, a general evaluation of the NO Dry Eye Severity and its indicators was carried out by the participants.

The dates and times for the delivery of the instrument with the evaluations and corrections were agreed between the participants and researchers. 15 days were recommended for delivery of the instruments. The meetings for delivery and receipt of the material took place in a place established by the research participant, providing privacy and comfort for cordial interaction with the researcher. Also, the researcher was present at the institution to clarify doubts regarding the completion of the instrument.

The collected data were entered into the Microsoft Excel for Windows 2010 software and analyzed using the Statistical Package for the Social Sciences (SPSS), version 22. For the descriptive analysis of the

characterization of the participating nurses, the frequencies, measures of the center of distribution and the variability were considered.

To verify the adequacy of the nurses who agreed with the relevance of each item evaluated, the scale was recoded to dichotomous, where items marked 1, 2, and 3 were considered inadequate, and items marked 4 and 5 were considered adequate.⁽¹²⁾

In addition, the Kappa test was performed to consider the appropriate items. The adequacy of these occurred when they presented a value equal to or greater than 85% of agreement.⁽¹²⁾ For each indicator, the binomial test was applied, thus, a value of $p < 0.05$ was used to indicate statistical significance if the proportion was less than 85%.

This study was approved by the Research Ethics Committee of the Federal University of Rio Grande do Norte (REC/UFRN) under opinion number 2.196.404, CAAE number 71452817.5.0000.5537, and the nurses signed the Informed Consent Form (ICF) in order to ensure anonymity and confidentiality of the information.

RESULTS

The sample of 15 nurses was predominantly female (86.67%). Most (73.33%) were up to 40 years old, with a mean age of 37.80 (± 4.75). Regarding the degree, 46.67% were specialists, while masters and graduates had the following percentages respectively: 40.00% and 13.33%. As for the time of operation, 60.00% had more than 10 years. 93.33% reported that they worked with Systematization of Nursing Care/Nursing Process and classification systems. The mean time of training of nurses was 12.20 years (± 4.38), as shown in Table 1.

Table 1. Data regarding the sociodemographic and professional profile of nurses. Natal, RN, Brazil, 2020. (n=15)

Variables	N	%
Sex		
Female	13	86.67
Male	2	13.33
Age		
40 yrs.	11	73.33
Over 40 years	4	26.67
Graduation		
Specialization	7	46.67
Master	6	40.00
Under graduation	2	13.33
Time working in the field		
Up to 10 years	6	40.00
Over 10 years	9	60.00
Working with Systematization of Nursing Care/Nursing Process and classification system		
Yes	14	93.33
No	1	6.67
	Mean	SD
Age (years)	37.80	4.75
Time of graduation (years)	12.20	4.38

Source: Elaborated by the authors (2020)

SD: Standard Deviation

Related to Table 2, the semantic analysis of the indicators that proved the easy understanding of the titles, constitutive and operational definitions and operational magnitudes of the indicators of the NO Dry Eye Severity was carried out. These results were obtained from scores assigned from 1 to 5 regarding the intelligibility of each indicator. Grades 4 and 5, when assigned, represented the permanence of the indicator without changes.

Table 2. Semantic analysis of the indicators evaluated by nurses regarding intelligibility. Natal, RN, Brazil, 2020. (n=15)

Indicators	Nurses	Intelligibility*
(1) Tear production	4 5 4 5 5 4 5 4 5 5 5 4 5 5 5	1.00**
(2) Eyelid closure	4 5 5 5 5 5 5 5 5 5 5 5 5 5 5	1.00**
(3) Burning sensation in the eyes	5 4 5 5 5 5 5 4 4 5 5 4 4 5 4	1.00**
(4) Conjunctival redness	4 4 5 5 5 5 5 5 4 5 5 5 5 5 4	1.00**
(5) Eye pruritus sensation	5 5 5 5 5 4 5 5 5 3 3 5 4 5 5	0.87
(6) Sandy sensation throughout the ocular surface	5 5 5 5 5 3 5 5 4 5 4 5 5 5 4	0.93
(7) Localized foreign body sensation on ocular surface	4 5 5 4 5 3 3 5 5 5 5 5 4 5 4	0.87
(8) Pain in the eye	5 5 5 5 5 5 5 5 5 5 3 5 5 5 5	0.93
(9) Excessive tearing	5 5 5 5 3 4 5 5 5 5 5 4 5 5 5	0.93
(10) Blurred Vision	4 5 5 5 5 4 5 5 5 5 5 5 5 5 4	1.00**
(11) Mucoïd secretion	5 5 5 5 5 5 5 5 5 5 3 4 5 5 5	0.93
(12) Sensitivity to light	4 4 5 5 5 3 5 5 5 5 5 5 5 4 5	0.93
(13) Eye fatigue	5 4 5 5 5 5 5 5 4 5 5 4 3 5 5	0.93
(14) Blinking mechanism	5 4 5 5 5 5 5 5 4 5 5 5 5 5 5	1.00**

Source: Elaborated by the authors, (2020).

* Kappa test; **p-value<0.05.

It should be noted that all indicators had a cutoff point ≥ 0.85 , of which 42.9% presented perfect agreement (1.00), 42.9% presented agreement index of 0.93 and 14.2% agreement of 0.87. In the evaluation of the binomial test, for a significance level of 5%, the indicators Tear production, Eyelid closure, Burning sensation in the eyes, Redness of the conjunctiva, Blurred vision and Blinking mechanism were statistically significant. Therefore, as all indicators that presented statistically significant p values ($p < 0.05$) presented a cutoff point with perfect agreement, all were admitted.

Regarding the considerations pointed out by the nurses, for the tear production indicator, despite having presented perfect agreement, in the considerations the nurses pointed to the lack of knowledge of the Schirmer test described in the operational definition. This consideration is pertinent in view of the need for the professional to perform ocular evaluation on patients and such test contributes to the quality of care provided. However, as seen at the cutoff point, this comment did not interfere with the NO Dry Eye Severity intelligibility process.

Regarding the indicators Burning sensation in the eyes, Sensation of ocular pruritus, Sandy sensation on the entire ocular surface, Localized sensation of foreign body on the ocular surface and Blurred vision, the evaluating nurses evidenced the difficulty of measuring them when they are in front of patients sedated and/or under invasive mechanical ventilation by orotracheal tube. In this sense, it is necessary to clarify that the measurements of some indicators of the NO Dry Eye Severity require conscious and oriented patients, and if the situations described above occur, the term Not Applicable (NA) is used.

As for the indicator Conjunctival redness, one evaluator suggested specifying the operational magnitude of this indicator, as operational magnitude 1 defined as "numerous and diffusely dilated blood vessels" could compromise the assessment. However, in view of the agreement of Kappa 1.00 for this indicator, it was decided not to make changes in this operational magnitude.

For the indicator Eye pain, it was suggested to change the term "Visual Analogue Scale" by the term "Visual Analogue Scale of Pain" in the operational definition of this indicator. Thus, it was considered relevant for the intelligibility of the NO and modified in the version for the later stage.

Regarding the indicator Excessive tearing, it was recommended to reformulate the term "occasional runny nose" present in operational magnitude 3 of this indicator. The modification was carried out and the operational magnitude 3 was called "occasional tears".

As for the mucoid secretion indicator, a suggestion for modification was presented due to the confusion between the terms "mucoid secretion" and "purulent secretion". However, this suggestion was not considered relevant for modification, since the term "mucoid secretion" is the term considered appropriate for clinical practice related to Dry Eye.

Regarding the indicator Sensitivity to light, the nurses questioned the permanence of this indicator, as patients do not differ, in most cases, the shifts of the day due to the persistent brightness in the ICU. This recommendation was not considered for modification/exclusion because the agreement was greater than 85% and because the constitutive definition of this indicator is described as "Feeling of discomfort during exposure to light". The term light in this regard is not linked to daylight, but refers to artificial light, which exposes the patient to light throughout the hospitalization period.

For the Eyelid Closure, Eye Fatigue and Blinking Mechanism indicators, no changes, insertions or exclusions were suggested in the constitutive, operational definitions and operational magnitudes. It is noteworthy that Eye Fatigue and Blinking Mechanism were included after concept analysis in previous research.⁽¹¹⁾

DISCUSSION

Research related to the refinement of NOs belonging to the NOC is growing in the national and international literature, since the arsenal of demands arising from clinical practice is high when new results arise or need reformulations. Therefore, research on this subject is indispensable to contribute to the clinical practice of nursing professionals, since they support clinical decision-making, promote the development of knowledge and also strengthen evidence-based practice.⁽⁸⁻⁹⁾

For this semantic analysis of the intelligibility of the NO Dry Eye Severity, the selection of the sample of nurses occurred in a way that represented the profile of the target population of interest. The characterization of the participants pointed out that most were female, specialists, had more than 10 years of experience, worked with Systematization of Nursing Care/Nursing Process and classification systems, and had a mean time of training greater than 12 years.

Another research with the same method showed the majority of female participants and with longer working time than the result of this study.⁽¹³⁾ This reveals that semantic validation research has contributed significantly, since most professionals have extensive professional experience, contributing to the approximation with clinical practice. Next, each indicator and its set of definitions and magnitudes will be discussed, considering its importance for the refinement of the NO under study.

As for the indicators, it was observed easy understanding of the titles, constitutive and operational definitions and operational magnitudes, since all presented agreement greater than 85%. Another study carried out in the ICU corroborates this result, as nurses in this sector considered an instrument to measure the use of light technologies to be easy to understand.⁽¹⁴⁾

Regarding the Tear Production indicator, the nurses suggested the need for knowledge to perform the Schirmer test. Despite the low knowledge regarding the Schirmer test pointed out in the present study, it is worth mentioning that this test is easy to apply and can be applied by nurses during their professional practice. Research carried out in the ICU highlights the use of the Schirmer test by nurses to measure lacrimal insufficiency, allowing earlier interventions to prevent eye damage.⁽¹⁵⁻¹⁶⁾

The Eyelid closure indicator is considered relevant, as incomplete eyelid closure can cause serious lesions, since exposure of the eye triggers the evaporation of the tear film and consequently ocular dryness. Thus, complete eyelid closure aims to protect the cornea from the external environment and is responsible for the renewal of the tear film.⁽¹⁷⁻¹⁸⁾

Although a difficulty in measuring the indicators Burning sensation in the eyes, Sensation of ocular pruritus, Sandy sensation throughout the ocular surface, Localized sensation of foreign body on the ocular surface and Blurred vision in sedated patients and on invasive mechanical ventilation, these can be applied to conscious and oriented ICU patients. The evaluation of these indicators is necessary in the face of changes in instability and osmolarity of the tear film, as well as inflammatory processes and neurosensory abnormalities that affect the eye.⁽¹⁹⁻²¹⁾

Related to the indicator Conjunctival redness, the nurses' main suggestion was to numerically clarify the number of blood vessels in the operational magnitudes; however the extension of these vessels in the ocular region was described. One of the main causes for conjunctival redness is insufficient tear production that promotes irritation of the ocular surface.⁽²²⁾ Research that evaluated the clinical predictors of ocular dryness in the ICU identified the presence of blood vessels in 30.6% of hospitalized patients.⁽²³⁾

The measurement of the Eye Pain indicator is performed in conscious patients using the Visual Analogue Pain Scale. Patients who are at risk of eye dryness may develop eye pain due to prolonged exposure to light and low humidity that promotes inadequate tear film.⁽²⁴⁾

Regarding the indicator Excessive tearing, its occurrence is related to eye exposure for a long period of time. Studies state that incomplete eyelid closure causes several clinical signs for ocular dryness, including hyperemia and excessive tearing observed from the application of the Schirmer test and a result close to 35 mm.⁽²⁵⁾

As for mucoid secretion, the evaluation of this indicator becomes relevant, because in studies with the diagnosis of risk of ocular dryness, its presence was decisive for diagnostic inference.⁽²³⁾ The presence of mucoid secretion occurs from excessive loss of water through evaporation from the exposed ocular surface or by dysfunction of the meibomian glands producing the ocular lipid layer.⁽¹⁶⁾

Regarding the indicator Light sensitivity, it is necessary to clarify that the indicator refers to artificial light present almost 24 hours a day throughout the hospitalization process. Excessive light falls on the ocular surface of patients, promoting ocular dryness by contributing to the evaporation of the tear film, including when associated with the decreased blinking mechanism.⁽¹⁷⁾

Regarding the indicator Eye fatigue, it has also been described in other studies.^(11,26) The insufficiency of the tear film promotes the development of the risk of ocular dryness and, consequently, the patient reports ocular fatigue.⁽²⁷⁻²⁸⁾

The indicator Blinking mechanism is relevant to the NO addressed in the present study, as the decreased blinking mechanism may be a potential factor for the development of ocular dryness. In addition, the blinking mechanism relates directly to the ocular surface and tear film homeostasis. Thus, the occurrence of limitations in the spontaneous movement of the blinking reflex triggers deficiencies in the pumping of tear drainage, removal of microorganisms and uniform tear distribution. In addition, it contributes to the increased evaporation of the tear film due to environmental factors, as it favors the exposure of the ocular surface.^(23,27-30)

Professionals described as relevant the use of NO Dry Eye Severity, because eye care needs to be present in nursing care developed in the ICU environment. It is recommended to carry out training for these professionals in relation to the use of NO with constitutive, operational definitions and operational magnitudes, in order to improve clinical practice, as well as the quality of eye health of patients hospitalized in intensive care.

It is worth mentioning the recommendation to develop studies focused on nursing interventions that help improve the care provided to patients with ocular dryness, allowing satisfactory health results to be achieved.

The results of the present study highlight that the indicators of the nursing outcome Dry Eye Severity are semantically valid in adult patients admitted to the intensive care unit. Thus, this study contributes to the refinement of the indicators by clinical practice nurses, enabling the improvement of the intelligibility of the nursing outcome under study with clear and precise constitutive, operational definitions and operational magnitudes.

The availability of nurses was considered a limitation of the study, as it was necessary for the researcher to return to the research scenario several times, due to the fact that the work process requires direct assistance, which influenced a smaller number of participants. Another limitation was the professionals' little experience with handling the NOC taxonomy. The participants pointed to a closer approach to NANDA-I, and it is necessary to clarify the contribution of the study to the clinical practice of the participants.

CONCLUSION

In the general evaluation of the NO Dry Eye Severity by nurses, it was observed that they considered it as understandable, easy and clear. Thus, all indicators were semantically validated by presenting a cutoff point of the agreement index above 85%. Therefore, this study ensured the semantic review of the indicators with their respective constitutive, operational definitions and operational magnitudes. Of these, two indicators (Eye Fatigue and Blinking Mechanism) are not yet included in the NOC 5th edition taxonomy, the inclusion of which can further enhance the NO Dry Eye Severity.

CONTRIBUTIONS

Contributed to the conception or design of the study/research: Lira Neto JCG. Contributed to data collection: Sáber AJG, da Roza MP, de Freitas MBT. Contributed to the analysis and/or interpretation of data: Lira Neto JCG, Sáber AJG, Grifante L. Contributed to article writing or critical review: Lira Neto JCG, da Penha JC, Fernandes BKC. Final approval of the version to be published: Sáber AJG, da Roza MP, de Freitas MBT, Lira Neto JCG, da Penha JC, Fernandes BKC, Grifante L.

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