Health indicators in the care for neurocritical patients

Indicadores de saúde no cuidado ao paciente crítico neurológico

Indicadores de salud en la atención al paciente crítico neurológico

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This study aimed to develop indicators to evaluate the care for neurocritical patients. Methodological study for development and validation of indicators of health evaluation, conducted on the Intensive Care Unit of a large hospital. The opinionated validation method was used, where seven experts (five nurses and two doctors) participated on the content analysis through operational manual from May to August 2012. The values obtained from the expert judgment were all above 80%, in which the literature reference was above 75%. The results revealed that all the indicators were considered valid as regards the agreement percentage. Therefore, it is possible to establish reliable indicators to evaluate the proposed care and establish the quality of the service. From the theoretical prerequisites, its use will support the control of assistance quality whilst collaborates with designing intervention plans.
Descriptors: Quality Indicators, Health Care; Validity of Test; Critical Care; Neurology.

O propósito deste estudo foi desenvolver indicadores para avaliação do cuidado a pacientes críticos neurológicos. Estudo metodológico de elaboração e validação de indicadores de avaliação em saúde, desenvolvido em Unidade de Terapia Intensiva de hospital de porte extra. Foi utilizada a metodologia de validação opinativa, onde sete *experts* (cinco enfermeiros e dois médicos) participaram da análise dos conteúdos através de manual operacional no período de maio a agosto de 2012. Os valores obtidos a partir do julgamento efetuado pelos *experts* foram todos acima de 80%, sendo o referencial de literatura acima de 75%, cujos resultados indicaram que todos os indicadores foram considerados válidos em relação ao percentual de concordância. Portanto é possível o estabelecimento de indicadores confiáveis para avaliação do cuidado proposto e estabelecer a qualidade do serviço prestado. A partir de pressupostos teóricos e sua aplicação subsidiará o controle da qualidade assistencial à medida que colabora com a elaboração de plano de intervenção.
Descritores: Indicadores de Qualidade em Assistência à Saúde; Validade dos Testes; Cuidados Críticos; Neurologia.

El propósito del estudio fue desarrollar indicadores para evaluar la atención a pacientes críticos neurológicos. Estudio metodológico de desarrollo y validación de indicadores de evaluación en salud, llevado a cabo en Unidad de Cuidados Intensivos del hospital de franqueo adicional. Fue utilizada metodología de validación de opinión, donde participaron siete expertos (cinco enfermeros y dos médicos) en el análisis de contenidos de manual operacional de mayo a agosto de 2012. Los valores obtenidos a partir de la sentencia de los expertos estaban todos por encima de 80%, la literatura referencia por encima de 75%, por lo tanto, los resultados indicaron que los indicadores válidos en relación con el porcentaje de concordancia. Así, es posible establecer indicadores seguros para evaluar la atención propuesta y establecer la calidad asistencial. Los presupuestos teóricos y su aplicación subvencionaran el control de la calidad asistencial, ya que colabora con el desarrollo del plan de intervención.
Descriptores: Indicadores de Calidad de la Atención de Salud; Validez de las Pruebas; Cuidados Críticos; Neurología.

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Introduction

Quality in health care can be defined as the degree of conformity of the items assessed with pre-established standards and criteria, which can be measured through indicators developed specifically for this purpose. The use of these indicators should be consistent and, for this reason, it is necessary to adopt appropriate quality standards of care[1].

Quality must be understood as an evaluation parameter, without which the service of health institutions would be severely compromised. In this context, assessing the functioning of health services consists in investigating, establishing, and improving the concepts of quality, as well as fostering the development of higher standards of care[2].

Recommendations for better practices in supportive care were described in the 1930s. In the 1960s, the precursor of the quality of health, a basic taxonomy for measuring the quality of health care was developed, dividing quality measures into structure, process, and outcome[3].

One way to assess the quality of care practices is the construction of clinical indicators, which are quantitative measures of desirable or undesirable outcomes of a given process or system, measured in a continuous or periodic basis to ensure the achievement of goals. Quality indicators can be defined as quantitative measures that reflect and measure the quality of the professional care performed, monitor and quantify the results[4].

The evaluation of health services must involve necessarily analysis of indicators and when focused on their use, in the context of hospital nursing, it is necessary to define indicators that assess the quality of care. It has always been a challenge associated with the need to provide nurses with indicators validated by them[5].

The construction of quality indicators for the evaluation of health services in hospitals involves the entire management structure to develop indicators that require searching for main routes that point to the need of considering aspects of healthcare, education, and management policies in health[6].

The indicator is a variable, characteristic, or attribute of structure, process, or outcome able to synthesize or represent what people want to evaluate[7].

The establishment of indicators as quantitative measure of a particular characteristic associated with the quality assessed. The purpose of indicators is to analyze the conditions of the process/service and compare them with pre-established standards, contributing to verifying diversion and consequent search for improvements, maintaining and improving the level of quality established[8].

Specifically, with regard to the health of critically ill patients, we verify high rates of morbidity and mortality in Intensive Care Units and the lack of health programs and actions, which are triggering factors of concern for professionals aware of their responsibilities regarding the importance to provide quality care[9].

Intensive Care Units (ICU) have specific care demand facing a population of critically ill patients, whose main characteristic is the need for constant monitoring of their health status by the entire multidisciplinary team with a reserved area in the hospital, where the mortality and morbidity risks are higher, and the treatments and care offered will influence the outcome[9].

Studies show that, given the severity and complexity of the patient within the intensive care environment, during their stay, each one undergoes approximately 178 interventions/day, which requires the coordination of multiple concurrent activities, in line with the multidisciplinary team[10].

The challenge of providing intensive care consists in developing and quantifying evidence to demonstrate the positive impact on the care offered[11]. In this perspective, the use of quality indicators of care represents a powerful management instrument for allowing the adequacy of the quantitative and qualitative importance of promoting excellent care[11].

This study aimed to develop and validate the content of indicators for the assessment of quality of care, based on process indicators, applicable to the neurological patient care within the biological and security domains. This study intends to contribute to new ways of measuring and assessing the quality of care as fundamental process to the care management through simplified instruments that can be applied, and it is directed to evaluate the quality of care through the validation methodology.

Method

To develop the indicators for the study, process indicators and neurological critical patient as the target population were established, considering that the institution chosen, Hospital Beneficência de São Paulo, has specialized ICU for this group. The study took place from May to August 2012. Were characterize as the care for seriously ill and high-risk patients those whose clinical conditions oscillate between narrow limits of normality/abnormality and where small organic changes can lead to serious deterioration of body function[11].

Methodological development study of designing and validating indicators of health assessment with investigative approach of methods of obtaining, organizing, and analyzing data, and validation of research instruments and techniques[12].

The construction of indicators comprises several stages. This study followed three steps. The first is the definition and construction of indicators, the determination of the construct in question, which in this case is the Quality of Care to Neurocritical Patients[13].

For the development, the following assessment items selected for the study were: "Is the pupillary assessment performed every 2 hours in all patients?"[14] "Is the Glasgow scale applied at least once in 24 hour period?"[14] "Are the Cerebral Perfusion Pressure measures applied every 2 hours?"[15] "Is there accidental loss of catheter to measure Intracranial Pressure?"[15] "Is the placement of the External Ventricular Derivation (EVD) catheter adequate?"[16] "Is the headboard maintained at a 30-degree angle according to care prescription?"[16]

The assessment items selected as process indicators of neurocritical patients, where there are most frequent problems and that involve a larger number of patients, result in situations that endanger their safety and wellbeing and are likely to be resolved through measures of permanent and continuing education, as well as issues involving the ethical and legal aspects related to the care documentation.

The second step was defining the expert panel that evaluated the substantiation of the content of the indicators, composed of five nurses and two doctors with experience in the field of neurology and intensive care, totaling seven professionals. As inclusion criterion, it was selected professionals (doctors and nurses) active for more than five years, and excluded those with less than five years of experience in the Neurological Rehabilitation Unit.

According to the Portuguese language dictionary, expert means specialist. For this study, expert was considered an those with a high degree of knowledge and experience in the care for critically ill patients, through either scientific research or healthcare practice.

The third step happened through the scientific validation of indicators using the method of Content Validity, by expert judgment, as to the value and consistency of each indicator to evaluate the practices approached and the ability to guide, capture, measure, and analyze the data produced.

The content validation is an essential step in the development of new measures because it represents the onset of a mechanism for associating abstract concepts with observable and measurable indicators[17].

In the literature, presents disagreement on the terminology and the concept of content validity. For some authors, it consists in judging to what extent the items selected to measure a theoretical construct

represent well all the important aspects of the concept to be measured[18].

The term validation is defined as the degree to which it is appropriate to measure the true value of what is proposed to, enabling to infer how much the results were obtained through the instrument[19].

Content validation is the method that encompasses two distinct phases, the conceptual analysis the author makes based on literature review and the evaluation by experts[20]. The work technique consisted of individual completion of the operational manual containing evaluation items of each indicator.

Were considered as approved the judgment of converging opinions with minimal favorable level of 75%, therefore close to the maximum observed in pertinent literature, ranging between 50% and 80%. When below 75%, it was considered the comments and suggestions for non-compliance, the possibility of adjustment with or without feedback to participants, or even suppression of assessment aspects that did not reach this ratio. In the attributes with psychometric scales, it was considered approved on the consensus of 75% only the attributes with scores 3 or 4[21].

The Research Ethics Committee of the Hospital Beneficência Portuguesa de São Paulo approved the research project under protocol No. 5483/2012. Furthermore, the participants signed the free and informed consent form.

Results

The expert judgment included analysis and evaluation of the operating manual of the proposed indicators, the content of each assessment item, and the attributes of the content of the set of items for assessing indicators of the care for neurocritical patients.

The evaluation of operational constructs of the indicators considered the items developed; theoretical and scientific substantiation as sufficient evidence; the type of indicator as a process suitable for what people want to measure; the numerator and denominator are described clearly and without doubt as to what is to be measured; the sample is adequate to portray the reality measured; the sources of information are sufficient for data collection; the criteria are clear enough to allow more than one reviewer to have the same interpretation under the same conditions at the time of evaluation.

The content validation procedure enabled to capture the opinion of each expert and supported the reformulation of items and indicators and the application of statistical calculations to determine the Content Validity Index (CVI) and percentage agreement shown in Table 1.

It was observed that all items obtained the value of 80% determined in the literature; therefore, were considered valid all items valid.

Table 1 - Expert agreement regarding the representativeness of the measure for the set of items that compose the evaluation indicators of care for neurocritical patients

Indicators		Expert agreement	
	n	Content (%)	Composition (%)
Pupillary assessment	7	100.0	85.7
Use of GCS	7	100.0	100.0
Cerebral perfusion pressure	7	85.7	85.7
Loss of catheter to measure ICP	7	100.0	100.0
Placement of the EVD	7	85.7	100.0
High headboard	7	85.7	85.7

GCS – Glasgow Coma Scale; ICP – Intracranial pressure; EVD – External ventricular derivation

The values in Table 1 represent the percentage agreement of experts who evaluated the set of items comprising the indicators of each indicator built for assessing the care for neurocritical patients, valid for representativeness of the measure in relation to the proposed indicators, namely: descriptor, substantiation, type of indicator, numerator, denominator, data source, evaluation criteria, and sample. We observe that all items showed a value above the determined in theoretical frameworks found, which was 75-80% agreement.

The items to assess the representativeness of the content of indicators corresponded to behavioral requirements, objectivity, simplicity, clarity, relevance, accuracy, variety, and credibility. We can conclude that the percentage agreement of experts in relation to the content representation of evaluation indicators obtained a percentage above the estimates proposed in the literature.

All indicators had a percentage agreement of 100% regarding the score of Content Validity Index (CVI), and the range of determining values for this measure is at least 80%, therefore, we considered them valid as regards the content studied. This step assessed the indicators of attributes, accessibility, communication, context, effectiveness/accuracy, feasibility, and goal.

Discussion

To measure, assess, or quantify clinical information, it is often necessary to consider the criteria of significance and accuracy of the measuring instruments to be used. The validity criterion relates to the ability of the instrument to measure what it proposes. Evaluation processes, however, must use valid information, because only by applying valid measurements we avoid the risk of distorting the staff behavior[22].

The values obtained from the expert judgment were all above the recommended in the reference literature, which is 75%[23]. Although we have followed the suggestions made by the experts, there was no need for resending the material to evaluators since all indicators obtained percentage above the recommended values in the literature.

This study highlighted the challenge of building and validating clinical process indicators to assess practices in the care for neurocritical patients. Thus, it becomes essential to the care that professionals develop critical thinking for making safe and informed decisions based on valid measures[24].

Following the need to assess the care provided to these patients through indicators, it could be used to strengthen the natural desire of healthcare professionals to improve the care and, at the same time, work as a way to understand the quality of this care.

Another major challenge was the content validation with unusual method to an essentially technical area, such as the care for critically ill patients, however, widely used in psychosocial area.

The indicators constructed and validated through the method of content validation certainly do not cover all practices, but address those that may fundamentally evaluate the quality of care provided.

Finally, although validated, such indicators need to be adjusted as to their use, in order to meet the specific care of each study population and thus ensure the reliability of the results.

Conclusion

The constant search for quality of care should be part of everyday life, as well as care management, patient safety, costs, or performance indicators. The improvement in the prognosis of neurological patients in recent years is mainly due to advances in intensive care, and the implementation of indicators for evaluation of care resulted in an adequate and immediate assistance. This way, it is possible to understand the aspects of care closely related to the prevention of secondary brain injury.

The quality of health and care for critical patients walk side-by-side, arousing great interest among health care providers regarding the role and performance of care and treatment offered for the population of neurocritical patients.

Assessing the quality and health programs and services is essential for the planning, organization, coordination, evaluation, and control of activities aimed at measuring the results established.

The use of health care quality indicators

are established practices in health, enabling new assessment practices in the care of critically ill patients.

The validation methodology provides an alternative to make safe evaluation measures for quantifying the quality of care provided.

Collaborations

Morais EAS contributed to the design, field data collection, analysis, interpretation of data, and drafting the article. Rojas SSO and Veiga VC contributed to the design and final approval of the version to be published.

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