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OUTCOME ASSESSMENT TOOLS FOR QUALITY IMPROVEMENT PROGRAMS: INTEGRATIVE REVIEW

INSTRUMENTOS PARA AVALIAÇÃO DE RESULTADOS DE PROGRAMAS DE MELHORIA DA QUALIDADE: REVISÃO INTEGRATIVA

INSTRUMENTOS PARA EVALUACIÓN DE RESULTADOS DE PROGRAMAS DE MEJORA DE CALIDAD: REVISIÓN INTEGRADORA

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Objective: assess the outcomes of quality improvement programs in the hospital context. Methods: integrative review of articles published between 2003 and 2016 in the databases MEDLINE, LILACS and CINAHL. Results: 12 instruments were identified using different assessment methods, namely: questionnaires, semistructured interviews, checklists, document analysis and case studies. Conclusion: the studies highlighted that the outcomes of quality improvement programs in the hospital context registered improvement in the quality of care, in patient safety and satisfaction and in the infrastructure.

Descriptors: Accreditation. Quality Assurance, Health Care. Questionnaires.

Objetivo: avaliar os resultados de programas de melhoria da qualidade no contexto hospitalar. Métodos: revisão integrativa de artigos publicados, no período de 2003 a 2016, nas bases de dados MEDLINE, LILACS e CINAHL. Resultados: foram identificados 12 instrumentos com diferentes métodos de avaliação, a saber: questionários, entrevistas semiestruturadas, checklists, análise documental e estudos de caso. Conclusão: os estudos destacaram que, os resultados de programas de melhoria da qualidade no contexto hospitalar registraram melhora na qualidade assistencial, na segurança e satisfação do paciente e na infraestrutura.

Descritores: Acreditação. Garantia da qualidade dos cuidados de saúde. Questionários.

Objetivo: evaluar los resultados de programas de mejora de calidad en el contexto hospitalario. Métodos: revisión integradora de artículos publicados, en el período de 2003 a 2016, en las bases de datos MEDLINE, LILACS y CINAHL.

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Resultados: fueron identificados 12 instrumentos con diferentes métodos de evaluación, a saber: cuestionarios, entrevistas semiestructuradas, checklists, análisis de documentos y estudios de caso. Conclusión: los estudios destacaron que los resultados de programas de mejora de calidad en el contexto hospitalario registraron mejora en la calidad asistencial, en la seguridad y satisfacción del paciente y en la infraestructura.

Descriptores: Acreditación. Garantía de la Calidad de Atención de Salud. Cuestionarios.

Introduction

A health system, independently of the funder, has to offer safe and quality care to the user. While understanding that this search is a complex question, health institutions and professionals should prioritize it.

The forerunners of the topic quality improvement in health services mention that its guarantee implies changing the professionals, institutions and systems' performance and behavior towards more appropriate and acceptable practices regarding health outcomes and costs, using evaluation strategies[1].

An effective evaluation of health services can only be conducted with the support of programs that establish criteria, standards and indicators to equip the service evaluation process. Among these programs, we highlight Hospital Accreditation, whose term originated in the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), in the United States of America (USA). Accreditation comprises the certification of a program, service, organization, institution or agency according to predetermined criteria, generally expressed as standards, structures and processes typically of measuring[2-3].

Accreditation has been present as a tool to improve the quality of health institutions, especially in the hospital context, since the 1950s in the USA and Canada, through the transfer of the Hospital Standardization program from the American College of Surgeons (ACS) to JCAHO. In 1953, the ACS published a manual called The Standards for Hospital Accreditation with a view to disseminating the concept of hospital quality, emphasizing aspects such as education to improve health care[4].

In Brazil, the Accreditation Program for Health Services is under the responsibility of the National Accreditation Organization (ONA), created in the late 1990s, with the objective of promoting evaluation and improvement in health facilities[5].

Another health quality evaluation program that deserves to be highlighted in Brazil is the Commitment to Hospital Quality Program (CQH) of the São Paulo Association of Medicine and the Regional Council of Medicine of the State of São Paulo, administered by *Sociedade Médica Paulista de Administração em Saúde,* also inspired by the work of the Joint Commission on Accreditation of Health Organizations (CCAOS), USA, which aims to contribute to the improvement of hospital quality, developing the evaluation of hospitals in the state of São Paulo since the 1990s[6].

The CQH is not qualifying and its management model is based on the company evaluation method of the Foundation for the National Quality Award (PNQ). The seven criteria of Excellence of the PNQ, adopted by the CQH and mentioned as elements of management models are: Leadership, Strategy and Plans, Clients and Society, Information and Knowledge, People, Processes and Results of the Organization[6].

Studies that evaluate the outcomes of the implementation of quality programs for the health system, users and community are necessary in Brazil[7], considering that the intensification of the movement for the implementation of Quality Management Systems (QMS) in hospital organizations in the country only occurred as from the 1990s[8-9].

Despite the increase in the search for strategies and management models aimed at excellence and quality in health services, the number of hospitals accredited in Brazil is still low. Currently, 227 hospitals are accredited by the National Accreditation Organization (ONA [10], 33 by the Joint Commission International[11], 43 by the Canadian Council on Health Services Accreditation[12] and five by the National Integrated Accreditation for Healthcare Organizations (NIAHO)[13]. These data correspond to 5% and, according to data from the National Register of Health Establishments (CNES), Brazil has more than 6,125 hospitals, among general and specialized hospitals[14].

Considering the above, this study is proposed to evaluate the outcomes of quality improvement programs in the hospital context.

Method

To develop the research, the integrative literature review method was chosen. Six distinct stages were undertaken: the identification of the theme, literature search, categorization of primary studies; evaluation of studies included in the integrative review; interpretation of results; and synthesis of the knowledge evidenced in the studies[15].

To elaborate the guiding question of this research, the Patient, Intervention, Comparison and Outcomes (PICO) strategy was used. The PICO strategy can maximize the retrieval of evidence in the databases, and can be used to construct the guiding question for research in several areas[16]. Therefore, the following question was asked: Which tools are used to evaluate the outcomes of quality improvement programs in the hospital context?

To select the articles, the following databases were used: LILACS, MEDLINE/Pubmed and CINAHL. The following controlled descriptors were used: "*Acreditação*/Accreditation", "*Garantia da Qualidade dos Cuidados de Saúde*/Quality Assurance, Health Care" and "*Questionários*/Questionnaires".

In order to carry out the searches and to cross, add up or delete the different descriptors presented in the analysis charts, the Boolean operators were used. The following criteria were used to select the articles: primary articles published in full that show the tools used to evaluate the results of quality improvement programs; published in Portuguese, English and Spanish; between January 2003 and December 2016. The option to carry out the review in the given period was adopted to accompany the most recent evidence of scientific production on the subject, in constant development. The following exclusion criterion was defined: articles that were duplicated in the databases, considering only one of the repetitions.

In the process of screening the articles by means of the search strategy, 253 publications were found, 235 of which came from the MEDLINE/Pubmed database, seven from LILACS and 11 from CINAHL. After reading the title and abstract of each study, 36 articles were selected (three from LILACS, 13 from MEDLINE/Pubmed and two from CINAHL) to read the full version. Considering the inclusion criteria established in this study, 24 articles were excluded because they did not respond to the research question of this integrative literature review, one experience report and two articles that were not available in Portuguese, English or Spanish. At the end of the screening phase, nine articles were selected, presented in the results after analysis and categorization.

For the analysis and synthesis of the articles that were included in the integrative literature review, a validated instrument was adopted, which includes the following topics: identification of the original article, methodological characteristics of the study, evaluation of methodological rigor, measured interventions and results found[17]. Furthermore, in the process, three reviewers were interviewed, which showed the convergences and divergences of each article, in order to complement the information and classify the levels of evidence according to the methodological coherence.

Subsequent to the collection of the information and analysis to answer the guiding question of this integrative literature review, the articles were categorized and summarized. The synthesis of the articles included in this research was done descriptively, allowing the reader to perform a critical evaluation of the results, the quality of the evidence and its applicability.

Results

After analyzing 36 studies that met the inclusion criteria, nine articles were added in this review, addressing the use of tools to evaluate quality improvement programs.

Among the selected studies, six were developed in Asia, one in North America and two on the European continent. The lack of productions in Brazil stands out. In relation to the subjects involved in the research, there was variation in the size and characteristics of the populations, which can be explained by the diversity of sites and contexts studied. The research participants in the studies were nurses, physicians, administrators and patients/users.

There was an increase in the number of publications between 2008 and 2012, representing 78% of the sample. Regarding the tools for evaluating the outcomes of the quality improvement program, the use of questionnaires was predominant, even in studies that used more than one evaluation method.

In view of these considerations, we chose to categorize the results as follows: studies that adopted a questionnaire, studies that adopted a questionnaire and a checklist, studies that adopted a questionnaire and document analysis, studies that adopted a questionnaire and semistructured interviews, and studies that adopted multiple methods, namely: document analysis, case study, semistructured interview and questionnaire (Chart 1).

Chart 1 – Distribution of selected studies by objective, design, tool used and evidence level. Ribeirão Preto, São Paulo, Brazil – 2017 (continued)

Category	Authors, Article Title and Year	Objective	Design	Tool	Evidence Level
Studies that adopted a questionnaire	Al-Awa B, Al Mazrooa A, Rayes O, El Hati T, Devreux I, Al-Noury K, et al. Benchmarking the post-accreditation patient safety culture at King Abdulaziz University Hospital. 2012[18]	Assess the patient safety culture according to the nursing team's perception after the implementation of the Canadian Accreditation Program.	Retrospective and prospective cohort study.	"The Hospital Survey on Patient Safety Culture" (HSOPSC).	IV

Chart 1 – Distribution of selected studies by objective, design, tool used and evidence level. Ribeirão Preto, São Paulo, Brazil – 2017 (continued)

Category	Authors, Article Title and Year	Objective	Design	Tool	Evidence Level
Studies that adopted a questionnaire	Sack C, Lütkes P, Günther W, Erbel R, Jöckel KH, Holtmann GJ. Challenging the holy grail of hospital accreditation: a cross sectional study of inpatient satisfaction in the field of cardiology. 2010[19]	Assess the relation between patient satisfaction and the status of the Accreditation Program.	Cross-sectional study with quantitative approach.	"Picker in Patient Questionnaire".	VI
	El-Jardali F, Jamal D, Dimassi H, Ammar W, Tchaghchaghian V. The impact of hospital accreditation on quality of care: perception of Lebanese nurses. 2008[20]	Assess the perceived impact after the implementation of the Hospital Accreditation program from the nurse's perspective.	Cross-sectional study with quantitative approach.	"Quality Improvement Implementation Survey". "Préparation d´un Établissement de santé à l´accréditation et dynamique de changement".	VI
Studies that adopted a questionnaire and checklist	Sekimoto M, Imanaka Y, Kobayashi H, Okubo T, Kizu J, Kobuse H, et. al. Impact of hospital accreditation on infection control programs in teaching hospitals in Japan. 2008[21]	Characterize the situation of the infection control programs in teaching hospitals in Japan and assess the impact of the accreditation.	Cross-sectional study with quantitative approach.	Questionnaire constructed by the authors based on the standards of the Japan Council for Quality Health Care (JCQHC).	VI

Chart 1 – Distribution of selected studies by objective, design, tool used and evidence level. Ribeirão Preto, São Paulo, Brazil – 2017 (continued)

Category	Authors, Article Title and Year	Objective	Design	Tool	Evidence Level
	Ito H, Sugawara H. Relationship between accreditation scores and the public disclosure of accreditation reports: a cross sectional study. 2005[22]	Examine the association between the public disclosure of accreditation reports and the obtained scores.	Cross-sectional study with quantitative approach.	Questionnaire constructed by the authors based on the standards of the Japan Council for Quality Health Care (JCQHC).	VI
	Al Tehewy M, Salem B, Habil I, El Okda S. Evaluation of accreditation program in non-governmental organizations' health units in Egypt: short-term outcomes. 2009[23]	Determine the outcome of the accreditation program at health units and non-governmental organizations based on patients and providers' satisfaction.	Quasi-experimental study.	"Patient satisfaction questionnaire"; "Provider satisfaction questionnaire"; "Checklist for compliance with established standards".	III
Studies that adopted a questionnaire and document analysis	Hosford SB. Hospital progress in reducing error: the impact of external interventions. 2008[24]	Determine whether the standards established by the accreditation program, the reports of medical errors and the public awareness raising have resulted in quality improvements.	Cross-sectional study with quantitative approach.	Questionnaire based on the BALDRIGE system: Health Care Criteria for Performance Excellence.	VI

Chart 1 – Distribution of selected studies by objective, design, tool used and evidence level. Ribeirão Preto, São Paulo, Brazil – 2017

(conclusion)

Category	Authors, Article Title and Year	Objective	Design	Tool	Evidence Level
Studies that adopted a questionnaire and semistructured interviews	Sunol R, Vallejo P, Thompson A, Lombarts MJMH, Shaw CD, Klazinga N. Impact of quality strategies on hospital outputs. 2008[25]	Explore patients, professionals and funders' opinions to understand the association between the implementation of quality improvement strategies in hospitals and successful compliance with quality requisites.	Cross-sectional study with quantitative approach.	Questionnaire based on the evaluation dimensions according to the program Performance Assessment Tool for Quality Improvement in Hospitals. The semistructured interviews covered the following themes: clinic, quality improvement, patient safety and execution of seven quality improvement strategies: 1. accreditation, 2. quality management programs, 3. audit, 4. internal evaluation of clinical standards, 5. patient safety systems, 6. clinical practice guidelines, 7. patient perception indicators.	IV
Multimethods	Pomey MP, Contandriopoulos AP, François P, Bertrand D. Accreditation: a tool for organizational change in hospitals? 2004[26]	Examine the dynamics of change that operated after the preparations for the implementation of the Hospital Accreditation Program.	Longitudinal case study with qualitative and quantitative analysis.	- Questionnaire: " Préparation d´un Établissement de santé à l´accréditation et dynamique de changement". - Document analysis, case study and semistructured interview.	VI

Source: Created by the authors.

In the study carried out in Saudi Arabia[18], the questionnaire called HSOPSC was used, a tool consisting of 9 sections, totaling 42 items, widely used around the world to measure the safety culture among hospital professionals. It evaluates the level of agreement among the professionals on issues related to the safety culture, using a Likert scale that varies between "I totally disagree" and "I totally agree".

The instrument called Picker in patient Questionnaire[19] was applied to patients from 25 cardiology units in Germany. It consists of 39 items, divided into eight domains: hospital admission; the hospital and the nursing ward; doctors; nurses; care and treatment; operations and procedures; discharge from hospital; and characteristic of the hospital. The findings of the study emphasized that the use of this tool permitted measuring the results related to the doctor-patient and nurse-patient relationship, quality of the structure and care provided.

In Egypt, in a research[23], a checklist and three validated questionnaires were adopted. The questionnaire applied to the patients was aimed at identifying the aspects related to the perception about the cleanliness of the unit, the behavior of the doctors and nurses and general satisfaction. The internal consistency of the items for each factor was considered good and/or excellent, according to the Cronbach's alpha coefficient of 0.8. The provider satisfaction questionnaire was divided into three main factors: administrative environment, social environment and family health model. The checklist was completed in each selected unit by an evaluator trained in the National Accreditation Program.

In another study[25], which was carried out in eight European Union countries – Belgium, the Czech Republic, France, Ireland, Poland, Spain, the Netherlands and the United Kingdom – a questionnaire was adopted that consists of four sections. The first presented information on the improvement in hospital quality and the last three focused on quality management under specific conditions: acute myocardial infarction, appendicitis and decrease and prevention of damage to the selected patients based on their frequency of occurrence.

A study conducted in 59 Lebanese hospitals[20] applied a questionnaire to a sample of 1,048 nurses. It consists of seven subscales adapted from the Quality Improvement Implementation Survey and two subscales, also adapted for the target population of the study, called "Accreditation" and "Benefits of Accreditation", taken from the *Préparation d´un Établissement de santé à l´accréditation et dynamique de changement*. The author also notes that the questionnaire is available in Arabic and English. All items were graded on a five-point Likert scale. A section on demographic data (gender, age, level of education, professional category and years of work experience) was included. The dependent variable was "quality outcomes", while the independent variables were: leadership, commitment and support; strategic quality planning; quality management; use of human resources; use of data; and accreditation. The conclusion for the Lebanese nurses was that hospital accreditation is an appropriate tool to improve the quality of care. In addition, it was evidenced by means of the questionnaire that large hospitals are more likely to benefit from accreditation, considering that smaller organizations may be burdened by the surveillance and compliance costs in relation to their overall budgets. The author alerted that few instruments are available in the literature to evaluate the implementation of quality and outcomes in health organizations, particularly in the context of accreditation.

In a study conducted in Japan[21], a questionnaire was applied to all teaching hospitals. The tool was developed based on the JCQHC for use in the study on the effectiveness of Hospital Infection Control (SENIC), and it is composed of three domains: the first to evaluate general characteristics of the hospital, including location, property, number of beds, average length of hospital stay, number of staff, and accreditation status according to JCQHC; the second domain was designated to evaluate the hospital infrastructure for infection control

(IC) activities, including the organization with the infection control team (TIC), presence of infection control physicians (IDUs), infection control nurses (SNIC) and time allocated for IC activities. The final domain was designed to designate the practical activities of IC.

In this review, a study was selected that was conducted in the United States[24], which adopted a questionnaire and document analysis as an instrument to evaluate the outcomes of quality programs. The research instrument, consisting of 57 questions that consisted of nominal information (yes or no) and ordinal data classified in scales, the healthcare processes were evaluated from clients, employees and leaders' perspectives. Public, private and teaching hospitals accredited and not accredited by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) participated in the study. It was concluded that 82% of the hospital managers reported significant progress in the implementation of medical error management systems, as evidenced by the reduction of these errors.

In the survey conducted with hospitals accredited by JCQHC[22], the questionnaire adopted for the analysis contained items to collect data on the characteristics of the hospital, including number of beds, ownership (public/private) and location (urban/rural). Comments on the disclosure of the accreditation reports were categorized into five domains: public disclosure impact, benefits for the hospital, risks for the hospital, disclosure of information by the JCQHC, and disclosure by the hospital through a pamphlet or notice put up on a bulletin board in the hospital. In general, through the instrument, the necessary data could be collected to analyze the association between the accreditation scores and the disclosure of reports.

Another article selected in this review adopted multiple methods to measure the outcomes and reach the objective the authors proposed[26]. The questionnaire called *Préparation d´un Établissement de santé à l´accréditation et dynamique de changement* was used, an instrument that permitted measuring and understanding what was asked to the hospital professionals, considering aspects about their self-assessment, interpersonal relationship and actions for patient safety. In the document analysis process, the documents issued by the different hospital departments were assessed, such as management, self-assessment groups (created to complete the standards of the Accreditation Manual), operational and strategic douments. The researchers also stressed the importance of using different methods in combination in order to ensure more complete and reliable results.

Of the nine articles selected, in four studies[21-22,24-25], the authors did not specify the name of the questionnaire, but presented its objectives and described the items. It was also verified that only five articles described whether the tool used had been validated[19-20,23-24,26].

Discussion

In today's age, focused on transparency and accountability, with an escalation in the complexity of health care, accreditation contributes to ensuring that the care has the best standards of quality, decision-making and prevention[27].

It should be noted in this review that the studies that evaluate the outcomes of the quality improvement program through instruments have increased throughout the decade analyzed, with an increase in frequency in the years 2008 to 2012. A probable explanation for this increase in publications is the expansion of worldwide strategies for improvements in patient safety. In 2004, the World Health Organization (WHO) created the Global Patient Safety Alliance project with the aim of raising awareness for the improvement of quality and patient safety in care and political commitment, as well as supporting public policy development and practical approaches to patient safety around the world[28].

In view of the instruments and methods highlighted in this review, the studies present relevant results regarding the applicability and usefulness of the instruments that evaluate the implementation of quality improvement

programs. In the study from Saudi Arabia[18], for example, the questionnaire was effective to assess the proposed objective, demonstrating that the implementation of the quality improvement program could be measured and that it provided significant improvements in the general perception of the patient safety culture.

The study published in Egypt[23] concluded that, through the instruments, it could be identified that health centers of accredited Non-Governmental Organizations (NGOs) showed greater patient satisfaction compared to non-accredited health establishments.

In the study that used the questionnaire based on the evaluation dimensions of the Performance Assessment Tool for Quality Improvement in Hospitals, the authors concluded that the use of this tool permitted identifying useful information about the characteristics of the hospitals and their results, according to the maturity of the quality improvement strategy they were applying. They also emphasized that the association between the implementation of internal and external quality improvement strategies permits a better understanding of the quality of health services with beneficial results for patient safety.

The studies developed in Japan[21-22] were based on JCQHC assessment criteria. Through this questionnaire, the authors report on the successful evaluation of the quality improvement program and its significant outcomes for the hospital infrastructure and infection control performance. They also point out that the results cannot be generalized to other accreditation systems, as the study was focused on Japanese hospitals.

The results of these studies suggest that public disclosure of accreditation reports should be encouraged to improve public accountability and care quality, and that the hospital who disclosed the reports scored higher in attending to the community needs, focusing on patient care and safety management[21]. In view of the studies presented in this review, one limitation is the fact that the tools used are not standardized, as the accreditation standards differ according to the local reality. In a study developed in 2000, WHO appointed that 36 studies developed accreditation programs in health services. This result demonstrates a global growth related to quality improvement activities, making an increasing number of countries develop and apply accreditation methods. This scenario certainly entails the need to assess the impact of accreditation in health services by means of valid and consistent instruments[28].

In this sense, evaluation instruments need to be elaborated that are validated, because they are more reliable, which was not found in all studies analyzed. Reliability analysis is a key aspect in evaluating the quality of an instrument. When a scale is developed, it is necessary to check the internal consistency, that is, if the items are grouped and measure the same value[22-23], confirming that the instrument is able to measure what it proposes. Thus, the statistical analysis of evaluation measures leads to a greater guarantee that the variables outlined represent the phenomenon studied[29].

This methodological rigor in the construction of evaluation tools is essential to ensure that the information regarding the results of the quality programs in hospitals are reliable and trustworthy parameters, with a view to consolidating the quality strategies used and permitting new perspectives in the search for service excellence.

Another important aspect is the use of diverse sources to evaluate a service or program, as verified in four articles analyzed. We highlight the use of multiple methods, evidenced in only one research[28]. This method fits qualitative research and can be seen as a type of "do-it-yourself". The researcher who uses it is a handyman. This characteristic of the researcher's activity is not limited to the data collection phase, but also involves the moment of analyzing and interpreting the data, in the multiple theoretical frameworks that can support them[30]. This guarantees greater breadth and depth to the data collection and analysis, enabling the use of information in a more appropriate and assertive way.

The lack of Brazilian studies confirms the existing distance in professionals, managers and patients in the search for evidence of the implementation outcomes of quality improvement

programs in Brazil. This may be related to the lack of consolidation of an evaluation culture, which is greatly encouraged in health service quality management models and their tools.

On the other hand, in Brazil, since 1990, an increase was verified in the area of health management, when there was a rise in the development of research instruments and methods, mainly related to customer satisfaction, contributing to the qualification of management processes and the monitoring of quality programs[31]. In this case, it should be emphasized that fragility may be more related to the dissemination of evaluation instruments than to their development and application.

In general, the studies highlighted that, after the adoption of hospital quality improvement programs, the following aspects improved: better quality care, improved patient and infrastructure safety, as well as greater patient satisfaction.

Conclusion

This review allowed us to identify the tools to evaluate the outcomes of the quality improvement programs used in health care services, highlighted in the literature. The studies found indicated different tools to evaluate the results of quality improvement programs. Among these, the questionnaire is the most used tool, followed by document analysis, case study and interview.

It could be noticed that the scientific production about evaluations of quality improvement programs is incipient. The analysis based on the review revealed that, in most of the studies, the accredited institutions obtained better results than the non-accredited ones, although this result is described as not significant in one of the studies.

It was demonstrated that the instruments were adopted in accordance with the local needs, which makes it difficult to be fully fit for the Brazilian context.

It is concluded that the results of quality improvement programs in the hospital context have improved the quality of care, safety and patient satisfaction, as well as the infrastructure.

The absence of Brazilian productions was reflected in this study, which indicates the need to enhance the scientific dissemination in relation to the evaluation of the results of the quality improvement program, taking into account the characteristics of the country. In addition, the results of this review also indicate the need to develop research aimed at validating quality assessment tools developed in other countries that, after being culturally adapted, can be useful for the Brazilian reality. Studies are also necessary that aim to create quality assessment tools or methods that correspond to the problems faced in the Brazilian reality.

Collaborations:

1. conception, design, analysis and interpretation of data: Graziela Caldana, Carmen Silvia Gabriel and Leticia Cristina Hirotani;

2. writing of the article and relevant critical review of the intellectual content: Graziela Caldana, Leticia Cristina Hirotani and Larissa Gutierrez de Carvalho;

3. final approval of the version to be published: Andrea Bernardes and Carmen Silvia Gabriel.

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