

Artigo Original

Evaluation Proceedings in Actions of Distance Education for Health Professionals: A Literature Review

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Abstract

The increasing dissemination of distance education in recent decades has recognized the potential that educational processes would have when supported by technological resources. One of the central elements of building a distance learning course is the Educational Assessment Strategy. Thus, it is mandatory to investigate the assessment methodologies that are currently being used in Continuous Health Education, as a way to qualify future offers of courses and enable, with greater efficiency, the achievement of the learning objectives and development of competencies proposed in the training. The objective of the present study was to identify the educational assessment strategies adopted in professional qualification actions for health workers in Brazil, carried out in the distance education modality at a national level. This is a documentary research, carried out through a review of the literature narrative. Data collection was carried out in January 2020, in the Virtual Health

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Library (VHL) and SciELO databases. A total of ten articles was considered within the scope of the study, evaluating training (short courses), specializations and disciplines, offered both at the blended or distance modality. Target audience of the training courses comprised health professionals in hospitals, primary care, health promotion or education areas. Authors adopted different theoretical assessment approaches and levels of deepening, in which more traditional instruments prevailed, such as closed questionnaires, which predominantly assessed content satisfaction and learning, without significant progress in impact assessment. Two models were highlighted, considered to be a reference in the field of educational assessment: Kirkpatrick Model and the Integrated Model of Work Training Assessment (Impact). Assessment of educational processes for health professionals is a field that needs to be explored in greater depth, as it is difficult to choose and develop more complete and structured assessment proposals. Thus, the study addresses that the diversification of measures and dimensions analyzed is fundamental, since the assessments tend to consider only individual perceptions.

Keywords: Educational assessment. In-service training. Distance education. Continuing education. Health professionals.

1. Introduction

With the spread of distance education (DE) in recent decades, there was recognition of the potential that educational processes would have when supported by technological resources. Distance education rationalizes time and resources through student autonomy, which can decide the time and place of study, in addition to combining new forms of multimedia interaction that stimulate learning (LOPES, 2010).

In the field of health, educators have used several technologies to offer Permanent Education in Health (EPS) actions to their professionals, such as telehealth / tele-education, in distance education courses offered by the Open University of Brazilian National Health System (Unasus) and open educational resources. Educational offerings can range from

short-term activities and courses to fully distance postgraduate courses or in hybrid (semi-presential), with tutoring or without tutoring (self-instructional courses). In this context, many authors highlight the potential of the hybrid modality, which allows rethinking the disciplines and the way they are structured, taking advantage of the best classroom strategies with virtual resources (BICALHO; MEDEIROS, 2018). According to Lawn, Zhi and Morello (2017), the hybrid represents the best way to overcome the need for interactivity, reflection and practice of health professionals.

One of the central elements of building a distance learning course is the educational assessment strategy. Only through evaluation is it possible to reflect on the proposed actions, stimulating the learning process, in order to subsidize more consistent choices about the direction of offers and the development of other initiatives (SILVA; BRANDÃO, 2003). Thus, it is unique to investigate the evaluation methodologies that are being used in EPS, as a way to qualify future offers and enable, with greater efficiency, the achievement of objectives and the development of skills proposed in training. The investment in effective evaluation strategies makes it possible to verify the effects of the educational process at the individual, collective and work qualification levels in health, which is consistent with the guidelines of the National Policy for Permanent Education in Health (BRASIL, 2004).

Given the above, the objective of the present study is to identify in the national literature the educational evaluation strategies adopted in professional qualification actions for health workers, carried out in the “distance education” modality.

The analysis presented here is part of the process of preparing the Specialization Course in Management of Family Health Strategy (Cegesf) conducted by a working group from the Fiocruz Government School - Brasília, within the educational axis of the Qualification Program of Primary Health Care in the Federal District (Qualis APS). This study will contribute to the planning of the course evaluation processes, as it will allow us to know previous experiences about the evaluation of distance education, in addition to the potentialities and challenges involved in each proposal. Thus, we intend to design an assessment that

contemplates the different components of the teaching and learning process; that makes it possible to identify the managerial skills acquired by specialized workers; and to identify its effects and consequences at work in the Family Health Strategy.

2. Educational Evaluation

Evaluating is an old action, present every day in people's lives, but which often goes unnoticed due to the natural way we perform it when organizing, choosing and acting. There is no universal and absolute definition of “evaluation”, but there is a central basis for this action: the judgment of value (CONTANDRIOPOULOS *et al.*, 1997). It is supported in decision making to correct flaws or change what is being done, using systematic procedures for collecting, analyzing and interpreting information. Thus, the evaluation should be understood as part of the management and education processes. According to Silva and Brandão (2003, p. 3),

We understand evaluation as the elaboration, negotiation and application of explicit analysis criteria, in a careful and precise methodological exercise, with a view to knowing, measuring, determining or judging the context, merit, value or status of a given object, in order to stimulate and facilitate learning and development processes for people and organizations.

It is important to highlight the approximation between “evaluation” and “quality”, as the evaluation is able to generate information about what was done (feedback), so that decisions are made with guarantee and security. In short, for Negrini (2011, p. 6), “the act of evaluating becomes a constant exercise when looking for quality in actions”, especially in educational contexts, due to the relevance of estimating the quality of training and the impacts caused by them.

When such a process focuses on education, it becomes more complex, as it reflects the relationships of those involved (who evaluates, who or what is evaluated and the context). In this sense, educational

assessment can be understood as a broad process with a focus on the subject, which results in products that go beyond education and the meritocratic classification of students, especially in human education and the construction of citizenship, considering subjectivities and contexts, process with educational, pedagogical and psychological characteristics (MARINHO-ARAÚJO; RABELO, 2015).

Educational assessment has a “social construction” character, with collective, institutional and individual developments, bringing, on the one hand, measures and classifications and, on the other, reflections on behaviors and human development (MARINHO-ARAÚJO; RABELO, 2015). From this view - that the evaluation process influences the environment, in the sense of reconfiguring contexts, social conditions and pedagogical proposals -, with the evaluation it is possible to point out more favorable options for the development of the necessary competences to the profile that one wishes to form.

For this to happen, it is necessary to invest in evaluation as a path to be followed, which allows the appreciation of both products and results and of the processes through which educational and professional training materialize, in the dialogue between learning knowledge and developing skills. In this sense, investment in evaluative processes “that are able to show the way in which the articulation between theory and practice occurs, as well as indicators of how competences are built, linked to individual and social subjectivities specific to the relationships and contexts experienced” (MARINHO-ARAÚJO; RABELO, 2015, p. 447).

The act of evaluating does not make sense in itself, but when it is an integral part of the entire teaching-learning process. In this perspective, learning assessment can be carried out in different ways; the main ones are: diagnostic, formative and summative.

The diagnostic evaluation is intended to signal the student's previous knowledge, as a way to identify his condition before the educational action. The training is known as an assessment that puts itself at the service of learning, in the sense of permanently monitoring the teaching-learning process (OLIVEIRA *et al.*, 2007). Finally, the summative assessment is carried out in a timely manner at the end of a module

or course, with the objective of assessing whether the student has assimilated the contents worked in a given period. The most used form of assessment is summation, but Borges *et al.* (2014) point out some limitations when this modality is used alone, focusing only on the final result, superficially, without considering the student's trajectory.

Therefore, Oliveira *et al.* (2007) declare that formative assessment is as important as summation: the first offers a perception of the student's interaction to verify the degree of learning and necessary adjustments, while the second allows a more global view on their progression and/or certification (BORGES *et al.*, 2014; OLIVEIRA *et al.*, 2007).

Regardless of the form of evaluation, there was an increase in evaluative processes around distance education actions, mainly as a justification for investment, the return to professional qualification and, consequently, organizational development, very much based on the concepts of TD&E system (Training, Development and Education) (ZERBINI, 2007).

Organizations have been betting on TD&E. *Training* (T) is a more specific education action to supply some deficiency in the individual's performance, with the objective of performing new functions or adapting the use of new technologies at work. *Development* (D) refers to the broader concept of "organizational actions", which aim at staff growth and quality of life at work. Finally, and recently added to the system, we have *education* (E), which carries a broader concept than that of "development", in the sense of promoting learning for any future work of the individual. Linked to these concepts, another differentiation would be the duration of these educational actions, with *training* being the shortest action and *education*, the longest (ZERBINI, 2007).

The evaluation is so important and present in the processes that it permeates the three elements of TD&E: (a) training needs assessment, (b) training planning and execution and (c) training evaluation (BORGES-ANDRADE, 2002). With the development of the TD&E system, studies in the area of training evaluation grew, motivated by the great demand for professional qualification, leading to the emergence of training evaluation references, such as Donald Kirkpatrick's model.

Kirkpatrick's model states that the results of a professional qualification should be evaluated based on four levels: reaction, learning, behavior and results. The first two levels relate to the individual's more subjective, satisfaction and learning processes, while the last two reflect changes in work behavior and returns in terms of cost-benefit and quality in the organization. (GALLOWAY, 2005). Even after years of this model, it remains popular and adapts to the context of distance education processes, facilitating and optimizing the ways of measuring levels.

Other authors adapted the Kirkpatrick model, following the example of Hamblin, who redefined the last level (results) in two sub-items: organization and final value (ZERBINI, 2007). In Brazil, authors like Borges-Andrade, in 1982, and Abbad, in 1999, developed studies with an integrated model, considering individual and contextual characteristics as factors that influence the results of courses. Despite the existence of these classic models, Zerbini (2007) highlights that systematic assessment is still little used, either to know the need for training, or to measure the acquired learning and relate it to the desired skills.

It is worth noting that, with technological development, the ways to promote professional qualification processes have changed, moving towards distance education, with new ways of interaction and reach. In this sense, evaluation is also supported by the advent of technologies, allowing the mediation of learning by monitoring and communication tools with the student in the Virtual Learning Environment (VLE), such as forum, chat, news wall, webmail, virtual rooms, discussion of cases, among others (ARAÚJO *et al.*, 2016). The implementation of these technological resources takes place in a continuous, systematic and diverse process of assessing and monitoring student learning (CALDEIRA, 2004).

The care with assessment in digital environments, assumed as a constant component of professional qualification, part of a dynamic process that influences, but at the same time is influenced by subjects, context and moment (CALDEIRA, 2004). For the learning to be meaningful and the evaluation processes effective, it is necessary to consider all these exposed components.

3. Material And Methods

The present study is a documentary research, carried out through a narrative review of the literature, with the objective of mapping the educational evaluation strategies adopted in distance training actions directed to health professionals. To this end, the following guiding question was defined: How has the educational assessment been carried out in qualification courses in the “distance” modality for health professionals?

The search was carried out in January 2020 in the VHL and SciELO databases, using the descriptors "educational assessment" and "distance education", in a combined way with the Boolean operator "and". Inclusion criteria were: studies published in scientific articles indexed and available electronically; training in the field of health, carried out in Brazil; use of distance education in its various modalities, aimed at health professionals, in the context of postgraduate studies, in Portuguese; and without publication time cut. They were delimited as exclusion factors: being a theoretical article or a systematic review; evaluate other educational technologies outside the scope of courses; publications within the exclusive scope of graduation; and not be aimed at health professionals.

The search returned 147 texts, which were analyzed by means of title and abstract, based on the established criteria. At the end, ten articles were selected for full reading. The reading was directed to list the publications that brought the greatest contribution to the objective of the survey. Thus, two articles were removed, but two others were added, taking into account the analysis of the references used in them. In all, ten articles were included in the scope of the study. The articles were systematized by means of reading sheets, and the analysis was organized into two categories: the evaluation method used and the evaluation instruments adopted.

4. Results

The selected articles corresponded to the period between 2008 and 2018, with 4 articles from 2018, 2 from 2016, 2 from 2013, 1 from 2017

and 1 from 2008. As for scientific journals, most publications are in the field of nursing (6), with the rest being in the field of medicine and distance education. On the topics covered in the courses, there was a diversity of health issues, namely: patient safety; International Classification for Nursing Practice (CIPE); elderly health; breastfeeding; prevention of pressure injury; pressure ulcers and nursing care projects; education and health promotion; Health education; and Family Health Strategy.

Regarding the type of training, training (short courses), specializations and disciplines offered in the hybrid or totally distance mode were evaluated. The target audience of the training courses comprised health professionals in the hospital, primary care, education and health promotion. Chart 1 systematizes the main information about the evaluation processes of the analyzed publications.

4.1. Evaluation methods used

The authors adopted different theoretical evaluative approaches, with different levels of deepening of the method used, data that are described in Chart 1. Of all the studies analyzed, two models stand out, considered to be benchmarks in the field of educational assessment: Kirkpatrick Model and Integrated Model for Assessment of Work Training (Impact).

Chart 1 - Articles selected for analysis, according to course modality, evaluation method and instruments

Authors	Course modality	Evaluation method	Instruments
BACKES, V. M. S. <i>et al.</i> (2008)	Specialization course in distance education	Ex-post facto impact assessment	Structured interviews and analysis of learning modules
PEIXOTO, H. M. <i>et al.</i> (2013)	Semi-presential undergraduate and graduate courses	Impact model (reaction)	Likert scale questionnaires

MARTINS-MELO, F. R. et al. (2013)	Semi-presential specialization course with tutoring	Formative evaluation	Indicators and portfolios with feedback from the teacher / tutor
MONTEIRO, A. K. C. et al. (2016)	Permanent distance education program	Instruments adapted from literature	Questionnaires (ergonomic evaluation and pedagogical evaluation) with specialists
FRATUCCI, M.V. B. et al. (2016)	Specialization course in distance education with mentoring	Community of Inquiry (CI), in the three analysis variables: cognitive, social and teaching presence	Questionnaire and focus group
AVELINO, C. C. V. et al. (2017)	Semi-presential course with tutoring	Qualitative and quantitative, reaction evaluation	Semi-structured questionnaires and focus groups
WANDERLEI, P. N.; MONTAGNA, E. (2018)	Short course (up to 3 months) in distance education	Accreditation Canada Handbook; Hospital Survey on Patient Safety Culture Survey	Questionnaires; Likert scale research; indicators (impact)
CASTRO FILHO, J.A.; MOTTA, L. B. (2018)	Specialization course in distance education with mentoring	Kirkpatrick's Rating	Questionnaires, narrative analysis and analysis of intervention projects
FREITAS, L.A. et al. (2018)	Semi-face-to-face refresher course with tutoring	COLLES survey	Semi-structured questionnaire and Colles survey
AROLDI, J. B. C.; PERES, H. H. C.; MIRA, V. L. (2018)	12h online training with tutoring	Impact model (reaction)	2 Likert-scale instruments (amplitude impact and transfer support)

Source: Created by the authors.

The Kirkpatrick model, from 1976, adopted in the publication by Castro Filho and Motta (2018), is an evaluation method that is divided into four levels: 1) reaction, student perception about the approach to learning; 2) learning, accumulation of student knowledge with the course; 3) behavior, use and form of learning use with the course; and 4) results, return of learning to the environment. It is recognized worldwide for its method of evaluating the effectiveness of distance education, serving as a reference for new adaptations and re-readings of levels. Consequently, the four levels offer a broad and complete view of the educational initiative, which is not much explored in evaluation studies, as evidenced by this survey.

Impact, a framework adopted by Aroldi, Peres and Mira (2018) and Peixoto *et al.* (2013), is a more recent model, developed by the area of organizational psychology, by Abbad (1999), with the objective of expanding the evaluation of training results according to seven components: organizational support, training, clientele, reaction, learning, support to transfer and impact of training at work (ZERBINI, 2007). No study has brought the complete evaluation of the model. The cuts made focused on the evaluation of one or two components, since Peixoto *et al.* (2013) investigated the reaction, such as the degree of satisfaction of the participants in relation to the training, while Aroldi, Peres and Mira (2018) evaluated the perception of impact in amplitude and transfer support. The amplitude impact, one of the ways of verifying the impact of training at work, comprises the transfer of learning in the application of acquired competence, reflecting on the overall performance of the participant. The transfer support recognizes that the non-application of knowledge in practice does not depend only on the participants; it is necessary to check working conditions and available resources.

The other methods employed presented an outline on the analyzed dimension, such as the COLLES Survey (Constructivist On-Line Learning Environment Survey), adopted by Freitas *et al.* (2018), and the *ex post facto* impact assessment, used by Backes *et al.* (2008). The COLLES Survey is an electronic Moodle instrument that captures the student's perceptions, in order to assess the quality of web-based learning environments, developed from the Theory of Social

Constructivism (FREITAS *et al.*, 2018). In the ex post facto impact assessment (SAVEDRA, 2002), the authors interviewed a sample of subjects who completed the course, so that, based on their perceptions, the elements necessary to estimate the impact were reconstructed.

The evaluation carried out by Wanderlei and Montagna (2018) made up a particular case: the accreditation process that the participants were experiencing was taken advantage of and the Accreditation Canada manual was applied, with regard to patient safety assessment. The evaluations performed in the articles by Monteiro *et al.* (2016) and Martins-Melo *et al.* (2013) were more specific: the first reported the ergonomic and pedagogical evaluation; the second, the formative assessment of the teaching-learning process.

The study by Fratucci *et al.* (2016) brought the Community of Inquiry, cited by Garrison, Anderson and Archer (2000), and discourse analysis, a data analysis technique widely used in qualitative research. The Community of Inquiry is formed by three variables of quality analysis of the courses in VLE: cognitive, social and teaching presence. The cognitive presence represents a reflection phase, in which the student is encouraged to explore and understand the problem. Therefore, social presence refers to a relationship phase. Even being in a virtual environment, it is verified if the student projects socially and emotionally. The last variable, presence of teaching, is determined as the phase of resolution and synthesis, which is the communicative action, that is, the directions for the student to reach learning (FRATUCCI *et al.*, 2016).

4.2. Evaluation instruments adopted

In the scope of this research, studies that used the quantitative approach (6) predominated, applying Likert-type scales (AROLDI; PERES; MIRA, 2018; WANDERLEI; MONTAGNA, 2018; AVELINO *et al.*, 2017; FREITAS *et al.*, 2018; MONTEIRO *et al.*, 2016; PEIXOTO *et al.*, 2013). Of these evaluations, two triangulated the data with quantitative and qualitative procedures (WANDERLEI; MONTAGNA, 2018; AVELINO *et al.*, 2017).

The instrument used by Wanderlei and Montagna (2018) to determine the impact of the course was a survey on the perception of the patient's safety level, Hospital Survey on Patient Safety Culture (HSOPSC), relating patient safety indicators to the participants' performance. Learning, on the other hand, was assessed according to the student's adherence, verified from the following information: from which modules were accessed; what materials were visited; how many students completed the proposed tasks and made the assessment; study progress, with evaluation notes at the end of the modules.

The study by Avelino *et al.* (2017) assessed satisfaction based on the application of two semi-structured questionnaires: the first, when starting the course, with profile information; the other, at the end, on the evaluation of the course in the VLE and the technological and educational resources used. Focus groups were also held. Freitas *et al.* (2018) promoted educational assessment in two stages: the characterization questionnaire and the COLLES Survey. The questionnaire was applied at the first meeting and aimed at the sociodemographic and computerization characterization and the use of the participants' internet. In the second moment, COLLES was made available, which records the perception of students within a virtual classroom, subdivided into the items of relevance, critical reflection, interactivity, support from tutors, support from colleagues and understanding.

Although the study is theoretically based on Impact, Aroldi, Peres and Mira (2018) propose to evaluate the perception of only two components: support to transfer and impact, specifically of amplitude. The effect of training on the performance of nurses and support for transfer were measured using the instrument proposed and validated by Abbad, on a Likert scale, consisting of 12 and 22 items, respectively, applied via electronic form, answered within 45 days of the end of the training. The activities carried out were: multiple choice tests with feedback; three case studies and three applications of the Braden Scale; preparation of situational strategic planning of preventive measures; and forums for questions regarding training content. There was also an evaluation by specialists before the course was made available.

Another quantitative study - the one carried out by Monteiro *et al.*

(2016) - describes the construction and evaluation of a Permanent Distance Education Program before the course is offered. In the evaluation phase, an ergonomic evaluation was carried out by computer experts ($n = 10$) and pressure ulcers - UPP ($n = 11$), a specific theme of the course; the pedagogical evaluation was carried out only by specialists in Up. The instruments used were of the Likert type, adapted from the literature, distributed over 23 items, being 12 related to navigation, 6 to legibility, 4 to media and 1 to printing, all referring to ergonomic evaluation. The pedagogical assessment instrument included 19 items, 17 related to content and 2 to objectives.

The last evaluation that used an exclusively quantitative method was carried out by Peixoto *et al.* (2013), with the objective of investigating the reactions of students through Impact. The instrument consisted of two parts: one on sociodemographic data and the other on participants' reactions to instructional procedures. The second part used a Likert-type scale with 19 items, which covered topics related to content, language, interaction and time management.

On the other hand, the studies by Backes *et al.* (2008) and Fratucci *et al.* (2016) worked exclusively with the qualitative methodology, evaluating specialization courses. Backes *et al.* (2008) conducted an analysis of the learning modules through interviews with the 32 graduates, in order to assess the impact of the Specialization course in Nursing Care Projects (Espensul). Fratucci *et al.* (2016) also evaluated a specialization course on Family Health, but for a wider audience: medicine, dentistry and nursing. For data collection, a questionnaire was organized in three structuring axes of analysis: methodological strategies used and the student's perception regarding learning in this distance education proposal (axis 1); distance education mediated by technology used by the Family Health Specialization course Unasus / Unifesp as an aggregator of changes for professional practice (axis 2); possibilities and challenges in the implementation / implementation of team work, in the transformation of practices and in the organization of services (axis 3). The evaluation took place at a time after the course, with the participation of six people who completed the specialization, having been carried out through three meetings: the first was in person, in a focus group; the

second, the distance, with records in the forums; the last, in person, promoted in a focus group, for the closing. Another mechanism to support the evaluation was the provision of a page on Moodle, in order to facilitate interaction between participants.

The study by Castro Filho and Motta (2018) used the four levels of the classic Kirkpatrick model to assess the specialization course in Elderly Health. To carry out the evaluation, the authors used a mixed approach, with documentary analysis and evaluation of the final report of the course (applied questionnaires and keywords of the intervention projects). The first level of reaction was assessed according to the 444 narratives of students who stayed on the course, with the comments made at the end of the modules being described by two variables, endogenous and exogenous, in addition to self-assessments. The next level, of learning, used the summative assessment survey, the approval index and the students' adherence after the first month of the course. In the third level, of behavior, there was an analysis of the 299 intervention projects of the graduates, based on title, objectives and keywords. The last and fourth result level was not evaluated, but it is concluded that the course promoted a successful experience, showing the relationship between the levels of evaluation, in which the variables studied at the first level also explain aspects of adherence and avoidance assessed at the second level, for example.

Finally, the authors Martins-Melo *et al.* (2013) present the evaluation of a specialization course in Family Health in the format of an experience report. The evaluation and monitoring of students / professionals were conducted throughout the course, considering grades according to the following indicators: mastery of content, fulfillment of tasks, participation in chats / discussion forums, punctuality in completing tasks and attendance. Each subject was evaluated, by the participant, in relation to the teacher / tutor and didactic material, also including self-evaluation (positive and negative aspects regarding the didactic material, the methodological conception and the development of the activities). The students also registered their opinion in relation to the discipline's contribution to their personal and professional life, listed facilitating and limiting aspects experienced during the process and

presented suggestions for new experiences. Another point highlighted in the teaching-learning process was the systematization, through a portfolio, at the end of each subject, of the knowledge acquired in the various activities proposed.

Some articles brought the characterization of the participants to know the profile of the course participants, with information on age, sex and professional performance (AROLDI; PERES; MIRA, 2018; FREITAS *et al.*, 2018), which is essential for an effective educational planning. In addition to this information, the article by Freitas *et al.* (2018) brought data on computerization and internet use by students, considering internet access, average hours of use and previous completion of some distance learning course (FREITAS *et al.*, 2018). In Kirkpatrick's evaluation model (LOPES, 2010), these variables of characterization of the individual were not considered, being later incorporated by new integrated models, proposed by authors as Borges-Andrade (2002).

5. Discussion

In general, the evaluations presented different dimensions of analysis, as described in Chart 2. Five texts addressed only one level of evaluation: Backes *et al.* (2008), Peixoto *et al.* (2013), Monteiro *et al.* (2016), Freitas *et al.* (2018) and Aroldi, Peres and Mira (2018). In this regard, Ruggeri, Farrington and Brayne (2013) emphasize that educational programs need to be evaluated at various levels by multiple stakeholders, with a combination of methods, from their effectiveness to their implementation and dissemination.

Freitas *et al.* (2018) and Peixoto *et al.* (2013) evaluated the distance education strategy according to the participants' satisfaction - the first, based on the perception of quality of the learning environment on the web; the second, based on the perception of quality on instructional procedures, such as teaching objectives, content, assessments, among others, including the quality of web tools.

On the other hand, Aroldi, Peres and Mira (2018) and Backes *et al.* (2008) focused their assessments on the impact dimension, justified

by the over-evaluation of reaction and learning and by the absence of studies that assess the impact of the educational process. The reaction evaluation is carried out right after the completion of a module or course, providing immediate information, in order to determine, through the perception of quality and learning approach, the value of the course for the participants (LOPES, 2010; GALLOWAY, 2005). In addition to the impact of training on transferring knowledge to practice, working conditions and available resources were identified as essential factors in supporting transfer (AROLDI; PERES; MIRA, 2018). Both studies considered the participants' perception of the contribution of courses in the acquisition of skills.

Unlike the previous dimensions, Monteiro *et al.* (2016) addressed an evaluation carried out before the course was offered, to test and validate the Permanent Education Program based on the expertise of specialists on the subject, due to their theoretical mastery on the subject. Two types of evaluation were used: ergonomic, from the perspective of computer experts and the central theme of the course, and pedagogical, according to the expert's analysis of the adequacy of the material and content worked according to the objective of the course.

Wanderlei and Montagna (2018) presented the assessment of learning and the impact of a training course in a public hospital. Avelino *et al.* (2017) and Martins-Melo *et al.* (2013) described satisfaction and learning as a way to evaluate the semi-presential course. In common, the three studies considered the student's learning, differentiating the way of evaluating.

In the first, a more traditional way of measuring knowledge was applied, by assigning scores (0 to 10) in a questionnaire at the end of each module (WANDERLEI; MONTAGNA, 2018). Regarding the impact, the authors also performed a result comparison of two years in a row, based on the application of a hospital survey on patient safety culture, in order to assess whether there was a change in the team's attitude.

Avelino *et al.* (2017) used different strategies to assess their mastery over the subject, such as the construction of collaborative texts (wiki), participation in the discussion forum, clinical case study, among

others, which, in the satisfaction assessment, proved to be a positive point, configuring use of resource diversity. Finally, Martins-Melo *et al.* (2013) mixed the two forms of assessment (satisfaction and learning) and considered a set of indicators that included grades received in the mandatory modules, fulfillment of tasks, participation in chats / discussion forums, portfolio and other activities. The proposal also included assessments of the tutor, didactic material and self-assessment, which promoted greater reflection on the processes experienced.

Borges-Andrade (2002) states that, as we go deeper into the levels of evaluation, the more difficult it becomes to detect the effects of the educational process, which may justify the failure to carry out the impact assessment by some of the studies analyzed. In addition to understanding notions of performance, the impact includes dimensions of motivation, that is, it is not enough to know how to do it (skill), the person needs to want to do the task and, even more, be able to do it (ZERBINI; ABBAD, 2005). Thus, impact assessment requires a more complex, rigorous and multifaceted approach (AROLDI; PERES; MIRA, 2018), as it investigates changes that may be inserted in the culture or organizational structure. Other considerations on this level refer to the existence of few validated instruments (ZERBINI; ABBAD, 2005), the imprecision and the variation of the moments in which the transformations of the environment occur in the long term (BORGES-ANDRADE, 2002).

This perspective is pointed out in the study by Lima *et al.* (2019). The authors carried out a literature review that analyzed 11 studies from different countries (United States, Germany and the United Kingdom), with the aim of evaluating the effectiveness of distance education in orthodontics, according to the levels proposed by Kirkpatrick. The results demonstrated the predominance of reaction evaluation and, to a lesser extent, of learning evaluation. Only in two of the analyzed articles was there an evaluation of performance in clinical procedures, with no significant result in the practical applicability of interventions.

Chart 2 - Categorization of selected articles, according to levels and moments of evaluation

Autores	Evaluation level	Evaluation time
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BACKES, V. M. S. <i>et al.</i> (2008)	Impact	After the course
PEIXOTO, H. M. <i>et al.</i> (2013)	Reaction	After the course
MARTINS-MELO, F. R. <i>et al.</i> (2013)	Reaction and Learning	During the course
MONTEIRO, A. K. C. <i>et al.</i> (2016)	Reaction	Before the course
FRATUCCI, M. V. B. <i>et al.</i> (2016)	Reaction, Learning and Impact	After the course
AVELINO, C. C. V. <i>et al.</i> (2017)	Reaction and Learning	Before, during and after the course
WANDERLEI, P. N.; MONTAGNA, E. (2018)	Learning and Impact	Before, during and after the course
CASTRO FILHO, J. A.; MOTTA, L. B. (2018)	Reaction, Learning and Impact	After the course
FREITAS, L. A. <i>et al.</i> (2018)	Reaction	After the course
AROLDI, J. B. C.; PERES, H. H. C.; MIRA, V. L. (2018)	Impact	After the course

Source: Created by the authors.

Of the total of the ten assessments described, only two included, in the same study, a more complete assessment, exploring the dimensions of reaction / satisfaction, learning and transformations / impact (CASTRO FILHO; MOTTA, 2018; FRATUCCI *et al.*, 2016). Although the article by Castro Filho and Motta (2018) presents the assessment levels in a more structured way, it points as a limitation to not addressing the impact, since there is no application of the intervention projects developed throughout the course. In any case, the assessment is guided by the levels of reaction (student perception), learning (knowledge accumulation) and behavior (learning use). It is noteworthy that, for the reaction analysis, endogenous variables were considered, which considered aspects inherent to the course (for example, technical issues, content, material, methodology, tutoring), and exogenous, such as personal issues, internet access and opinions about the course (CASTRO FILHO; MOTTA, 2018). The other assessment, carried out by Fratucci

et al. (2016), simultaneously addressed all dimensions of the assessment, identified from the statements of a small sample of students. These dimensions were signaled as structuring axes of analysis on the methodological strategies used and their relationship with learning and the transformation of professional practices.

The results presented in this study corroborate, to a large extent, with data from the literature, as in the findings of Otrenti (2011), who promoted an international integrative review when analyzing 19 scientific articles, between 2000 and July 2010, on the evaluation methodology of formal educational actions for health professionals. According to Otrenti (2011), most studies used the quantitative approach, the Likert Scale instrument and the levels of learning assessment, combined in some cases with the reaction. The systematic review carried out by Leeuw *et al.* (2019), which analyzed 418 articles in the medical postgraduate field with different e-learning methods, identified Kirkpatrick's methodology as the most used to evaluate or create e-learning. Among the articles, only 4% used a defined method; 28 studies (approximately 7%) used some kind of qualitative assessment, such as focus group or individual interview.

Specifically in Brazil, a similar result is identified, as, according to the review by Borges-Andrade and Abbad, in 1996, the articles on training evaluation, in their majority, referred only to the learning evaluation (ABBAD; GAMA; BORGES-ANDRADE, 2000). However, the studies carried out by Abbad, Gama and Borges-Andrade (2000) and Otrenti (2011) bring results related to the context of face-to-face training, different from the research analyzed here, which took place through distance education. It is noteworthy that this may justify differences in the amount of focus of the assessed levels: while the studies of in-person educational actions pointed out the predominance of the level of learning, the distance training focused their efforts on the reaction assessment, followed by learning. Caldeira (2004) states that EaD offers a more flexible and adaptable to students' conditions, but requires greater autonomy and discipline.

Regarding the moments of the evaluation, most were carried out after the course, as a new movement to mobilize a sample of course

participants to investigate its benefits and effects on the subjects' professional lives. This form of assessment is at odds with the proposal for a comprehensive assessment process, which is incorporated at all times in the teaching-learning process.

Another factor that points to the need to align the assessment with educational actions is the use of face-to-face meetings, as noted by Backes *et al.* (2008) and Fratucci *et al.* (2016). According to the authors, these meetings provided moments of reflection, which qualified the participants' evaluation processes. Still on this aspect, Lawn, Zhi and Morello (2017) affirm that, although distance education has many benefits, the offer of totally distance learning can limit the process in some cases; the authors emphasized the importance of subsequent practice and the opportunity for reflection after learning. Thus, reserving spaces for exchange between the participants, in person, is recognized as an important strategy, which improves the motivation of the participants and reduces the dropout rate, a major concern in distance education courses (OBRELI-NETO *et al.*, 2016).

6. Conclusions

Based on the analysis of the literature, it was found that the theme of “evaluation of education processes for health professionals” is a field that needs to be explored in greater depth. The authors investigated here report the difficulty in electing and developing more complete and structured evaluation proposals. Furthermore, most of them adopted more traditional instruments, such as closed questionnaires that predominantly assess satisfaction and knowledge transfer, which can hinder the articulation between the educational process carried out and the effects provoked in the work practice.

In this context, it has been highlighted among health professionals to carry out education actions through distance education, since it enables new forms of interaction, fundamental for professional qualification. According to the results, evaluations of courses were carried out in different Brazilian contexts, developed for different professional categories. This is an advantage of distance education, which enables greater

flexibility, personalization and capillarization of educational offerings, in order to break the barriers of space and time.

Some reported experiences reported on being able to carry out the assessment in a more complete way - mixing quantitative and qualitative instruments - and integrated with the professionals' work process, which enabled the identification of the acquired skills and their consequences in the work practice in health services. Despite this, the studies themselves did not show concrete results in changing the behavior of the professionals participating in the educational offerings. The teaching and learning process needs to be linked to the problems and needs of the worker and services, in order to enable exchanges of experiences and fruitful dialogue between this knowledge and academic knowledge, which is close to the assumptions of Permanent Education in Health.

Thus, this study points to the importance of the diversity of measures and dimensions analyzed, since the assessments tend to consider only the individuals' perception model (self-reported). It is noteworthy that an effective educational assessment for professional qualification must include assessment strategies composed of quantitative and qualitative instruments, which enable the collection / analysis of information in addition to the knowledge acquired.

In this aspect, based on the methods used in the evaluations, the theoretical references of the Kirkpatrick and Impact model are evident, which permeate areas of knowledge of administration, education and organizational psychology. These models understand the evaluation with a systemic approach, considering the levels of reaction, learning, behaviors and results, in addition to considering contextual factors and characteristics of the environment and the individual, in the case of Impact.

7. Financing

Qualification Program of Primary Health Care in the Federal District (Qualis APS).

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