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Undergraduate student assessment in the health professions: changes associated to faculty development

Avaliação do estudante de graduação nas profissões da saúde: mudanças associadas ao desenvolvimento docente

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ABSTRACT

Introduction: Student assessment in undergraduate courses in the health professions holds essential importance, ideally fulfilling summative, formative and informative purposes. However, data available on how it occurs in Brazilian institutions are scarce. A Faculty Development (FD) action, which consisted of cycles of workshops for course managers and teachers focusing on institutional assessment programs, with a formative emphasis, provided an opportunity to explore these settings.

Objective: To characterize the assessment practices in undergraduate health courses in Brazil, detailing institutional responsibilities, assessment methods, and student feedback, and identifying changes in these aspects associated with FD activities.

Method: Thirty undergraduate health courses from nine different higher education institutions (Northeast, Southeast and South regions) participated in this initiative and their managers responded to two questionnaires about the assessment processes in place. The first questionnaire, applied before the FD workshops, generated 23 situational diagnoses about context, assessment responsibilities, methods adopted and mastery of techniques for feedback to students. The second, applied one year after the last FD activity, generated 36 sets of responses expressing perceptions on changes. Responses to the first instrument were analyzed using Bardin's Content Analysis technique. Data from the second were analyzed quantitatively.

Result: Before the workshops, in 70% of the courses, student assessment were the responsibility of teachers, with little institutional participation. More than half of the courses focused on summative assessment, with limitations on formative assessment and feedback to students. Methods for assessing knowledge and clinical skills were quite varied, while those for the affective domain were imprecise. One year after the FD activities, there was a considerable significant increase in institutional participation, with a greater balance in responsibilities between teachers and central instances. In the perception of 89% of managers, mastery of feedback techniques improved. Furthermore, the different assessment methods have become more appropriate for each purpose.

Conclusion: Aspects of assessment, such as reduced institutional responsibility, limited practice of feedback to students and adequacy of methods, underwent significant changes, which, in the perception of administrators, were associated with the participation of faculty and managers in FD activities.

Keywords: Educational measurement; Health Occupations Student; Higher Education; Health professions; Professional Training.

RESUMO

Introdução: *A avaliação dos estudantes nos cursos de graduação nas profissões da saúde tem importância essencial, podendo cumprir as finalidades somativa, formativa e informativa. No entanto, há poucos dados disponíveis sobre como ela se dá nas instituições brasileiras. Uma ação de desenvolvimento docente (DD), que consistiu em ciclos de oficinas para gestores e professores sobre programas institucionais de avaliação, com ênfase formativa, proporcionou oportunidade para explorar esse panorama.*

Objetivo: *Este estudo teve como objetivo caracterizar as práticas avaliativas em cursos de graduação em saúde no Brasil, particularizando responsabilidades institucionais, métodos de avaliação e feedback ao estudante, e identificando mudanças nesses aspectos associadas às atividades de DD.*

Método: *Trinta cursos de graduação em saúde de nove diferentes instituições de ensino superior (Regiões Nordeste, Sudeste e Sul) participaram dessa iniciativa, cujos gestores responderam a dois questionários sobre os processos avaliativos desenvolvidos. O primeiro questionário, aplicado antes das oficinas de DD, gerou 23 diagnósticos situacionais acerca do contexto, das responsabilidades sobre a avaliação, dos métodos adotados e do domínio de práticas de feedback fornecido aos estudantes. O segundo, aplicado um ano após o último ciclo de capacitação, gerou 36 conjuntos de respostas, expressando a percepção sobre mudanças. As respostas ao primeiro instrumento foram analisadas por meio da técnica de análise de conteúdo de Bardin. As do segundo foram expressas de modo quantitativo.*

Resultado: *Antes das oficinas, em 70% dos cursos as práticas avaliativas eram de responsabilidade dos docentes, com pouca participação institucional. Mais da metade dos cursos focava a avaliação somativa, com limitações na formativa e no feedback. Os métodos de avaliação de conhecimentos e de habilidades clínicas eram variados, enquanto os do domínio afetivo se mostravam imprecisos. Um ano após as ações de DD, notou-se aumento expressivo da participação institucional, com maior equilíbrio nas responsabilidades entre professores e instâncias centrais. Na percepção de 89% dos gestores, o domínio das técnicas de feedback melhorou. Ademais, os diferentes métodos avaliativos tornaram-se mais adequados para cada fim.*

Conclusão: *Aspectos da avaliação, como reduzida responsabilidade institucional, limitada prática do feedback fornecido ao estudante e adequação dos métodos, sofreram mudanças expressivas que, na percepção dos gestores, foram associadas à participação de professores e gestores nas atividades de DD.*

Palavras-chave: *Avaliação Educacional; Estudantes de Ciências da Saúde; Ensino Superior; Profissões de Saúde; Capacitação de Professores.*

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INTRODUCTION

Currently, student assessment is understood as a process of collecting, analyzing, and interpreting information about their performance in the cognitive, psychomotor, and affective-attitudinal domains, as well as in the competencies related to these aspects. It aims to fulfill specific purposes, among which the following stand out: decision-making on student progress (summative assessment), the promotion of continuous learning (formative assessment) and the improvement of the educational process (informative assessment)[1,2].

In undergraduate courses in the health professions in Brazil, practices characterized by a traditional paradigm still seem to predominate, where evaluation is the exclusive responsibility of the curricular unit teacher and summative exams prevail, with an almost exclusive focus on the cognitive domain and carried out within the scope of disciplines and professional internships[3].

Despite initiatives to improve evaluation processes, such as the expansion and consolidation of the Progress Test (PT) in medical courses[4], or the contributions of hybrid teaching during the pandemic, which expanded the possibilities of carrying out technology-mediated formative assessment, promoting new teacher-student interactions[5, 6, 7], there is still much to advance in the Brazilian reality.

In the abovementioned paradigm[3], the evaluation of clinical, procedural and attitudinal skills, despite their great importance, occurs in a sporadic and less systematized manner, and the use of structured methods suitable for these purposes is infrequent. Formative assessment is usually scarce and there is not enough institutional investment for teachers to master the techniques to provide feedback to the student.

As in this model the evaluation is the responsibility of the teacher or the coordination of the curricular unit, there is a lack of institutional instances that coordinate the processes, integrate the information, decide on the student's progress and the improvement of curricular activities[2]. Assessment procedures usually result in scores (grade or average grade), which determines the pass or failure of the undergraduate student, according to the cutoff point defined by the educational institution in its statute.

Therefore, the evaluation practices are far from the main national and international guidelines on the subject. In the international scenario, the International Association for Health Professions Education *(*AMEE*)* proposes criteria to recognize innovative practices through ASPIRE AWARDS[8]. The World Federation for Medical Education *(WFME)* periodically provides specific recommendations for teaching, learning, and assessment processes[9]. These organizations encourage the creation of institutional assessment programs or systems that allow the fulfillment of specific purposes and the valorization of assessment for learning[3,10,11].

These recommendations indicate that evaluation programs should support the mission of institutions in health profession education, aiming at improving people's health. Moreover, it is necessary for them to improve and create learning opportunities, ensuring students' competence as they progress with thorough and continuous quality control. This commitment to knowledge and innovation includes the dissemination of good practices[8], through robust evaluation programs capable of ensuring, boosting, guiding and optimizing educational processes[9].

In Brazil, the National Curriculum Guidelines (DCN, *Diretrizes Curriculares Nacionais*) for Undergraduate Medical Courses[12] emphasize the need for continuous and progressive monitoring and evaluation of the course and assessment of students, regarding the cognitive, psychomotor and affective-attitudinal aspects, establishing the obligation to offer and maintain a "*permanent Program for Training and Development of Teaching in Health*".

The updating of the DCN for other undergraduate courses in the health professions follows the same direction. The National Health Council published recommendations highlighting *"assessments with a procedural and formative character"*[13], emphasizing the use of active methodologies and the definition of criteria for monitoring and evaluating teaching-learning processes. It also recommends the maintenance of Faculty Development (FD) activities and, in this sense, it is important to highlight that it would be equally important for postgraduate programs, responsible for the training of masters and doctors, future teachers and managers, to dedicate themselves to the discussion and reflection on health education.

However, there are few objective data on how student assessment currently takes place in the various undergraduate courses in the health area. The characteristics of the assessment practices or the improvement initiatives adopted to incorporate the recommendations expressed are not clearly known.

In this context, Faculty Development plays a fundamental role in contributing to the change in the paradigm of student assessment in undergraduate health courses in Brazil. This transformation will only be possible with real and regular opportunities for teacher training in this area.

An FD initiative that involved teachers and managers from several institutions in different Brazilian states allowed obtaining data to create a situational overview of student assessment practices in a considerable number of undergraduate courses in the health area. This action allowed us to identify signs of change, both in the maintenance and

consolidation of what was already working well, as well as in the improvement of aspects, thus constituting a movement of rupture with the traditional pattern.

Therefore, the aim of this article was to verify the influence of an FD project on student assessment practices in undergraduate courses in the health professions in Brazil, characterizing aspects such as institutional responsibilities, assessment methods and feedback techniques, seeking to identify changes associated with participation in FD activities, from the point of view of the course managers.

METHOD

Context and design

The Center for Faculty Development for Teaching (CDDE, *Centro de Desenvolvimento Docente para o Ensino*) of the Ribeirão Preto School of Medicine, Universidade de São Paulo (FMRP-USP), created a line of work focused on teacher training, with an emphasis on student assessment and a highlight on formative assessment[14].

In 2018, a new front of specific action was initiated, aimed at preparing teachers and course managers to work in institutional programmatic assessment[2,3,10,11]. This action was part of a project that received resources from the Latin American Grants (LAG) initiative of the National Board of Medical Examiners (NBME), of the United States of America. The funds made it possible to carry out FD activities, disseminating these reflections and practices in Brazilian contexts of health education, through workshops (manuscript in preparation), which had participants, including teachers and managers of undergraduate courses.

These participants came from nine different higher education institutions, located as follows: one from the Northeast region, one from the South region and the others from the Southeast. Of these, seven were public (state or federal) and two private (one a confessional institution). These professionals worked in 30 undergraduate courses in 13 different health professions, including: Biomedical Sciences, Nursing, Pharmacy, Physical Therapy, Speech Therapy, Gerontology, Biomedical Informatics, Medicine, Veterinary Medicine, Nutrition, Dentistry, Occupational Therapy and Social Work.

The workshops, held between November 2018 and January 2020, followed a program of content focused on student assessment, using active and participatory teaching-learning strategies (Chart 1). In all, 11 cycles of face-to-face workshops took place, initially at the headquarters of the proposing institution and, later, at the partner schools. Each cycle lasted two days, with a total workload of 20 hours. The overall objectives of this action included the formation of a critical mass of teachers and managers of undergraduate courses in the health professions, allowing them to plan projects related to the programmatic assessment of students in their educational scenarios. This aimed to promote a better understanding of the concepts and purposes of student assessment, in addition to the improvement of existing practices or the introduction of new approaches.

Participants

FD actions mobilized 359 participants from the various health professions courses. However, seeking the institutional characterization of student assessment, this study focused on the managers' views on the relevant processes in their courses.

For this purpose, before the FD workshops, the managers answered a structured questionnaire with open-ended questions about aspects that would allow them to characterize how the student assessment conditions in their courses were at

Chart 1. Content and strategies of the FD Workshops on student assessment, within the scope of the LAG-NBME Project, developed by CDDE-FMRP-USP.

Contents
Concepts on systems of student assessment and Programmatic Assessment
Key concepts about educational evaluation, quality criteria in student assessment, and choice of methods
Alignment between curriculum and student assessment
Assessment of cognitive abilities
Structured assessment of clinical competencies
Assessment in professional practice scenarios
Formative assessment and feedback techniques
Portfolio and academic tutoring (Student assessment data record)
Successful experiences towards programmatic assessment
The future of institutional programmatic assessment: where we are and where we can go.
Strategies aimed at learning
Text readings
Dialogued lectures
Group discussions
Individual and group exercises
Role playing
Plenary discussions
Evaluation strategies
Forms to characterize student assessment in the undergraduate courses of the participants, of initial and final self-evaluation of learning and appreciation of the quality of the activities and the workshop.

Source: Prepared by the authors.

that time ("initial situational diagnosis"). Of the 30 participating courses, 23 diagnoses were obtained in this initial phase, corresponding to 76.6% of the participating courses.

In a second moment, one year after the end of the last cycle of workshops, the managers of these same 30 courses were invited to answer a new questionnaire, this time an electronic one. This instrument specifically evaluates the changes in the students' assessment practices, which could result or not from the participation of the managers and teachers in the different activities of the FD workshops. This stage of the study took place between February and May 2020.

In this phase, 36 questionnaires were answered, because in six of the 30 participating courses, both the original manager, who had answered the initial instrument, and the current coordinator independently answered the instrument. It should be noted that, in this second moment, data were obtained from all 30 courses, and six of them had more than one perception. In the six courses with two managers' answers, both were analyzed and no major divergences were observed. Therefore, the answers were considered independent to provide a more comprehensive view of the course.

Instruments

Questionnaire 1 – Initial situational diagnosis instrument, consisting of open questions, to be answered discursively, on paper, by the course managers. The questions were divided into four sections: general characterization of the course, general characterization of student assessment, predominantly used methods and instruments, and FD support. For this report, four specific questions were selected that offer a view of the student's assessment conditions:

1.Is the student's assessment the responsibility of the curricular units (modules, subjects, internships) or of the institution as a whole (course coordination or school management)?

2.Describe the main methods used in the course for cognitive assessment, for the assessment of procedural and clinical skills, and for the assessment of professional behaviour.

3.Is there a balance between summative (pass/fail/remedy or recovery) and formative purposes?

4.Is there a satisfactory mastery of feedback and feedback techniques to the student by faculty members and preceptors? Describe and comment.

Questionnaire 2 – Electronic instrument (Google Forms) to characterize the student's assessment conditions after FD activities. It was applied one year after the last cycle of workshops and kept the same sections and topics as Questionnaire 1, but used objective multiple-choice questions, aiming to capture the perceptions of the effects of FD workshops on the courses. Each question allowed only one answer. For this manuscript, specific questions were prepared to identify possible changes and advances in the assessment processes:

1.Regarding student evaluation, the responsibility at your institution is or continues to be (answer by choosing only one alternative):

- Fully of the curricular units (modules, disciplines, internships);
- Predominantly of the curricular units, but with the participation of instances of the institution (course coordination or school management);
- Balanced between the curricular units and the institution;
- Fully of the institution (course coordination or school management);
- Another situation.

2.Were there advances in relation to the mastery of feedback and feedback techniques to the student by faculty members and preceptors in your institution, in general, after FD activities?

3.Were there advances in relation to the balance between the summative and formative purposes of student assessment after FD activities?

4.Were there advances regarding the methods used in the course for cognitive assessment after FD activities?

5.Were there advances regarding the methods used in the course for the assessment of procedural and clinical skills after the FD activities?

6.Were there advances regarding the methods used in the course to assess professional behavior after FD activities?

The alternatives to answer these previous questions were:

- There was no progress, and the need for adaptation persisted;
- There was no progress, because what there was, was already adequate;
- There were advances, regardless of participation in FD activities;
- There were advances, as a result of the participation in FD activities;
- Another situation.

Before being sent to the managers, the instruments were reviewed by seven judges (teachers), including two specialists in basic biomedical sciences and five who worked in the clinical stage of different health courses. They evaluated the presentation, format, pertinence, clarity and content of the questions, contributing with their knowledge and

experience. Their observations allowed reviews that ensured that the questionnaires met the requirements for face and content validity[15,16].

Data analysis

Questionnaire 1 – The original printed documents containing the 23 answered questionnaires had their contents copied to an Excel spreadsheet (Microsoft Office 365, version 2016).

Thematic content analysis was the qualitative analysis strategy adopted, according to L. Bardin's[17] perspective, which consists of:

> *A set of communication analysis techniques aimed at obtaining, through systematic and objective procedures for describing the content of messages, indicators (quantitative or not) that allow the inference of knowledge related to the conditions of production/ reception (inferred variables) of these messages (p. 44).*

When applying this analysis technique, after the initial reading of the material ("floating exploration"), other more detailed and in-depth approaches were carried out, with the identification of topics and the *"counting of several topics or items of significance"*[17]. It is important to consider that, in this case, these topics or categories were given *a priori*, by the questionnaires. The identification of the frequency of terms that arose explained whether the "Responsibility for student assessment" was more the responsibility of teachers and coordinators of curricular units or was shared with other instances of the course or institution, such as management or evaluation committees. This same procedure was applied to the questions on the "Balance between the summative and formative purposes of the assessment" and the "Satisfactory mastery of feedback techniques".

To illustrate the topics, specific discursive excerpts (literal transcriptions) were selected, followed by a code: initial letters that designate the courses and a number assigned during the analysis.

In the case of questions about the assessment methods, the results will be presented in separate tables for the cognitive and procedural or clinical skills domains, containing the grouped and counted expressions, which demonstrate the predominant strategies in the courses. For the professional behavior domain, a table was created containing the strategies mentioned by the participants, since, due to the diversity of formats mentioned, it was not possible to identify the precise frequency of each one. Thus, in view of the universe of analyzed answers, in each table or chart, the frequencies of the declared methods were presented.

Questionnaire 2 – The data from the second questionnaire, applied electronically, were extracted and tabulated in an Excel spreadsheet (Microsoft Office 365, version 2016). The answers to the questions explained above were analyzed and the results will be presented as percentages of the total number of respondents.

Ethical Aspects

The research project was submitted to the Research Ethics Committee (REC) of the institution and was approved on March 6, 2020 (Process N. 3902020. CAAE: 29464920.6.0000.5440).

Considering that part of the data had already been collected during the workshops held previously (for the exclusive purpose of improving FD activities), the approval of this project includes the authorization by the REC to waive the signing of the Informed Consent Form (ICF) by the participants who answered the first questionnaire.

As for the second questionnaire, the responding participants were duly informed about the nature and objectives of the study and invited to participate, expressing their agreement through electronic acceptance of the specific ICF, prepared according to resolution N. 510, of April 7, 2016 of the National Health Council, regarding research with human beings and previously submitted and approved by the REC.

All research procedures were carried out considering the risks, discomforts and benefits involved. Given the sensitive topic of student learning assessment, the hierarchy and dependence of professionals in relation to their institutions was respected, also ensuring anonymity and confidentiality in the treatment of the obtained information.

RESULTS

Responsibility for student assessment

Among the set of initial characterization answers (23 courses), in 16 (70%) it was mentioned that the student's assessment was entirely the responsibility of the teacher and the coordination of the curricular units, as illustrated in the excerpt: *"The evaluation is exclusively carried out by the teacher of the course" – OT19*. In seven courses (30%), the answers indicated shared initiatives, with the creation of committees, working groups or institutional commissions for this purpose, as illustrated by the comment: *"The assessment of students is the responsibility of all instances involved in training throughout the course" – NU6*.

The answers to the second questionnaire showed changes in the courses after the FD actions. The exclusive responsibility of teachers or coordinators of the curricular units decreased from 70% to 45% (17/36 responses), while

sharing with the institution increased from 30% to 53% (19/36 responses).

Balance between the summative and formative purposes of student assessment

Among the set of answers to the first questionnaire, it was possible to identify that in 12 (52.2%) there was no balance, with a predominance of the summative purpose, as shown in the comment: *"In some disciplines, summative assessments are carried out, including discussions after group activities and evaluations without assigning grades; however, there is still no balance between these formative and summative assessments in all disciplines" – PI3.*

Six (26.1%) showed that there is a balance between the two purposes, as indicated in the excerpt *"Summative and formative assessment is carried out in all professional disciplines, using the instrument chosen by the teachers" – N23.*

In the remainder (21.7%), generic descriptions were presented, which did not allow a defined conclusion, since some managers' discourses point to the need for studies on this aspect related to their courses, as in the example: *"Once again, my answer is only illustrative (part of a whole, which I cannot detail)" – ME21.*

In turn, as a highlight, the answers to the second questionnaire showed an increase from 52.2% to 70% (25/36) in the recognition of the balance between the summative and formative purposes of the student's assessment, after the FD actions, from the perspective of the managers.

Mastery of feedback to the student and feedback techniques

Of the set of answers to the initial diagnostic questionnaire, in 12 (52.2%) the answers clearly indicated the lack of mastery of the feedback techniques by the teachers, as shown in the comment: *"We do not apply these assessment techniques" – IN5.*

Six (26.1%) showed mastery, as in the example *"Many teachers have been trained and currently have this profile" – ME1.*

In five (21.7%), there were general responses, sometimes indicating the need for improvements, sometimes acknowledging not knowing how the feedback is manifested in the courses, or even indicating heterogeneity, as in the excerpt: *"(...) However, we cannot answer this question in a qualified way. It has been a challenge to be able to access, in detail, the assessment methodologies used by the teachers" – OT17.*

On the other hand, the answers to the second questionnaire showed considerable progress in the domain of feedback *practices* after FD actions, from the perspective of 89% of the managers (32/36 responses).

Methods used for assessment in the cognitive domain

In the answers to the initial characterization questionnaire produced by the managers, there were reports of several methods that used to be employed for the assessment of the students in the cognitive domain. Among the discursive mentions, the use of multiple-choice tests and tests with open questions emerged (Table 1). Based on the analysis, terms with the same meaning about methods were counted, which generated a total of 77 records (100.0%).

With the application of the second questionnaire, after the FD actions, in the appreciation of 75% (27/36) of the managers, advances were perceived in the choice and use of evaluation methods for the cognitive sphere.

Methods used for the assessment of procedural and clinical skills

The managers' answers indicated the use of many strategies to assess procedural and clinical skills (Table 2), with a predominance of practical and laboratory tests and the Objective Structured Clinical Examination ("OSCE"), the latter mainly used in medical courses. Some managers' narratives point out that the methods used to assess this domain lack coherence (such as "cognitive assessment"; "progress test"), since there seems to be no observation of the student

Table 1. Frequency of records on methods used to assess students in the cognitive domain in 23 undergraduate courses in the area of health sciences, whose managers participated in FD workshops. The data are presented in absolute numbers (N) and, in parentheses, in percentages of the total mentions.

METHODS USED IN THE DIFFERENT UNDERGRADUATE COURSES	
Assessment of the cognitive domain	**N (%)**
Multiple-choice tests	22 (28.6)
Tests with open questions (short, medium, long)	21 (27.3)
Experimental projects and reports (scientific, internship, Informative, reports, significant manifestations, field research)	12 (15.6)
Seminars (oral, individual or group presentations)	7 (9.1)
Clinical cases (real, data interpretation)	7 (9.1)
PBL, TBL	4 (5.2)
Other (Progress Test, Portfolios, Games, Literature Reviews)	4 (5.2)
TOTAL RECORDS	**77 (100.0)**

Legend: PBL – Problem-based learning; TBL – Team-based learning.
Source: Prepared by the authors.

performing the procedures themselves. However, they were analyzed as they appeared in the writings. Thus, the different mentions of the 23 forms analyzed were considered, generating 59 units of records (100.0%).

When applying the second questionnaire, the data obtained indicated that there were positive changes in the methods used by the courses to assess procedural and clinical skills. For 55.6% (20/36) of the managers, these advances were a direct result of the participation of their teaching teams in FD activities.

Methods used for the assessment of professional behavior

The answers to the initial questionnaire revealed heterogeneity in the description of the methods and instruments used for the assessment of the student, making it difficult to quantify data. Some of them are well-known strategies in the health professions education, while others were customized by the courses for specific phases, according to the educational objectives (Chart 2).

In the second questionnaire, 58.30% (21/36) of the managers recorded that there had been advances in the use of methods in the courses for the assessment of professional behavior. For 11.40% (4/36) there was no progress, and there was still a need for adjustments.

Table 2. Frequency of records on methods used to assess students in the procedural domain and clinical skills in 23 undergraduate courses in the area of health sciences, whose managers participated in FD workshops. The data are presented in absolute numbers (N) and, in parentheses, in percentages of the total mentions.

METHODS USED IN THE DIFFERENT COURSES	
Assessment of procedural and clinical skills	**N (%)**
OSCE	13 (22.0)
Practical tests and laboratory practices	13 (22.0)
Simulations	8 (13.6)
Reports, registration forms, monitoring of the patient's evolution	5 (8.5)
Clinical cases	4 (6.8)
Written, objective tests	4 (6.8)
Observation of students during patient care, DOPS, Mini-CEX	3 (5.1)
Cognitive assessment (test or essay)	2 (3.4)
Portfolio	2 (3.4)
Collective work and seminars	2 (3.4)
Others (Progress Test, Product Evaluation, Capstone project)	3 (5.1)
TOTAL RECORDS	**59 (100.0)**

Legend: OSCE (Objective Structured Clinical Examination); DOPS (Direct Observation of Procedural Skills); Mini-CEX (Mini-Clinical Evaluation Exercise).
Source: Prepared by the authors.

Chart 2. Methods used to assess the student in the attitudinal domain and professional behavior in 23 undergraduate courses in the area of health sciences, whose managers participated in the FD workshops. The names of the methods or instruments and the descriptors presented by the managers are presented (Continues).

Method or instrument used	Mentions of attitudes and behaviors assessed
360-degree assessments	*"Assessment of the student by everyone around them, such as superiors, subordinates, employees, patients and by the student self-assessment and their peers". ME1*
Class Councils, which assign grades in internships	*"Assessment of the student's professional behavior, attendance". D13*
Discipline of the Human Sciences Axis and Academic Tutoring	*"Issues related to professional ethics, punctuality, attitudinal behavior worked on in these contexts". CI2*
Professional internships, with records in forms developed and adapted to each specificity	*"Professional behavior. The assessment is subjective and carried out by the preceptors in the services where the activities take place". NU6* *"Punctuality, interprofessional teamwork, professional behavior, organization of the work environment, proactivity, relationship with colleagues, team and supervisors, clinical conduct. Interest in learning, attendance and punctuality". PI20*
Structured individual assessment form	*"Punctuality, assiduity, participation in activities, relationship (colleagues, patients, preceptors, teachers), motivation, ethics in personal relationships and development, organization in the execution of activities". FA11* *"Attitudinal aspects (eventually, they have the support of the psychology sector)". N8* *"Some internships use a form with pre-established parameters to assess professional behavior". ME2*

Contine...

Quadro 2. Continuação.

Method or instrument used	Mentions of attitudes and behaviors assessed
Instruments specific to the discipline	*"They consider behavioral and attitudinal aspects, skills, ethics and application of knowledge". N23*
Mini-CEX, use in the clinical cycle and internship	*"Clinical skills and student behavior towards the patient". ME1*
Records of practice and reflection (aspects observed in a checklist that quantifies constructs, with feedback, for formative or summative purposes)	*"Ethical, relational posture (with team and professionals), ability to plan, know how to do it, perform, analyze, use theoretical and practical framework to carry out practice". OT19*
Analytical reports; Significant manifestations; Participation in collective work (seminars and others)	*"Correct use of PPE, punctuality of the beginning and end of care, frequency, behavior". OD13*
Teacher supervision for the Capstone project	*"Monitoring of the student's daily performance in the laboratory, in which the supervisor assesses their behavior in terms of punctuality, teamwork, compliance with agreed commitments and professional ethics". CI2*

Legend: PPE – Personal Protective Equipment; Mini-CEX (Mini Clinical Evaluation Exercise).
Source: Prepared by the authors.

DISCUSSION

The results reveal that most undergraduate courses in the health professions still adopt a traditional paradigm of organization in the student assessment process. This model is characterized by reduced institutional participation and the predominance of summative assessment, under the exclusive responsibility of teachers or the coordination of disciplines, curricular units or internships. Moreover, an essential part of the assessment process – the feedback cycle – seems to be unassisted, since the mastering of feedback strategies is limited and the instruments for greater investment in formative evaluation are few.

The predominance of summative assessments may result from the institutional evaluative culture, based on the assumption that the final measure of the performance of students in health professions, through formal tests and their scores, is indicative of their performance in the future. This would serve as the basis for the choice of candidates for advanced training, such as medical residency, and also to protect the population from the effects of incompetent professionals. However, although the results of structured clinical skills tests may identify students at risk of insufficient performance in the future, there is little evidence that the results of summative assessments have predictive value for this outcome[18].

Thus, the excessive valorization of the summative purpose usually occurs to the detriment of the formative assessment practice, ignoring the evidence of the great effectiveness of feedback in promoting student learning[19]. As a result, limitations may be present in the domain of the feedback techniques.

The institutional culture regarding student assessment is also marked by the institution's scarce participation in the coordination of assessment procedures, which is delegated to the teacher or the coordinator of the curricular unit. This generates enormous heterogeneity regarding the methods that are used in student assessment in the various domains, generating doubts about the quality of the instruments and their use based on best practices.

In fact, among the declared methods of assessing knowledge, multiple-choice tests and tests with open questions predominate (Table 1). These findings coincide with a study[18] that shows the high use and good effectiveness of these methods for the cognitive domain. However, given the variety of available formats, it is essential to make careful choices and formulate assessments appropriately, based on specialized literature, to ensure greater reliability[20,21].

Regarding the assessment of clinical and procedural skills, results showed that, in addition to practical and laboratory tests, the objective structured clinical examination (OSCE) is the most often used (Table 2). This is justified because developing these skills is essential in the training process of students, future health professionals[22, 23]. The OSCE is an assessment model that, when well planned and executed, has validity, reliability, and accuracy, providing a reliable measure of competence in simulated environments[24,25]. It has a high educational impact and there is evidence of significantly positive associations between its scores and clinical performance, as observed in students of physiotherapy, pharmacy, medicine, dentistry and nutrition[18].

Although the diversification of methods is commendable, the offer of strategies, sometimes validated, sometimes

customized for certain activities or learning objectives, without supervision or institutional engagement, can lead to inadequacy in the student assessment of the various domains. For instance, some managers indicated the use of progress tests or portfolios, which are more appropriate for the assessment of the cognitive or affective domains, respectively, for the assessment of procedural skills (Table 2).

Assessing student performance in clinical skills does not only imply detecting and correcting deficiencies, but, mainly, reinforcing the strengths of the performance of the evaluated individual[23], implying the use of established and effective techniques for this purpose[26].

In the field of professional behavior, although several methods have been reported by managers, some instruments are globally accepted. In fact, the assessment of learning processes in the affective-attitudinal domain usually generates insecurity in the assessor, as their judgment may be more influenced by ideological positions than in the assessment of other domains (cognitive and procedural)[27]. In the predominant evaluative culture, this affective-attitudinal item is underestimated because it does not fit well with the *"quantifiable sanctioning function"* (p. 208), unlike the others that fit into the "*illusion of believing in the rigor of their statements because they are mathematizable*" (p. 208)[27].

The affective-attitudinal domain contains the attributes of professionalism, which has a multifaceted and dynamic definition, without a unique concept in the literature[28]. The assessment of professionalism encompasses various professional attitudes and behaviors, such as altruism, responsibility, teamwork, using different strategies[28]. Due to its importance and the fact that its learning is not instinctive, it is essential to include this topic in the curricula of the health professions and to combine methods for a global assessment of the student, in addition to training teachers for this purpose.

Although the use of different methods may indicate heterogeneity, each of them has its strengths and intrinsic limitations. The use of different assessment strategies over time may partially compensate for the deficiencies of one approach or another[29,30]. In this sense, building assessments systems[31] and investing in the programmatic appraoch[3,10,11] in courses can be an effective alternative to improve the decision-making processes of student progress. This continuous and integrated approach, with adequate recording of findings, goes beyond summative exams, favoring the formative assessment, feedback and observation of practical skills, allowing a comprehensive and holistic understanding of the student's trajectory to acquire the skills necessary for the future profession.

The paradigm shift regarding student assessment and its continuous improvement require permanent investment in FD. Although it was previously considered that a specialist in their area would naturally be an effective teacher, it is now understood that preparation and training for teaching, in the full exercise of teaching, is crucial[32].

This article reveals trends of changes aimed at improving the assessment processes carried out in HEIs, with the engagement of teachers and managers. FD activities can accelerate positive transformations. Considering teachers as the institution's most valuable resource, investing in their professional growth is essential to promote innovation and excellence at all levels of the *"educational continuum"*[33].

The results presented herein allow us to identify the characteristics of student assessment practices in various undergraduate courses in the health professions, as well as the trends of changes and improvements enhanced by the FD workshops. However, it is important to recognize some of its limitations.

First, it is important to consider that, although the FD proposal that gave rise to the data has created a unique opportunity to outline situational diagnoses of several courses, involving managers and teachers from different HEIs, it is a convenience sample. Thus, despite offering a relatively broad and diversified panorama, this set of data may not be representative of the national scenario.

Moreover, the interval between data collection and disclosure may have given rise to other undetected changes. Finally, considering the context of the provision of faculty development activities, the scenario for this study (low cost for the participating institutions and nearly zero cost for managers and teachers), positive reports on the effects of these activities may be influenced by this aspect.

Despite these limitations, this study reveals elements of characterization of student assessment practices in undergraduate courses in the health area and shows trends of changes and advances, which were strengthened by FD activities. However, it should be recognized that similar studies are desirable to better characterize the national scenario of student assessment in undergraduate courses in health professions and its transformation aimed at adapting to national and international recommendations in this field.

FINAL CONSIDERATIONS

The results of this study highlight the prevalence of the traditional paradigm in the student assessment processes of undergraduate health courses, with emphasis on the summative function to the detriment of the formative one, in addition to revealing insufficiency in the practice and limited of feedback institutional responsibility in student assessment. Teachers and managers from different Brazilian institutions

show an effort to diversify assessment methods and strategies, and align them with professional demands, especially regarding clinical skills, a process that seems to have been accelerated by FD activities. However, the lack of uniformity in the assessment methods for the affective-attitudinal domain constitutes a great challenge. Cultural changes to implement more comprehensive assessment systems and programs are necessary, requiring continuous investment in FD, which should improve the teaching performance in educational practices in undergraduate courses in the health area.

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AUTHORS' CONTRIBUTIONS

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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DATA AVAILABILITY

Research data is available in the body of the document.

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