

Problem Based Learning as a teaching tool in Pediatric Dentistry specialization

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ABSTRACT

The subject of the present study was the current educational process for training dentists. The subject emerged from the need to reorient the teaching process in the Dental Pediatrics Specialization Course of the Federal University of Rio de Janeiro (UFRJ). The study aimed to implement problem-based learning as a teaching tool in the Dental Pediatrics Specialization Course of UFRJ. The method was divided into two steps: initially the development and application of the method during the first semester of 2016, with a two-hour a week workload in the Topics on Dental Pediatrics discipline. The second step, the assessment of the tool, used a questionnaire answered by students of the discipline to determine their perception regarding the development of the problem-based learning method as a teaching tool in Dental Pediatrics training. Data were submitted to content analysis, using a qualitative methodological approach. Among results obtained were development of analytical thinking, greater autonomy, freedom to question, and more participation of students. Relations among students were also strengthened, promoting a support network and sustaining the empowerment of students, turning them into active participants in the construction of their learning process.

Descriptors: Problem-Based Learning. Teaching. Pediatric Dentistry.

1 INTRODUCTION

Curricular and pedagogical changes focused on the development of critical thinking and on the adoption of an approach to professional training linked to a specific local

setting have been proposed in many countries¹. To achieve these objectives, political-pedagogical changes that involve the entire process of training dentists are being proposed. Problem-Based Learning (PBL) and community-

based education are also current proposals².

Medical schools in the UK, Canada, and the Netherlands, as well as some medical schools in Brazil, such as UNESP in Botucatu/SP, FAMEMA in Marília/SP and UEL in Londrina/PR, among others, have adopted PBL and problematizing to help students acquire the skills essential to their training³. Although dentistry courses are using these methodologies, we have not found reported experiences of PBL use during Pediatric Dentistry specialization training in Brazil.

Problematizing, consolidated by Bordenave and Pereira⁴ in 1982, seeks a critical insertion in reality to extract the elements that will give meaning and direction to learning from it. Thus, problematizing presents itself as an appropriate methodological alternative for courses in which teaching topics are related to the provision of services to society. Therefore, it represents an innovative response to the challenges in training health professionals⁵.

The choice for problematizing education is understood as the possibility to solve a problem that every teacher faces daily⁶: how to teach without "massifying" or "objectifying" students? This way, the improvement of teaching methods should not be considered as an end in itself, but as an important means for the university to fulfill its social functions.

The problem-based education model contrasts to the banking education model⁶ as the former recognizes that *"a person knows something well only when he/she transforms it and during the process transforms him/herself"*. Pursuing problem-solving implies in active participation and constant dialogue between students and teachers, in a horizontal relationship with exchange of ideas, in which learning is conceived as a natural response of students to a problem situation. The synthesis of the student's response has continuity in *praxis*, that is, in the activity that transforms reality⁶.

The implementation of PBL in the teaching process of Pediatric Dentistry specialization aims to overcome the biomedical model based on the concepts of disease as an individual phenomenon and of curative dental care as the focus of

professional training. Therefore, the objective of the present study was to establish the problematizing methodology as a teaching tool in the discipline of the Pediatric Dentistry specialization course of the Federal University of Rio de Janeiro (UFRJ).

2 METHOD

The study, approved by the research ethics committee, number CAAE 53577415.7.0000.5257, was designed as a qualitative approach to content analysis.

PBL was implemented in the specialization course in Pediatric Dentistry at UFRJ during a semester in which the teaching process occurred through preparation of Practice Reports, following the Arch Method of Charles Maguerez⁶.

During the semester there were 19 weekly tutorial group meetings. Each student developed 5 practice reports and 5 synthesis solutions to the challenge of the problem situation, totaling 49 practice reports and 49 individual syntheses that were discussed and shared during group activity. Students' teamwork was the preparation of 5 group syntheses of all material developed during the semester and a final presentation of all content developed.

The method was evaluated by students through a questionnaire to determine their perception regarding the development of PBL as a teaching tool in Pediatric Dentistry training. Content of questionnaires was identified by the letter "e" (student), followed by the corresponding cardinal number assigned randomly.

Data was submitted to content analysis, in which the text is the means of expression of the subject in which the analyst seeks to classify the units (words or phrases) that are repeated, inferring an expression that represents them⁷. Toward that end, a categorization was created, which consisted of the classification of elements according to their similarities and differences, with posterior regrouping, according to common characteristics.

Content analysis was the methodology chosen because it is the most appropriate for the

analysis of specific phenomena, interpreting them more by their level of complexity than by their quantitative expression. Thus, the emphasis is not given to a mathematical description, but to searching enough information to build a discourse that allows an analysis of the subjectivity of the central question of the investigated subject.⁸ The qualitative approach addresses the dynamic and specific concerns involved in educational research⁹.

3 RESULTS AND DISCUSSION

In the tutorial group comprised of students, 80% had never participated in a class or course using PBL as a teaching tool. This result is consistent with the diffusion of the methodology in Brazil¹⁰. Undergraduate experiences at the Marília/SP Medical School and the Londrina/PR State University were pioneers in the use of Problematizing and, and have been a reference for other medical schools seeking a path curricular transformation¹⁰.

Among the characteristics of the method considered positive for the teaching process, "discussing topics in group" was the most cited (39%). The possibilities of "developing analytical thinking", "having freedom of expression" and "producing academic syntheses" were also reported.

Among the positive characteristics "learning to research" (57%) and "working in a group" (29%) were highlighted by students as the most important.

"The opportunity to work in group and to learn by being a group member increases our vision and academic qualification, in addition to stirring up our critical sense and driving us to think to discuss and understand the problem situation and answer it". (e1)

Small group learning has been increasingly adopted in the training of professionals in the health area, due to its beneficial outcomes. Small groups create favorable conditions for the teaching process, encourage cooperation and mutual learning, encourage student interest, and assist in the development of skills required for teamwork. In problem-based learning, activities

take place in the tutorial group, which is considered an essential component to the process, because it is where the learning objectives are established, the problem is analyzed and worked, and interpersonal relationships of the group are built.

The tutorial group counts on the presence of a teacher-tutor, whose function is to mediate discussions, stimulate and facilitate the learning process, and help conduct each activity. The teacher-tutor essentially presents questions, not answers, unlike traditional educational processes²¹.

"Listening to the opinion of the other group members, the absence of right or wrong, the required reflection for preparing the question to be answered." (e4)

Training the analytical and reflective professional is consistent with the premises proposed by the curricular guidelines of the MEC (Ministry of Education and Culture), in which dentistry graduates must have a generalist, humanistic, critical and reflexive education to act on all levels of health care¹¹. Therefore, teaching dentistry should be built on human and realistic foundations, based on the paradigm of promotion of oral health.

"The methodology contributes to more participative students, with more freedom to question and seek answers to their experiences." (e3)

This statement leads us to recognize the importance of the contextualization of professional practice. Pires Filho¹² stated that the inadequacy between the training of dentists and the expectations of society goes beyond the question of redefining a professional profile. According to the author, the solution is not exactly in the profile of the graduate, but in the conception, one has about what is curriculum and the role that is attributed to the school. Thus, "school can be thought of as a mere transmitter of neutral knowledge, of undeniable values, without reference to the school's social context, holding crystallized knowledge, before experience, above and aside from social relations"¹². From this perspective, the school is

not seen as a place for construction and critical re-elaboration of knowledge, but as a place of knowledge consumption.

Among the reasons that justify the adoption of problem-based learning¹³, we can list some characteristics that are manifested in health professionals. Among them, the concept that when they are involved in a process, the role of their experience and their histories of life function as an important source of resources for themselves and their peers, and on which learning, as well as the motivation given to it should be built.

"I consider the moment we express our doubts about a subject and the reasons we want to study it as positive for the teaching process." (e2)

Students are more likely to learn when they need to know something relevant to themselves and their professional practice¹³, as well as to assess their ability to take responsibility and make decisions, including the identification of their educational needs and the definition of when and how to meet them. *"Cover our questions and not only those predetermined by the course". (e1)*

"I find the possibility of bringing a problem-situation to be discussed and then review the literature on the subject extremely positive. There is nothing more educational: description of the problem, discussion, and research to answer the question ". (e7)

Regarding the characteristics of the method considered negative for the teaching process, "little time for the synthesis" was mentioned by 67% of students, while "lack of a model" for the production of the above activities was highlighted by 22% of students.

"Little time to carry out activities, and difficulty to reach the freedom to communicate or learn to have this freedom". (e10)

It is essential that the tool be properly implemented in every training project, observing its impacts on students' professional daily life. Thus, we must add to this debate the risk of considering the problematizing approach as a

simple technical instrument, unrelated to the political-pedagogical project. Discussing the educational process from the viewpoint of the subject who learns, leaving the concrete conditions of practice and formation to a second plan, as well as the reconfiguration of the educator's role in a dialogic perspective and the dilemmas related to the reconstruction of curriculum designs are crucial crossroads that represent a challenge for building proposals for training in health.⁵

When comparing Problem-Based Learning with traditional lecture classes, 44% of students expressed the possibility of "developing critical thinking" and 25% "freedom to question and express themselves". *"Autonomy, thinking "out of the box" ". (e8)*

In this sense it is worth emphasizing the words of Freire¹⁴ in Pedagogy of Autonomy: *"teaching is not transferring knowledge, but creating the possibilities for its production or construction"*, in the sense that to attain knowledge, educators and learners need stimuli that arouse curiosity and consequently, quest; but one's curiosity cannot inhibit that of others, both must be complementary to the creation of knowledge¹⁴.

Brazilian universities adopt, for the most part, the traditional teaching model. This pedagogical approach^{15,16} focuses on the teacher's exposure of knowledge and on the passivity with which students receive it, and consequently results in a disconnection between the contents and procedures related to daily life and the social reality in which students live. Thus, it becomes difficult for students to understand the transforming function of acquired knowledge, as it is transmitted to be absorbed and memorized only.

"The methodology allows students to express themselves on a certain subject, different from the traditional classroom; and group discussion on a given theme makes us 'more thinking' beings, more analytical of information we receive and makes us think beyond the obvious." (e4)

The possibility of "more student participation" (19%) and "searching different

lines of thought" (12%) was also expressed.

"The methodology allows us to be participants of a class and not just viewers. Not to mention the richness of information acquired through the exchange among the individuals of the group and interpersonal relationships" (e4).

In this methodological approach¹⁷, it is the teacher's responsibility not only to convey knowledge but also to awaken students to critical awareness and analysis of the problems that surround them, to build a broad, comprehensive and integrated view of society. In this way, educational models that adopt methods of oral, repetitive, non-creative presentations, without critical thinking must be replaced¹⁸ by models that are more dynamic and interrelated to the problems and needs of the setting in which institutions are located, and to the path to socioeconomic development of society.

Still, when comparing PBL with traditional lectures, the possibility of "discussing issues that arise in lecture-based classes" was also a feature mentioned.

"The Problematizing methodology allows us to debate questions that may arise from a lecture, in which we often have no opportunity to answer these questions". (e7).

The lecture-based class is developed¹⁹ as a structured verbal communication, used by teachers with the purpose of conveying certain contents to students. Lectures have limitations, such as emphasis on verbal communication, authoritarianism of the teacher, and restraining student participation.

We asked about the contributions of the problematizing methodology in the process of academic and / or personal development of students. Students answered "writing the research project" (20%), "learning to question and discuss" (20%), "having more autonomy" (20%), "strengthening interpersonal relations" (14%), stimulus to creativity (13%) and "learning to respect different opinions" (13%).

"We have the possibility of discussing and perceiving different issues, we learn to

accept different information, we learn how to add." (e1)

PBL activity provides students with the opportunity to learn the concept of shared knowledge originated from the history and life experience of each subject. Students also understand that reality can be observed from different angles along with its characteristics, contradictions and different knowledge of the subjects involved in the process.

Students are encouraged to develop a dialogue between scientific knowledge and practical knowledge, as well as to recognize the importance of patients' knowledge in the construction of therapy, which may point to reconciliation between techno-science and life. Thus, the methodology contributes by enabling students to seek the answer to the problem in question in a broader perspective, considering its possible causes and determinants, which generally go beyond technical-scientific aspects. *"It is not a matter of abolishing science under these methods, but of rescuing the dignity of other types of wisdom in the construction of truths useful for fostering health"*²⁰.

About the development of the group, 82% of students referred to the "union of the class" as the main contribution of the problematizing methodology, followed by "learning to debate" (18%). According to Moran²¹, through Problem-Based Learning, *"The student develops cooperative learning, group research, and exchange of results. Successful interaction increases learning"*.

Experiences and theoretical analyses inspired by problematizing assumptions need to be shared; making it possible to produce knowledge that strengthens change²², contributing to the construction of what is called the pedagogy of crossing. *"To overcome the traditional, one must begin to clearly realize that a path is built in the process of walking"*²².

4 CONCLUSIONS

Problem-Based Learning has provided a new perspective in the Dentistry training process, as it has emphasized teamwork, student

autonomy and the search for problem solutions imposed by the challenge of the problem situation. Critical and humanized teaching, based on reflections and teamwork, has been valued, relating it to the whole context of health actions and practices, that is, related to the changes introduced by an intervention in a real-life context, seeking to overcome fragmentation and technicality.

RESUMO

Aprendizagem Baseada em Problemas como ferramenta para o ensino da Odontopediatria em nível de especialização

O tema abordado neste estudo é o processo educacional na formação do cirurgião-dentista nos tempos atuais. O objetivo do trabalho foi implementar a Aprendizagem Baseada em Problemas (PBL - *Problem Based Learning*) como ferramenta de ensino no curso de especialização em Odontopediatria da Universidade Federal do Rio de Janeiro. A metodologia dividiu-se em duas etapas: a primeira, da elaboração e aplicação do método de ensino, que ocorreu durante o primeiro semestre de 2016, com a carga horária de duas horas semanais, na disciplina Temas em Odontopediatria. A segunda etapa correspondeu à avaliação da ferramenta pelos estudantes, para determinar a percepção dos mesmos quanto ao desenvolvimento do PBL como ferramenta de ensino na formação em Odontopediatria. O tratamento dos dados foi feito a partir da análise de conteúdo, numa abordagem metodológica qualitativa. Entre os resultados obtidos estão o desenvolvimento do pensamento crítico, maior autonomia, liberdade para questionar e maior participação discente. O reforço do vínculo entre os estudantes também se expressou promovendo uma rede de apoio e dando suporte ao protagonismo, tornando-os sujeitos ativos na construção do seu processo de aprendizagem.

Descritores: Aprendizagem Baseada em Problemas. Ensino. Odontopediatria

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