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Students' and graduates' perceptions on problem-based learning in nursing undergraduate education

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Abstract *This study aimed to analyze students' and graduates' perceptions regarding the use of Problem-Based Learning (PBL) in nurse education. This is a qualitative study that employs the comprehensive and interpretative approach proposed by Dialectical Hermeneutics. Four focus groups were conducted with the participation of 17 students and 16 graduates from a higher education institution that implements PBL in nurse education. The analysis of results allowed for the identification of five thematic categories: difficulty in adapting to the method; attainment of autonomy in one's own learning; encouragement of clinical reasoning development; enhancement of communication and interpersonal relationships; and integration between theory and practice. It is evident that the use of PBL promotes alignment with the propositions of curriculum guidelines for nurse education by fostering the development of skills and competencies such as autonomy, communication, interpersonal relationships, and clinical reasoning through comprehensive and contextualized practices. However, students encounter challenges with the changes observed when introduced to PBL, which are overcome during the implementation process.*

Key words *Problem-Based Learning, Active Learning, Nursing students, Teaching, Nursing education*

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Introduction

All over the world, higher education institutions in the health sector have turned to the use of active learning methods to train professionals, as, through this, students have the opportunity to learn skills and attitudes, and, in this way, develop skills for professional practice, which, in another method, might not be as favorable[1,2].

Active methods have enhanced the construction of linear knowledge and the acquisition of new discoveries, enabling individuals to become critical and reflective professionals, dedicated to collaborative resolution of challenges or problems[3]. In fact, the Brazilian National Curricular Guidelines (DCN - *Diretrizes Curriculares Nacionais*) for undergraduate nursing courses propose their use[4], as they will enable training a generalist and humanist professional, allowing to assist people, families and the community from the perspective of completeness.

Active methods favor the use of self-directed learning, as students take responsibility for their own learning independently, requiring the ability to plan, implement and assess their own work process[2,5,6]. Through such methods, students are able to recognize their potential and limits, factors considered as a basis for building their autonomy, consolidating ethical concepts and strengthening the humanized process[7].

This approach, based on active teaching, promotes the development of different areas of learning, overcoming the passive listening of traditional learning. Students are encouraged to learn to think, reflect on their actions and use their prior knowledge to support investigations in the search for discoveries and resolutions. As a result, they are expected to gradually share the knowledge acquired in their tutorial interactions and group experiences[6,8].

As an active method, Problem-Based Learning (PBL) had its origins in John Dewey's learning theory through the New School movement, highlighting the experiences of Canada, at McMaster University, and the Netherlands and the United States, at Maastricht, Harvard and Cornell Universities, respectively[9], with the assumption of student-centered teaching that encouraged creativity.

Without ready-made recipes, professors participate as facilitators of the process, whereas students can design, develop and modify the way of solving a problem, involving decision-making about what will be learned, the freedom to consult different sources of knowledge and communicating the resolution of the problem presented. PBL starts from students' prior knowledge, encouraging the ability to inquire and present hypotheses and evidence aimed at solving the problem[10].

PBL starts from simulated problems or situations whose purpose is to generate doubts and encourage students' interest in the subjects covered in activities through a scenario and/or hypothetical clinical case as a starting point for discussion and learning. To achieve this, activities are carried out in small groups, led by a tutor. These problems are constructed by a teaching team with pedagogical intention. The discussion begins with the opening of a case, in which the group of 12 to 15 students meets in a room, arranged in a circle, together with a professor in the role of facilitator of the teaching-learning process[11].

At this first moment, students will identify a problem situation and promote a discussion about it, debating hypotheses and questions. To answer the questions, they carry out bibliographical searches individually and, after that, they meet again to discuss, through the presentation of bibliographical searches[6,11].

It is noteworthy that, for the practical success of this method, it is important to focus on the formulation of qualitative problem situations, which will be the basis of discussions and learning questions. Furthermore, the problem situation must be based on real problems, making the discussion dynamic and capable of encouraging students to overcome obstacles in the search for solutions[12]. When creating a paper case, it is necessary to take into account some criteria, such as the relevance of the subject, a logical sequence, the extent of the problem and the contextualization of the proposed theme, thus encouraging the elaboration of questions to be raised during the opening of each problem[6,11].

PBL inclusion in nursing training is due to the need for healthcare services to have professionals with more acute clinical reasoning skills, thus facilitating the transformation of theoretical knowledge into clinical practice to solve problems effectively and, consequently, for more qualified healthcare[1,2,13].

PBL has been used as a learning method around the world and in different areas of knowledge, however, in nursing, it is still little used. As a result, it is considered relevant to carry out studies based on students' and graduates' experiences of a course that uses it. The present study therefore starts from the following question:

what is the nursing students' and graduates' perception about the consequences of using PBL in their professional training? Thus, the objective is to analyze undergraduate nursing students' and graduates' perceptions regarding the use of PBL for their academic training.

Method

This is a qualitative study, carried out from December 2020 to January 2021, based on Hermeneutics-Dialectics assumptions, developed by conducting focus groups with students and graduates from a higher education institution in the countryside of the state of São Paulo who uses PBL in nursing training[14,15].

Through its central characteristics, such as discussion, argumentation and provocation, Hermeneutics-Dialectics proposes to qualitatively interpret social phenomena through categories of analysis. From a Hermeneutic perspective, the reading of reality occurs through the movement of understanding that allows us to unveil and reveal how situations or texts present themselves and happen intersubjectively. In Dialectics, there is a triggering of processes in the search for criticism, contradiction, opposition and transformation of reality, extrapolating qualitative expressiveness in search of interpretation and understanding of the analyzed discourse[14].

The articulation of Hermeneutics with Dialectics allows a deep critical-reflexive reflection of reality. Praxis allows understanding texts, historical facts, everyday life and reality by highlighting difference, contrast, dissent and rupture of meaning. The researcher also moves in intersubjectivity to the research process, jointly seeking to represent rationality production in relation to social processes constituted by complexity[14].

The institution where the study took place offers 40 places per year for the undergraduate nursing course, lasting four years. From 2003 onwards, it began to develop academic training linked to the world of work. In this regard, the course's curriculum structure is annual (serial) and is organized into four units: Professional Practice Unit (PPU), Systematized Educational Unit (SEU), Elective Educational Unit and Course Completion Work (CCW)[15].

In PPU, activities are based on analysis and intervention in real problems addressed with a multidisciplinary and interdisciplinary approach. To this end, students are inserted into practice scenarios from the first series of the course, with the first and second series being developed in Family Health Units (FHU) in partnership with primary care services of a municipality in the countryside of São Paulo. In the other grades, students are inserted into the hospital setting, and in the fourth grade, they also return to primary care services[15].

In SEU, where the first and second series take place, they work with specific groups of eight nursing students, following the PBL method supported by the resources available in the library and learning laboratories (morphofunctional, computer and simulation) and also through consultancy with specialist professors. The CCW is developed from the third grade onwards. An Elective Educational Unit aims to offer opportunities for active student participation in curriculum construction[15].

Students from the second, third and fourth grades of the aforementioned course and graduates from the years 2018, 2019 and 2020 were invited to participate in the study. The sample was selected randomly, carrying out a draw based on the lists of students from each grade. Graduates were invited through social networks, and each one who was located was asked to indicate other possible participants, according to the snowball non-probabilistic qualitative sampling technique[16] due to the difficulty in locating them. Students and graduates who had at least one year of experience using PBL were included. Students who were away from activities during the period proposed for data collection were excluded[17].

The data were obtained through an online focus group, considered as a technique based on the dialectics of human processes and groups, which makes it possible to collect information through discussions between participants, valuing the interaction between them and the complementarity of opinions, concepts and experiences[17].

The technique is operationalized through a script of questions and, to answer them, the group proposition must provide relaxation and generate possibilities contextualized by the study group itself, in order to collaborate with the formation of new ideas and enable a close understanding of the theme in the daily lives of those involved in the process[14,15].

For the four focus groups carried out, eight to 12 participants were invited. The first and second groups had seven and ten students, respectively. In the groups of graduates, five participated in the first and 11 in the second. Each focus group had a script with identification data (sex, age, marital status, grade or year of graduation) and the fol-

lowing guiding question: talk about your perception regarding the use of PBL in nursing training. The focus groups took place remotely using Google Meet®, for which one of the researchers created a link and forwarded it to participants.

The online focus group coordination was carried out by a professor with experience in the technique. Furthermore, one of the researchers participated as group moderator with the role of observing, taking notes and supporting the coordinator. With an average duration of 50 minutes, the dialogues were recorded and transcribed in full[18].

For data organization and analysis initially, "their ordering" occurred, including material organization, transcription of online focus group audios, material re-reading and report organization, which allowed classification to begin. In a second moment, considered "data classification", there was the understanding that data do not exist by themselves, as they are constructed from questions about them based on theoretical foundations[14].

Through exhaustive reading of these transcriptions, the relevant structures of participants' narratives were identified, enabling the establishment of empirical categories, which were compared with the analytical categories established to guide the investigation, seeking the dialectical relationships between them. Finally, "final analysis" and data interpretation were carried out, at which point the articulation between the collected data and the theoretical frameworks of the research was established[14,19].

Considering the ethical aspects of research, identification codes were created for focus groups and participants, guaranteeing anonymity. Focus groups were coded by the acronym FG in alphanumeric sequence as FG1, FG2, FG 3 and FG4. Participants received the letter P code in an alphanumeric sequence such as P1, P2, P3 and other numbers consequently.

When developing the study, the EQUATOR Network COnsolidated criteria for REporting Qualitative research (COREQ) recommendations were followed, whose purpose is to ensure the reproducibility of health research[20].

The project was approved by the Research Ethics Committee (REC) of the proposing institution, under CAAE (*Certificado de Apresentação para Apreciação Ética* - Certificate of Presentation for Ethical Consideration) 52442321.3.0000.5413 and Opinion 117665/2021. Meanwhile, the students who participated in the study signed the Informed Consent Form (ICF), which was returned to the researchers online.

SciELO Data: https://doi.org/10.48331/scielodata.VDXWJ.

Results

A total of 17 students and 16 graduates participated in the study, totaling 23 participants. All students are female, single, aged 20 to 27 years. As for graduates, the majority are single and female, whose predominant age range is 23 to 29 years. From data analysis, five thematic categories emerged: difficulty adapting to the method; attainment of autonomy in one's own learning; encouragement of clinical reasoning development; enhancement of communication and interpersonal relationships; and integration between theory and practice.

Difficulty adapting to the method

Participants point out that, at the beginning of their degree, because they are used to the traditional teaching method, the adaptation process in relation to the use of PBL brings important difficulties, which are overcome over time. Furthermore, they mention that students' leading role in the learning process entails fear, uncertainty and anguish.

The adaptation itself is daily, we arrive and say, "oh, I can't handle it", how many people end up giving up, there were people who left because they didn't adapt to the method [...] (FG4-P1).

Yeah... I found my adaptation to be very difficult. I didn't think it would be that difficult, because the first year, I practically suffered the entire year with finding my place to speak, being able to express myself... so, it was a very difficult year for me, I had to completely get out of my way comfort zone [...] (FG2-P9).

[...] At first, for me, it was quite scary, I would say, I was quite lost, so it took a while for us to adapt and understand. (FG1-P1).

When the tutorials all started, the hardest part was adapting, because I was used to the traditional, then it changed to a completely different method, which you have to follow [...] (FG3-P4).

Attainment of autonomy in one's own learning

Regarding autonomy, interviewees consider that the use of PBL is a differentiator in nursing training, as it provides support for the constant search for knowledge based on the assumption

that learning gaps may arise during graduation, but also during professional practice.

[...] I see that autonomy and clinical reasoning were what we learned most from the method, in addition to everything we learned from our degree, but I see that this is a highlight among us among other professionals (FG3-P5).

[...] I think this method helps us a lot to develop logical reasoning and increases our autonomy too, because we have autonomy over our own learning (FG2-P5).

[...] and every day, every time, I correlate the tutorials with my daily life. If there is a problem, what am I going to do with that problem, I clarify it clearly and I look for the solution, the answer, what I am going to do. So, not only the steps, which I remember a lot from tutors saying, "guys, remember the steps of tutoring!", the steps are very present in my daily life, in my practice, as well as the autonomy of knowing that I can, that I will be able to solve (FG3-P2).

Encouragement of clinical reasoning development

PBL provides clinical reasoning development, an essential tool in nurses' decision-making process, contributing to healthcare effectiveness. According to participants, this happens when trying to understand and explain a person's symptoms.

I think that with all the basis we have in physiology, histology, anatomy comes all this reasoning of understanding the reasons for patients' conditions [...] (FG1-P1).

[...] we achieved logical reasoning, clinical reasoning and this is very important, especially within the hospital (FG2-P10).

This part of clinical reasoning will also help us a lot to observe what the patient has and try to understand what is happening [...] (FG2-P8).

Enhancement of communication and interpersonal relationships

According to participants, PBL promotes the enhancement of communication and interpersonal relationships, considering that students play an active role in the teaching-learning process as well as the duty to share with the group in which they are inserted what they understand about a certain subject.

I also think this issue of communication is very important, because we have no other way with PBL, we have to talk, study, show that we know the subject, so I think this helps a lot when we are in front of a patient, when we need to explain something to them, or in front of the team, when we need to explain why a certain procedure or something we need to do [...] (FG1-P5).

[...] I was always much more withdrawn; I never liked expressing my ideas; I thought that was my head, I didn't like talking, so college helped me a lot in this matter of communication (FG4-P1).

Because everyone had this difficulty, you know, researching, speaking. I had a lot of difficulty in the beginning, being able to explain what I had studied… then after PBL, I can speak calmly (FG3-P1).

Integration between theory and practice

For interviewees, active learning methods, such as PBL, strengthen the integration between theory and practice, enabling students to use theoretical knowledge in practical activities to be developed in healthcare services from the beginning of graduation, favoring meaningful learning.

I think that PBL adds a lot to our knowledge from the first year to the last and our profession in practice, such as PPU and elective, and I see that it is where we can consolidate everything we learned in theory with practice, and I see that it makes students responsible with the care they will provide to patients (FG1-P7).

[...] I think this practice is very important, right, because no matter how much you read everything, if you don't go there and get it, you won't be able to think as quickly, so I think it will prepare us for all the experiences that we may or may not have it too, so I think this method is very important for our training (FG2-P2).

[...] Practice is fundamental both to consolidate this theory and to work on all the other aspects it involves. And I realized this precisely when I entered college. So, from the beginning, it was important, in addition to better establishing the theory, for us to be able to create this first contact with patients (FG2-P9).

Discussion

Among the thematic categories listed in the analysis of results, students' difficulties in adapting to the active method are observed, especially in the initial series of the course, which arises from the need to stop using memorization strategies exclusively for use of meaningful learning resources, which therefore denotes transposing the pedagogical traditionalism built up to high school

and requires the development of a new role for students. The insecurity highlighted by these reports was also evidenced by a study that identifies weaknesses in defining the depth of reading and insecurity in grasping concepts identified in learning objectives, leading to accumulation of knowledge that is not always relevant to the moment[21].

When faced with learning through PBL, undergraduate nursing students in Sweden expressed ambiguity of feelings, sometimes feeling comfortable, sometimes presenting difficulties in delimiting the level of depth of each search for a certain topic of knowledge[22]. This fact reiterates the need to construct well-defined objectives during the group process and, furthermore, the importance of institutional support in favoring the construction of study plans for students so that they can manipulate meaningful learning resources, leaving the search for memorization.

Another factor pointed out to the initial difficulties presented in relation to the method refers to the role of a tutor and their engagement, providing interaction, favoring collective construction and guiding the construction of educational objectives. Varied interpretation and removal from tutors increase uncertainty and alter desired learning outcomes[21].

It appears that students' adaptation to active methods requires handling significant learning resources, such as prior knowledge retrieval, self-motivation and development of metacognitive skills, which contributes to openness to new learning and adaptation to PBL. Studies reinforce that, to promote the autonomy proposed by the active method, it is necessary to improve self-regulation processes that promote development in the search for one's own knowledge. It should be noted, therefore, the relevance of the institutional role in providing projects to support the transition of high school students to higher education with a view to implementing self-regulation processes such as learning plans[22-24].

When considering the insecurity and difficulties of transitioning from high school to higher education, it is notable that, gradually, students overcome them and acquire the ability to appropriate the method, which, subsequently, will reflect in conditions for a professional active in finding solutions to their problems[25]. In this regard, it must give meaning to the contents covered, as it prepares individuals to deal with real situations, which they will experience in their future professional life, with PBL contributing to promoting self-control, self-management, self-knowledge and proactivity in accordance with modern society demands[26,27].

Therefore, active methods, such as PBL, enable training active, critical, reflective and ethical professionals, in addition to having more responsibility and commitment to the product, validating the collective construction of knowledge with future repercussions for the performance of this professional in facing situations of ethical-moral conflict[28-30].

Collecting similar results, research with Korean undergraduate nursing students, which compared the use of PBL and self-directed or autonomous learning, reiterates that PBL is more effective in relation to motivation, self-directed learning capacity and better academic performance as a whole for showing a clearer learning process[29].

However, for the adoption of PBL, its development must correspond to educational theories and that institutions must support initial students so that they can progress through reflective practices, critical thinking and experiential learning, raising them to the level of independence and self-regulation that benefit them throughout their lives. Contrary to this, it appears that students may have difficulty developing reflexivity, and, therefore, autonomy[23].

The students and graduates of this study also addressed the importance of processing problems, highlighting the proactivity they exercise. A scoping review that assessed the effectiveness of PBL in medical undergraduate courses supports the present study by presenting as a result indices of greater satisfaction, meaningful learning and self-learning, social and problem-solving skills[31].

In this way, PBL promotes the development of the "learning to learn" competency, with exponential possibilities through engagement in the educational process in theoretical-practical articulation, development of scientific reasoning, expansion of critical awareness to understand phenomena and events and, also, collaboration and cooperation of peers for due resolution, factors that will favor clinical reasoning[32,33].

For the development of clinical reasoning and, consequently, effective practice, PBL proves to be powerful as it provides skills related to critical thinking in nursing and other health sciences courses. It is worth highlighting that it contributes to intrinsic motivation for knowledge construction through the development of problem-solving skills. This encouragement provides students with the necessary tools to deal with ethical dilemmas and conflicts in professional

practice and the integration of basic and clinical sciences[34,35].

Thus, it is observed in the present study that PBL allows the exploration of resources to enhance critical thinking and reasoning skills. Motivated students become autonomous and take this dynamic into their personal development processes, a necessary requirement given the rapid obsolescence of our current knowledge[36,37].

Regarding aspects related to communication and interpersonal relationships, it is observed that learning in small groups, as carried out in PBL, goes far beyond a dynamic or action of the pedagogical process, as it constitutes a space for an effective community of learning and a democratic space for expression, listening, inclusion and dialogue[21,31].

The results of a systematic review on the facilitating elements of PBL in undergraduate nursing courses are similar to the data from this study, which highlights, among other aspects, that PBL promotes clinical reasoning through self-learning, the search for solutions and solving complex clinical problems, developing collaborative skills, building knowledge collaboratively and developing communication and leadership skills[5].

Findings from a study carried out in Indonesia indicate that in PBL there is greater student commitment to teamwork and mutual support. Students also mention success in sharing tasks, seeking knowledge and commitment to solving problems. These aspects meet the performance required by nursing professionals[36].

In the present study, PBL has the potential to develop critical thinking, collaborative problem-solving skills and collective engagement, which are important fundamentals for future nurses and those who are in practice, paying attention to the diverse and challenging real health needs[37,38].

PBL also favors readiness for teaching and supports the use of evidence-based practices, which, in turn, impacts the quality of care provided to patients[39]. It should be added that active and reflective learning, in nursing graduation, culminates in better satisfaction with regard to training, availability for continued training and engagement in clinical and professional practice[40].

Furthermore, in pandemic times, PBL reinforced its potential in building academic skills through detailed discussions and a critical approach to student learning while developing skills for using new technologies[41].

Considering the above, it appears that the principles of dialectics validate the findings of this study when considering that the processes of change occur through tensions between the opposites existing in social arrangements. Even though there is resistance and difficulties, at a certain moment, the change will happen, above all, in a continuous movement, in which one social arrangement gives way to another[42,43].

Final considerations

Previous school training experiences exclusively using traditional methods supported the difficulties in adapting to the active method, as pointed out by participants. Insecurities related to the scope and sources of studies were progressively addressed through the development of the PBL method in a frank process of change, in which new skills were provided with a view to achieving professional competency.

Consequently, there is recognition of the potential of PBL in acquiring autonomy for the continuous search for knowledge and advancing communication skills and interpersonal relationships, favored by work in small groups and its process that requires information exchange, mutual respect, such as knowing how to give and receive criticism, in the development of clinical reasoning and critical thinking, leading to a contextualized and expanded practice.

Furthermore, the teaching promoted through PBL prioritizes theoretical-practical articulation by virtue of starting from problem situations, putting them in contact with practical circumstances from initial grades, in accordance with DCNs and the global health context.

Although online research has presented advantages in the pandemic context, the interactional limits in focus group discussions and the study temporal limitation stand out, suggesting further investigations into the long-term impact of PBL on graduates' professional practice.

Therefore, even though PBL is a method still little used in nursing courses, it is essential that there are advances in its implementation. The present study, however, does not intend to generalize the data, nevertheless, it recognizes the contributions regarding the promotion of reflections on the topic.

Collaborations

PS Rodrigues contributed to data design, analysis, interpretation, article writing and approval of the version to be published. MJS Marin contributed to data conception, design, analysis and interpretation, article writing, and approval of the version to be published. AP Souza contributed to data analysis, interpretation and approval of the version to be published. JRS Vernasque contributed to data analysis, interpretation and approval of the version to be published. GM Grandin contributed to data conception, design, analysis, interpretation, article writing, and approval of the version to be published. KRV Almeida contributed to data analysis, interpretation and approval of the version to be published. CSR Oliveira contributed to data analysis, interpretation and approval of the version to be published.

References

1. Lu YCA, Lee SH, Hsu MY, Shih FF, Yen WJ, Huang CY. Effects of Problem-Based Learning Strategies on Undergraduate Nursing Students' Self-Evaluation of Their Core Competencies: A Longitudinal Cohort Study. *IJERPH* 2022; 19:15825.
2. Jamshidi H, Hemmati Maslakpak M, Parizad N. Does problem-based learning education improve knowledge, attitude, and perception toward patient safety among nursing students? A randomized controlled trial. *BMC Nursing* 2021; 20:70.
3. Compton RM, Owilli AO, Norlin EE, Hubbard Murdoch NL. Does problem-based learning in Nursing Education Empower Learning*? Nurse Educ Practice* 2020; 44:102752.
4. Cavalcante AN, Lira GV, Cavalcante Neto PG, Lira RCM. Análise da Produção Bibliográfica sobre Aprendizagem Baseada em Problemas (PBL) em Quatro Periódicos Selecionados. *Rev Bras Educ Med* 2018; 42:15-26.
5. Wosinski J, Belcher, AE, Dürrenberger, Y, Allin, AC, Stormacq, C, Gerson, L. Facilitando a aprendizagem baseada em problemas entre estudantes de graduação em enfermagem: uma revisão sistemática qualitativa. *Educ Enfermeiro Hoje* 2018; 60:67-74.
6. Seibert SA. Problem-based learning: A strategy to foster generation Z's critical thinking and perseverance. *Teaching Learning Nurs* 2021; 16:85-88.
7. Menezes-Rodrigues FS, Errante PR, Lima RY, Carmo ADO, Silva EF, Gehrke F, Taha MO. Vantagens da utilização do método de aprendizagem baseada em problemas (MAPB) em cursos de graduação na área da saúde. *Rev Ibero-Am Estud Educ* 2019; 14(2):340-353.
8. Leupin RME. Pedagogía activa o métodos activos? El caso del aprendizaje activo en la universidad. *RIDU* 2016; 10(1):6.
9. Gomes RM, Brito E, Varela A. Intervenção na formação no ensino superior: a aprendizagem baseada em problemas (PBL). *Interaccoes* 2016;12(42):44-57.
10. Paiva JM, Rodrigues SFN, Bottentuit Junior JB, Formiga D, Lima KCSFA, Cerqueira CGM, Lima KPBF, Santos JS. Challenges and benefits of using problem-based learning in distance education: an integrative literature review. *Res Soc Develop* 2022; 11(2):e54011226275.
11. Santos EO, Nunes CK, Demarco DA, Amestoy SC. Aprendizagem baseada em problemas no ensino da enfermagem. *Rev Contexto Saude* 2017; 17(32):55-66.
12. Lopes RM, Silva Filho MV, Marsden M, Alves, NG. Aprendizagem baseada em problemas: uma experiência no ensino de química toxicológica. *Quimica Nova* 2011; 34:1275-1280.
13. Santos MZD, Otani MAP, Tonhom SFDR, Marin MJS. Graduação em Enfermagem: educação pela aprendizagem baseada em problemas. *Rev Bras Enferm* 2019; 72:1071-1077.
14. Minayo MCS. *O Desafio do Conhecimento: pesquisa qualitativa em saúde*. São Paulo: Hucitec; 2014.
15. Rodrigues PS, Marin MJS, Souza AP, Grandin GM, Almeida KRV, Oliveira CSR. Problem-based learning in undergraduate nursing: Perceptions of students and graduates. In: Fornari L, Oliveira ESF, Oliveira C, Faria MB, Ribeiro J, organizadores. *Investigação Qualitativa em Saúde: Avanços e Desafios.* Aveiro: Ludomedia; 2022. p. e700.
16. Patton MQ. *Qualitative research & evaluation methods: Integrating theory and practice*. Thousand Oaks: Sage Publications; 2014.
17. Minayo MCS. Amostragem e Saturação em pesquisa qualitativa: Consensos e controvérsias. *Rev Pesqu Qualitativa* 2017; 5(7):1-12.
18. Sehnem GD, Alves CN, Wilhelm LA, Ressel, LB. Utilização de grupos focais como técnica de coleta de dados para pesquisas: relato de experiência. *Cien Cuid Saude* 2015; 14(2):1194-1200.
19. Portugal AC, Santos CHS, Campos FM, Leoni L, França RR, Silva VS, Lubisco NML, Rêgo RF. Artigo científico na área de saúde: diretrizes para sua elaboração e avaliação. *Rev Cien Med Biol* 2018; 17(2):265-271.
20. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Quality Health Care* 2007; 19(6):349-357.
21. Yang JH, Yang B. Experiências de estudantes de enfermagem com facilitador em aula de aprendizagem baseada em problemas. *Asian Nurs Res* 2013; 7:198-204.
22. Kamp RJ, Dolmans DH, Van Berkel HJ, Schmidt HG. A relação entre as atividades em pequenos grupos dos alunos, o tempo gasto em autoestudo e o desempenho. *Ensino Superior* 2012; 64(3):385-397.
23. Svensson J, Axén A, Andersson EK, Hjelm M. Nursing students' experiences of what influences achievement of learning outcomes in a problem-based learning context: A qualitative descriptive study. *Nurs Open* 2021; 8:1863-1869.
24. Irvine S, Brooks I, Lau R, McKenna L. Apoio instrucional de aprendizagem autorregulada para estudantes matriculados em um programa de enfermagem acelerado. *Collegian* 2020; 27(4):402-409.
25. Irvine S, Williams B, Smallridge A, Solomonides I, Gong YH, Andrew S. O aprendiz autorregulado, características de ingresso e desempenho acadêmico de estudantes de graduação em enfermagem em transição para a universidade. *Nurse Educ Today* 2021; 105:105041.
26. Van Houten-Schat MA, Berkhout JJ, van Dijk, N, Endedijk MD, Jaarsma ADC, Diemers AD. Self-regulated learning in the clinical context: a systematic review. *Med Educ* 2018; 52:1008-1015.
27. Maciel CMLA, Souza Rondon GA, Fernandes CT. A Implantação da Aprendizagem Baseada em Problemas – PBL, no Curso de Graduação em Medicina da Universidade do Estado do Mato Grosso Sob a Perspectiva dos Estudantes. *Rev Ensino Educ Cien Humanas* 2018; 19(2):195-201.
28. Hernández RM, Hilario FB, Palacios-Garay JP, Norabuena-Figueroa RP, Fuster-Guillen DE, Caurcel-Cara MJ. Autorregulación para el aprendizaje y su influencia en la Bioética en Estudiantes Universitarios de Enfermería. *Rev Int Investig Cien Soc* 2020; 16(1):5-30.
29. Wijnia L, Loyens SM, van Gog T, Derous E, Schmidt HG. Existe um papel para a instrução direta na aprendizagem baseada em problemas? Comparando as respostas do modelo construído pelo aluno versus o modelo integrado. *Aprendizagem Instr* 2014; 34:22-31.

30. Marques LMNSR. As metodologias ativas como estratégias para desenvolver uma educação em valores e saúde em enfermagem. *Esc Anna Nery* 2018; 22(3):e20180023.
31. Jeon J, Park S. Self-Directed Learning versus Problem-Based Learning in Korean Nurse Education: A Quasi-Experimental Study. *Healthcare* 2021; 9(12):1763.
32. Trullàs JC, Blay C, Sarri E, Pujol R. Effectiveness of problem-based learning methodology in undergraduate medical education: a scoping review. *BMC Med Educ* 2022; 22(1):104.
33. Lima VV, Ribeiro ECDO, Padilha RDQ, Mourthé Júnior CA. Desafios na educação de profissionais de Saúde: uma abordagem interdisciplinar e interprofissional. *Interface (Botucatu)* 2018; 22:1549-1562.
34. Gonzalez-Hernando C, Carbonero-Martín MA, Lara-Ortega F, Martín-Villamor P. "Learning to learn" in Nursing Higher Education. *Invest Educ Enferm* 2013; 31(3):473-479.
35. Carvalho ECD, Oliveira-Kumakura ARDS, Morais SCRV. Raciocínio clínico em enfermagem: estratégias de ensino e instrumentos de avaliação. *Rev Bras Enferm* 2017; 70:662-668.
36. Khatiban M, Falahan SN, Amini R, Farahanchi A, Soltanian A. Aprendizagem baseada em palestras versus aprendizagem baseada em problemas na educação ética entre estudantes de enfermagem. *Etica Enferm* 2019; 26(6):1753-1764.
37. Kibret S, Teshome D, Fenta E, Hunie M, Taye MG, Fentie Y, Tamire T. Medical and Health Science Students' Perception Towards a Problem-Based Learning Method: A Case of Debre Tabor University. *Adv Med Educ Pract* 2021; 12:781-786.
38. Maharjan BR, Shrestha U, Shrestha A, Acharya BM, Poudel A, Kc S, Gongal RN. Perception of Students and Faculty on Problem Based Learning in Proficiency Certificate Level Nursing Program. *J Nepal Health Res Counc* 2021; 18(4):779-784.
39. Leavy JE, Della Bona M, Nelson B, Leaversuch F. A comparison of face-to-face and fully online problem-based learning: Student results and staff experiences, 2014-2020. *Health Promot J Austr* 2022; 33(Supl. 1):57-66.
40. Millanzi WC, Herman PZ, Hussein MR. O impacto da facilitação em uma pedagogia baseada em problemas na prontidão para aprendizagem autodirigida entre estudantes de enfermagem: um estudo quase experimental na Tanzânia. *BMC Enferm* 2021; 20(1):1-11.
41. Lima Trindade L, Yilmaz AT, Demirsoy N, Vilela ACL, Ribeiro OMPL, Pereira CMG. Qualidade dos cuidados de enfermagem: diferenças em hospitais de Portugal e Turquia. *Cogitare Enferm* 2020; 25:e73262.
42. Lisbeth LS, Rahmaini FH. Comparison of Effectiveness between PBL and LBL in Improving Student Learning Outcomes. *Int J Nurs Educ* 2020; 12(4):296.
43. Fontana PM, Pinto AAM, Marin MJS. Pontos e contrapontos no desenvolvimento da interdisciplinaridade na formação técnica em enfermagem. *Rev Esc Enferm USP* 2021; 55:e03771.

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