

TEAM-BASED LEARNING IN THE TEACHING OF PERIOPERATIVE CARE IN UNDERGRADUATE NURSING

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Abstract

Objective: To analyze the use of Team-based Learning from the perspective of an undergraduate nursing school of a public university in Brazil. **Methods:** This study used a mixed method with 127 students of the Undergraduate Nursing Course of a public university in southern Brazil. Data were collected by questionnaire applied between July 2015 and September 2016. Using thematic analysis, data were grouped by similarity using simple frequencies and qualitative data. **Results:** Several thematic categories emerged from the experiences of the students in respect to Team-based Learning: Dynamism and organization, Student-centered learning, Critical thinking, and Interaction. **Conclusion:** The results show that this method favors student-centered learning, aiming at interactions and propitiating arguments that leads to an approximation to the perioperative care praxis and consequent development of clinical reasoning.

Key words: Nursing; Nursing Education; Nursing Research; Higher Education

INTRODUCTION

In a globalized world, the importance of didactics and the role of the professor as an articulator in the teaching-learning process is increasingly emphasized. In the context of healthcare, education must be a process of building knowledge, which happens under a condition of complementarity. In this process, on one side are the professors and students and on the other, the social problems versus knowledge acquired and re-elaborated throughout the process.

Active teaching methods have emerged in order to improve learning. These methods place the student as the main agent of change in the educational process; identifying skills and their necessities to assist them in gathering the information they need to develop new abilities, modifying attitudes and behaviors, and finding new meanings. Their employment may favor the student's autonomy, arousing curiosity, stimulating individual and collective decision-making arising from the essential activities of social practice and the student's context [1-2].

Some examples of active learning methodologies are cooperative learning, active teaching methodologies, peer instruction, use of case methods and Team-based Learning (TBL) [3].

In the context of healthcare, it is known that professionals require the ability to use critical thinking and work effectively in a team as part of a global set of skills, so teaching programs should use appropriate methods to train students to learn these abilities.

In this perspective, TBL emerges as a teaching strategy that improves active learning and critical thinking [4]. Currently the TBL method is used in the training of doctors, nurses, dentists, veterinarians and other professionals in universities in the United States of America and in other countries around the world [4]. The methodology consists of an instructional strategy developed for administration courses

in the 1970s to create opportunities and obtain the benefits of working in small learning groups of five to seven students in the same physical space. The development of the methodology creates opportunities for the student to acquire and apply knowledge through a sequence of activities that include steps prior to a meeting with the professor [5].

The essential elements for the implementation of TBL are defined in four phases, namely: Readiness Assurance, Readiness Assurance Test, Application of Concepts and Peer Assessment [6].

In the first phase, individual students are responsible for their own preparation so that they understand and prepare the content to be applied [7-8]. The second phase comprises an individual test, group test, appeal and professor feedback. In the individual test, the professor can individually evaluate the comprehension of concepts studied during preparation activities using a questionnaire of 10 to 20 multiple-choice questions applied in the classroom with scores of 0 to 4 points for each question [9]. Then the same test is performed, only now in a group, where teams are formed of five to seven students, either randomly or by alphabetical order with the same questions (test) being applied again. At this stage, the test is scored using answers provided by the professor. Consequently, on presenting relevant published material, there may be appeals in the absence of agreement within the team [6].

Successively, the professor provides feedback to clarify doubts. Finally, in the concept application phase, all the teams solve the same problem thereby bringing students closer to the clinical practice [10].

Accordingly, in nursing, the use of this methodology can favor the autonomy of the student, arousing curiosity, stimulating individual and collective decision-making arising from the essential activities of social practice and in student contexts [1]. These reflections are anchored in what is defined

by the National Curricular Guidelines for Undergraduate Nursing Courses (DCN/ENF), which recommend that the student should be the subject of his/her training process in the articulation between teaching, research and extension/assistance. These points are corroborated by other researchers in the area who praise this method as it promotes self-learning, enabling the application of acquired knowledge in the practice, developing clinical reasoning and critical thinking based on bioethics [11-12-13].

In the perioperative context, the student is placed in a unique reality due to the fragility of surgery and the complexity of the procedures to which the patient will be submitted. In this scenario, students are exposed to a totally unknown environment, outlining needs to improve knowledge in order for them to be able to develop clinical reasoning. In this conception, TBL emerges as a strategic methodology that helps students to face their new reality.

The following research question emerged from this perspective: What is the opinion of students about the use of TBL in the teaching of perioperative care in a nursing undergraduate course of a public university in southern Brazil? Accordingly, the objective of the study was to analyze the use of TBL from the perspective of undergraduate nursing students in a public university.

Method

This is a mixed-method, exploratory, descriptive study carried out with 127 students of the Undergraduate Nursing Program of a public university in southern Brazil. Approval of the research is registered under CAAE #44808915.9.0000.0121 and followed the legal precepts for the development of research in humans. The study population was all the students enrolled in the nursing course of the Federal University of Santa Catarina between July 2015 and September 2016. This period was chosen because students had been using this methodology for learning development. The inclusion criteria were undergraduate nursing students aged 18 years and over enrolled in the course "Care in the Human Living Process II - Surgical Health Condition". This discipline was selected as one of the professors is qualified to develop activities using TBL. All the students enrolled in this subject during this period were invited to participate (127 students) and all accepted and so the intentional sample size was 127 subjects.

A questionnaire, with closed and open questions, was used to collect data on the student's profile (age, gender) and their opinion about the TBL sessions and about each stage of the TBL technique. These stages are 1) Individual Preparation: duration between 1-48 hours; 2) Individual test: 30 minutes to respond; 3) Team test: 45 minutes to complete; 3) Appeal: 15 minutes; 4) Professor feedback: 5 minutes and 5) Application of the concepts: between 3 and 60 minutes. All TBL sessions followed the same format.

The questionnaire was applied after the preoperative and general postoperative classes with the Google Drive Program being used to apply the questionnaire. The answers obtained were grouped by similarity and recorded on spreadsheets of the program itself. Subsequently, the data were analyzed using simple frequencies and discussed using studies related to the topics investigated here.

Thematic analysis was used in the analysis of the qualitative data [14].

RESULTS

Data regarding the characterization of the students participating in the study are presented in Table 1.

Table 1: Characterization of undergraduate nursing students and their opinions about team-based learning (TBL), Florianópolis - SC, Brazil - 2016.

Age	n	%
15 –I 20	43	33.85
20 –I 25	66	51.96
25 –I 30	15	11.81
30 –I 35	2	1.57
35 –I 50	6	4.72
Gender	n	%
Female	122	96.1
Male	5	3.9
Evaluation of the theoretical and practical content learned in TBL sessions	n	%
Far exceeded my expectation	108	85.0
Met my expectation	19	15.0

Table 2 shows the students' perceptions about each phase of the TBL.

Table 2: Perceptions of undergraduate nursing students about the different TBL stages

	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
Pre-class preparatory activity: Individual preparation					
I prepared myself individually for group work	77	44	4	2	0
The time for individual learning was sufficient	49	59	17	2	0
I used the time for individual learning well	45	65	17	0	0
Individual preparation encouraged me to pursue learning on my own	79	40	8	0	0
The individual preparation allows you to associate theory with practice	77	42	8	0	0
I felt comfortable about the individual study	87	38	2	0	0
My studies before TBL also helped	22	46	44	12	3
Guarantee of preparation: Individual test					
The individual test allowed me to comprehend concepts relevant to the subject studied	73	49	5	0	0
The time for the individual test was sufficient	67	41	15	4	0
I was confident that I would succeed in the individual test	29	60	34	4	0
I felt comfortable in the individual test	70	52	5	0	0
Guarantee of preparation: Team test					

The team test allowed comprehension of concepts relevant to the subject	75	44	8	0	0
The time for the team test was sufficient	73	40	8	6	0
I was confident that I would succeed in the team test	60	50	17	0	0
I felt safe to explain and substantiate my answers, exercising my communication skills, argumentation and conviction	56	55	13	3	0
I was encouraged by the group to give my opinions	87	34	4	2	0
The professor's feedback facilitated the understanding of key concepts	101	26	0	0	0
I felt comfortable in the team test	89	30	4	2	2
Application of concepts					
The application of previously studied concepts helped to solve clinical cases	72	50	5	0	0
I felt challenged to make interpretations, inferences, analyzes and syntheses	63	59	5	0	0
I felt prepared to argue about the choices my group made	61	45	21	0	0

Regarding the pre-class preparation, the students highlighted the quality of the texts indicated for reading, stressing the importance of this preparation reading, which favored the elaboration of abstracts, stimulated the search for other articles about the subject and enabled adequate preparation of the student; 53.54% believed that their studies using the traditional methodology before the TBL also helped. Thus, 121 students (95.27%) felt prepared by the study beforehand and 119 (93.70%) believed that the individual study encouraged them to learn.

In the individual test, 122 (96%) of the students believed that this stage allowed the comprehension of concepts and 89 (70%) were confident that they would

succeed. It is also worth noting that the individual test allowed the students to perceive the need to search for other publications related to the topic after the class. One student pointed out that this stage made her nervous.

In the team test, 115 (90.55%) of the students believed that this stage allowed the comprehension of concepts, 111 (87.40%) felt confident to discuss the topic and 100% reported that the professor's feedback was essential in the consolidation of concepts and consequently in the learning process. At this stage, the importance of group discussion, collective decision-making and learning with the experiences of other colleagues was highlighted and many doubts were elucidated. These events strengthened the students' ability to argue and discuss their ideas. The objectivity and clarity of feedback helped students to link theory with practice better, as it was possible to explore and further discuss the topic using the professor's experience.

In the application of concepts phase, 122 (96%) of the students reported being able to apply the concepts to solve cases/problems, as well as being challenged to make analyzes and interpretations. However, 16.53% were not sure if they could.

Among the suggestions of the students regarding the use of the method are: to apply the same technique in other subjects and have more classes using this format; Increase the time for individual preparation, with a view to making the students more confident to discuss; Increase the time for group testing and the application of concepts.

Concerning the perceptions about the use of TBL in this subject, 97.63% of the students felt stimulated to participate in the session, they realized that the teaching was focused and the satisfaction was greater than the stress they felt studying for the sessions. When the students were questioned about whether their studies before the TBL technique that used the traditional approach had helped, 55.90% reported that yes and 34.64% said no.

In addition, they perceived that they managed to make a better connection with the practical side of nursing when developing perioperative care during theoretical-practical activities. This was confirmed as 98.42% of students reported a positive impact on learning and 94.48% said that they could apply what they had learned.

The following categories emerged in relation to the experiences of students in respect to TBL: Dynamism and organization; Student-centered learning; Critical thinking; Interaction.

DISCUSSION

As for the perceptions about the use of TBL in perioperative care, there was unanimity in expressing that the method stimulates students, awakening their curiosities and responsibilities in relation to the teaching-learning process. All the students stated that they felt stimulated to search for new knowledge, realized that the method is student-centered and prefer TBL to traditional teaching methods.

Dynamism and organization

In this category, it is emphasized that the TBL is a very different teaching method compared to the traditional monotonous classes, after which students feel drained. This finding is corroborated by a study carried out with nursing students of a postgraduate course on intensive care that reported their greater involvement in TBL classes compared to standard lectures [15].

In this study, students saw TBL as an interactive method, which helped in setting the content, thereby leading the student to learn in a less stressful way. However, there is a need for research that can discriminate between the impact of

the TBL technique on student preference and results of learning [16].

Another important aspect mentioned by the students is that TBL has well defined methodological steps that favor the process of comprehending the content to be studied.

The TBL steps are re-signified by the student as a way to plan their studies with the opportunity to identify each step of the activity that will be developed. In the stage of individual preparation, the student is faced with new questions that arise in the course of reading. Furthermore, students find themselves faced with the need to seek more information to answer doubts and questions and thus develop the next steps of the method.

This stage allows students to improve, while stimulating the believe in their potential and to seek new ways of obtaining knowledge, which does not only involve the article suggested by the professor; this motivates them to want to learn more and more as well as to support their discussion in the work group. In this method, the student's ability to memorize and interact with content is more effective, thereby providing greater ability to apply knowledge [17].

Student-centered learning

This category states that learning depends on the student and that the student must be able to manage and validate this learning. In this perspective, TBL is seen as a process of stimulation to learn. When educators use active classroom methods such as TBL, students are more engaged as they become active participants in their own learning [18].

Through TBL, students are encouraged to commit themselves to learning and present their own discoveries, elaborating their own critical thinking from their understanding of what they have learnt [13].

In nursing education, new teaching/learning strategies are needed to develop and improve self-regulated learning skills. One study compared the effectiveness of TBL with traditional instructor-led (IL) learning. The non-randomized sample consisted of 98 students in the IL control group and 86 students in the TBL intervention group. The TBL group demonstrated a significantly higher percentage of self-learning [19].

Another study revealed that TBL generally improves students' learning behaviors and academic performance. These learning behaviors are important and beneficial to the future development of the professional. The TBL method can be considered for wider applications in the teaching of future nurses [12].

However, authors argue that more high-quality experimental studies are needed to confirm that TBL positively affects test scores and other learning outcomes and to determine whether TBL produces students who have the ability to function well in groups [20].

Critical Thinking

In this category, TBL is indicated as a method that favors and improves learning especially by helping students to develop clinical reasoning and to approximate the theoretical contents to praxis.

It should be noted that in current nursing education, several learning methods are used in complex nursing situations that require flexibility and problem solving approaches [21].

A randomized study conducted in Korea used educational interventions for three weeks and demonstrated that TBL is an effective teaching strategy to improve problem solving ability, knowledge and clinical performance [22].

In this process, prospective nurses require advanced critical thinking and strong communication skills to provide

safe, high-quality patient care. TBL is a type of teaching program that focuses on developing these skills. The early acquisition of advanced and critical thinking, teamwork and communication skills, and knowledge of the specialty in practice, empowers nurses to provide safe, reliable patient care [20].

One study found that the benefits of TBL include reduced reading workloads and improved readiness for classes, which allowed more time to be spent in class discussing complex realistic nursing problems. Although TBL was not enthusiastically accepted by all students, most indicated that they liked and valued the method [23].

Interaction

This category illustrates the possibility of interaction with other colleagues, mainly by sharing experiences and shared learning.

One study showed that the TBL method increases the transfer of information and improves intrapersonal relationships and collaboration. The strengths are the systematic integration of content, teamwork, active participation of all involved and high learning motivation [24].

It is possible to perceive the cooperation and the interaction between colleagues in the group, promoting a relationship that results in the collective and valuable production of knowledge, as well as the exchange of experience and consensus within team [17].

TBL inserts the student in the context of the search for knowledge and in the context of teamwork, minimizing inertia and disinterest, strengthening and stimulating critical thinking in partnership with further knowledge. TBL enables the student to gain extra knowledge, individual and collective. Moreover, TBL allows the student to become a participant in the process of seeking solutions to solve the problem, starting from individual construction and expanding to the collective construction [9].

In the context of nursing, it is understood that this methodology brings great contributions to students when they are inserted as thinking beings with the need of knowledge for fast and effective decision-making. In addition, it is considered that the insertion of students in the context of this methodology allows collective construction and allows them to develop effective skills and strategies to work as a team.

In the scenario of this methodology, it is considered that the technique brings important benefits to health professionals as it promotes the development of interdisciplinarity and transdisciplinarity in the care of the patient and family.

CONCLUSION

For the students of this study, the experience in the use of the TBL was something extremely remarkable, as this methodology was new to everyone and that they all considered it important as it brought them closer to the praxis of nursing and stimulated critical thinking and clinical reasoning.

It is more and more up to professors to try to adapt active teaching methodologies that will arouse the students' interest in learning. For this, it is necessary to break from the traditional paradigm of education and adopt a modern, interactive and meaningful posture.

In Nursing, new experimental studies are essential to ratify the findings of this descriptive and exploratory study and to find scientific evidence to support the teaching-learning process using TBL.

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