

Research Article

Nursing Students' Perception Toward Team-based Learning at Nile University, Sudan

Elshafa Mohamed Ahmed¹, Nahla Elradhi Abdulrahman^{2*}, Fatima Alzahra Abdul Rahman Galgam³, Sharfeldin Mohammed Shuib⁴, Mohammed Jeber elder Abuanga⁵, and Nahid Khalil Elfaki²

¹Medical Nursing Department, Faculty of Nursing Sciences, International University of Africa, Khartoum, Sudan

²Community Nursing Department, Nursing College, Najran University, Najran, Saudi Arabia

³Pediatric Nursing Department, Faculty of Nursing Sciences, International University of Africa, Khartoum, Sudan

⁴Surgical Nursing Department. Nursing College, Najran University, Najran, Saudi Arabia

⁵Community Nursing Department, Faculty of Nursing Sciences, International University of Africa, Khartoum, Sudan

ORCID:

Elshafa Mohamed Ahmed: <https://orcid.org/0009-0001-9497-9410>

Nahla Elradhi Abdulrahman: <https://orcid.org/0000-0001-8543-9810>

Fatima Alzahra Abdul Rahman Galgam: <https://orcid.org/0000-0002-0412-6706>

Sharfeldin Mohammed Shuib: <https://orcid.org/0009-0000-3543-2004>

Mohammed Jeber elder Abuanga: <https://orcid.org/0000-0003-1033-2204>

Nahid Khalil Elfaki: <https://orcid.org/0000-0002-5624-4675>

Corresponding Author: Nahla Elradhi Abdulrahman; email: neabdulrahman@nu.edu.sa

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Seid Ahmed Husain, MD, M.Sc.,

MHPE, PhD.

Abstract

Background: Team-based learning (TBL) is a student-centered approach which has been used in health professions education and has demonstrated effectiveness in promoting students' learning, engagement, and application of knowledge. This study aimed to assess undergraduate nursing students' perception about TBL as an instructional strategy at Nile University.

Methods: A descriptive cross-sectional study was carried out among undergraduate nursing students at Nile University in Sudan. A structured questionnaire was filled out by 43 students out of 48 total students in cardiothoracic module, where 5 students refused to participate. Data were analyzed by descriptive and inferential statistics using the SPSS version 16.

Results: The findings showed that nursing students had high level of agreement with TBL in all domains of study, the higher score was noted in learning and engagement and motivation (86.80% and 87.44%, respectively). They demonstrated high positive perception on the usage of TBL in nursing education, P -value = 0.00.

Conclusion: The study concluded that nursing students have a positive perception about TBL method and that it improved students' learning behaviors; the more effect was in students' learning and communication skills in speaking English and transferring knowledge to others.

Keywords: nursing students, perception, team-based learning, nursing education, Sudan

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1. Introduction

Learning is an interactive and dynamic process that requires both the learner and the instructor to engage in the learning process. For effective learning to occur, a shift should be made from a teacher-centered approach, wherein the student is receiving information, to a learner-centered approach, which creates an environment where the emphasis is on learning rather than teaching [1].

Team-based learning (TBL) is one of the student-centered approaches and has been used in health professions education programs and has demonstrated effectiveness in promoting student learning, student engagement, and student application of knowledge. TBL is built on modules, which are three-part cycles of preparation, in-class readiness assurance testing, and application-focused activity [2]. Previously, many learning approaches focused on students have been implemented, however, one of the new approaches implemented on Sudanese nursing students by Abdullah *et al.* investigated self-directed learning and its effect on nursing student's readiness and perception compared to the traditional methods of learning [3]. Additionally, another study was conducted in Saudi Arabia to identify the effect of this approach on nursing students' performance [4].

Students engage in TBL to develop their communication and teamwork skills while tackling real-world challenges that are relevant to their future. Previous studies indicate that this approach to teaching and learning may better prepare graduates for the realities of the modern jobs [5, 6]. TBL has been implemented in health professions education including nursing education in many institutions worldwide and it has shown its effectiveness in the acquisition of knowledge and

skills, including interpersonal skills, needed for this profession [7–10].

Previous research has shown the effectiveness of TBL in enhancing students' learning competencies. One previous study conducted in Taiwan to assess the effect of TBL on students' learning outcomes and behaviors showed that the students' learning behaviors significantly improved after TBL, which indicated that TBL is an effective approach in improving students' academic achievement [11]. Another study conducted in Iran by Khosro Qaderian to evaluate nursing student's perception of using TBL showed that nursing students demonstrated very positive perception on TBL [12]. Furthermore, one quasi-experimental study to assess the performance of nursing students after implementing TBL found that most students in the TBL group (84.2%) felt significantly more engaged in classroom than the control group [13]. Many other studies conducted on nursing students found that TBL in nursing education improved nursing students' knowledge [14], their perception of learning [15], and academic performance in neurophysiology [16].

In Sudan, there is lack of evidence on the use or effectiveness of TBL; one study was conducted by Karoum, Abuelgasim Osman on TBL among medical students at the University of Kassala to assess the students' perception toward TBL. It was found that the students have high accountability toward preparation, working in team, and team learning [17]. Although studies have proved that engaging students in team learning is better than individual learning, there is no evidence on the use of TBL in nursing education in Sudan, while nurses have to adapt to changing nursing practice environments by utilizing such innovative teaching method in order to prepare and transform

undergraduate nursing education from a teacher-centered approach to a learner-centered approach. Thus, this study aims to assess undergraduate nursing students' perception toward TBL as an instructional method at Nile University, Sudan.

2. Methods

2.1. Study design

This study was a descriptive cross-sectional institution-based study.

2.2. Study setting

The study was conducted in medical–surgical department at the faculty of nursing sciences, Nile University, which is located at the east Nile locality, Khartoum. The faculty was started as a program in Nile College established in 2007. The first batch of students graduated in 2010. Nile College was upgraded to university in 2020, and so nursing program became the nursing faculty.

2.3. Study population

The study was conducted on undergraduate nursing students in the second year, semester two, and studying cardiothoracic nursing module at the medical–surgical department.

2.4. Sampling and sample size

A convenience sampling technique was used to select all registered students. Forty-three students enrolled in this study, who were in semester two and studying cardiothoracic nursing module. The response rate was 90%.

2.5. Data collection

Data were collected through a questionnaire which was modified after extensive review of literature. The questionnaire had two sections; the first section was for demographic data and the second section consisted of 25 questions for assessing students' perception toward the effect of TBL on students' learning behavior (6 questions), engagement and motivation (5 questions), accountability (6 questions), communication skills (4 questions), and students' satisfaction (4 questions).

The tool was validated by piloting any misunderstanding, and difficult questions were explained and made clear. Ten students from another nursing college were enrolled in the pilot test for validating the questionnaire. Internal consistency of the questionnaire items was checked through Cronbach's alpha reliability analysis test as 0.821.

The questionnaire was distributed to students after the completion of all TBL phases.

2.6. Data analysis

Data were analyzed through the SPSS program, version 16.0, using descriptive statistics; mean, frequency, and percentage were used, and inferential statistics were also applied such as *T*-test to determine the significant differences.

3. Results

3.1. Students' perception toward the application of TBL

The results showed that students have high level of agreement with TBL in all domains of study, the higher score appeared in learning, and engagement and motivation (86.80% and 87.44%, respectively).

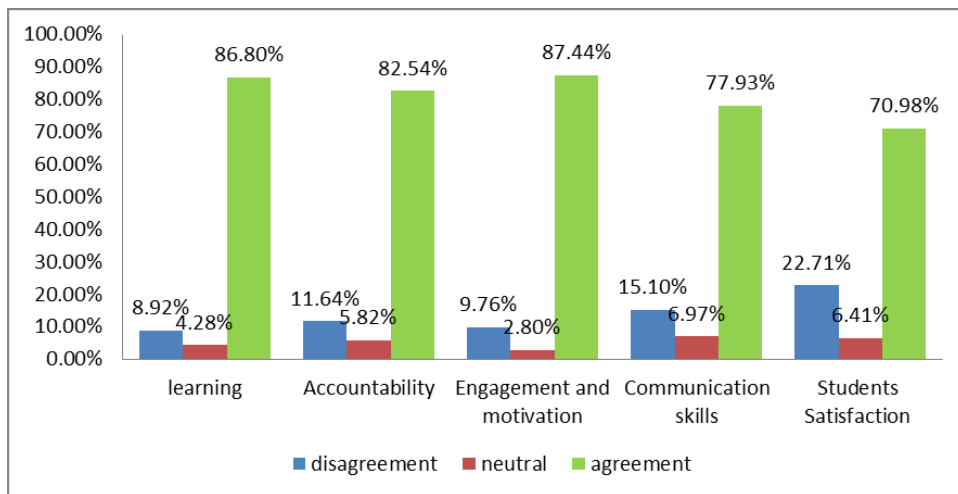


Figure 1: Level of nursing students' perception toward the application of TBL, n = 43.

TABLE 1: Nursing students' perception on TBL in Nile University, Sudan.

Development of learning skills	Frequencies & ratio	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Respond average	SD	Answer direction
TBL helps me remember the information for long period	F	1	1	1	16	24	4.42	0.852	Strongly agree
	%	2.3	2.3	2.3	37.2	55.8			
The discussion at the end of the sessions completes my understanding of the topics	F	3	1	3	10	26	4.28	1.161	Strongly agree
	%	7	2.3	7	23.3	60.5			
I learned more through group discussion	F	5	1	1	19	17	4.05	1.234	Agree
	%	11.6	2.3	2.3	44.2	39.5			
TBL helps me identify my strengths and weaknesses	F	1	3	3	20	16	4.09	0.971	Agree
	%	2.3	7	7	46.5	37.2			
After these methods, I spend less time in revising the information	F	1	3	1	17	21	4.26	0.978	Strongly agree
	%	2.3	7	2.3	39.5	48.8			
TBL helped me solve problems better	F	1	2	2	17	21	4.28	0.934	Strongly agree
	%	2.3	4.7	4.7	39.5	48.8			
Overall result	F	2	2	2	16	21	4.28	0.934	Strongly agree
	%	4.64	4.28	4.28	38.37	48.43			

As shown in Table 1, more than half of the students (24 [55.8%]) strongly agreed to the question

– TBL helps me remember the information for long period (n = 43).

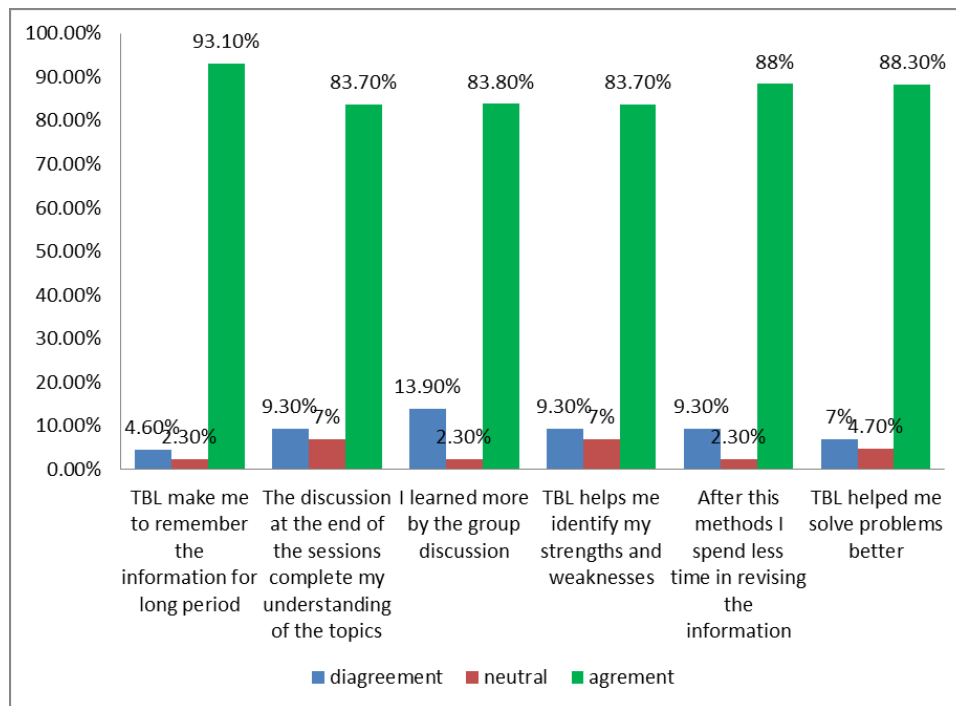


Figure 2: Students' perception about effect of TBL on learning ($n = 43$).

In this, the students strongly agree that TBL affected their engagement/motivation (mean = 4.30).

The study revealed that TBL encourages communication skills, students strongly agreed that TBL increase their ability to speak English and explain topic to other students (83.7% and 81.4%, respectively).

Table 5 shows the mean of students' satisfaction about TBL (mean = 3.75). When asking if TBL is wasting the time; 39.5% agreed with this point.

4. Discussion

TBL is one of the active learning strategies that are utilized in education programs today to improve learning quality and student participation in the learning process. By giving students the chance to collaborate successfully as a team to understand the purpose of learning, TBL develops students' capabilities. It also increases student engagement,

presence, learning attitude, and communication quality [11, 18].

In this study, students perceived TBL as an effective teaching and learning method as indicated by their mean scores on all subscales which is more than the average measurement. They perceived TBL as an effective learning strategy, >80% of them declared that TBL had led to better learning and even better problem solving as indicated by high mean scores on this subscale. The minimum score of all questions in this subscale was equal to or greater than the neutral score indicating a positive agreement with the effectiveness of TBL for learning, this was more in questions such as TBL helps me remember the information for long period by average of 4.42 and the discussion at the end of the sessions completes my understanding of the topics by a mean of 4.28. This might be because in TBL, students should acquire more knowledge to be able to participate; on the other hand, TBL encouraged students to ask questions, contribute to discussions or work with their colleagues on

TABLE 2: Student' perception about accountability in TBL (n = 43).

Development of accountability	Frequencies & ratio	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Respond average	SD	Answer direction
I spend time studying before class in order to be more prepared	F	5	1	1	19	17	3.98	1.263	Agree
	%	11.6	2.3	2.3	44.2	39.5			
I feel I have to prepare for this class in order to do well	F	3	3	3	19	15	3.93	1.163	Agree
	%	7	7	7	44.2	34.9			
I feel that I should be accountable for my own learning	F	3	0	3	15	22	4.23	1.088	Strongly agree
	%	7	0	7	34.9	51.2			
I collaborate with teams to make decision	F	1	2	2	17	21	4.28	0.934	Strongly agree
	%	2.3	4.7	4.7	39.5	48.8			
I participate actively in team learning process	F	3	2	2	15	21	4.14	1.167	Agree
	%	7	4.7	4.7	34.9	48.8			
I am accountable for my team's learning	F	3	4	4	11	21	4.00	1.272	Agree
	%	7	9.3	9.3	25.6	48.8			
Overall	F	3	2	3	16	19	4.30	0.580	Strongly agree
	%	6.98	4.66	5.82	37.21	45.33			

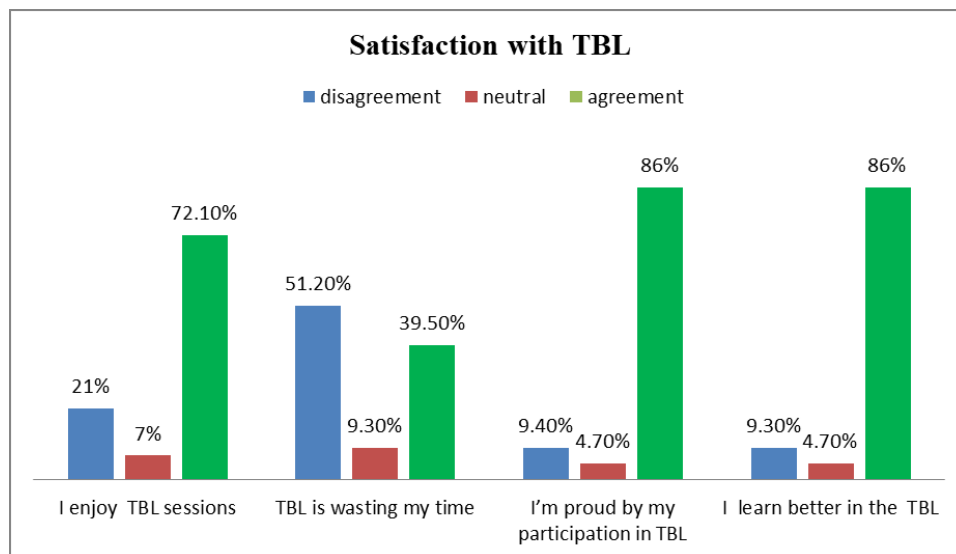


Figure 3: Nursing students' satisfaction with TBL (n = 43).

team assignments. Despite this agreement, 13.9% of students disagree with the question – I learned

more by the group discussion); this may be due to the fact that some students preferred to study

TABLE 3: Student' perception about engagement and motivation during TBL (n = 43).

Engagement and motivation	Frequencies & ratio	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Respond average	SD	Answer direction
The question at the beginning is motivating my attention in the topics	F	4	2	0	15	22	4.14	1.246	Agree
	%	9.3	4.7	0	34.9	51.2			
TBL makes me engaged in discussion	F	3	2	0	18	20	4.16	1.132	Agree
	%	7	4.7	0	41.9	46.5			
The multi-discussion activity engages me smoothly in the deep knowledge of the topic	F	3	1	0	18	21	4.23	1.088	Strongly agree
	%	7	2.3	0	41.9	48.8			
I participate actively in TBL process	F	2	2	2	16	21	4.21	1.059	Strongly agree
	%	4.7	4.7	4.7	37.2	48.8			
TBL encourages me to cooperate with others.	F	1	1	4	21	16	4.16	0.871	Agree
	%	2.3	2.3	9.3	48.8	37.2			
	F	2	2	1	18	20	4.30	0.580	Strongly agree
	%	6.06	3.70	2.8	40.94	46.5			

TABLE 4: Nursing students' perception about communication skills during TBL (n = 43).

First axes Communication skills	Frequencies & ratio	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Respond average	SD	Answer direction
TBL increases my ability to pass the knowledge to the others	F	3	4	1	11	24	4.14	1.265	Agree
	%	7	9.3	2.3	25.6	55.8			
My speaking skills in English language is increased by these methods	F	2	2	3	15	21	4.19	1.075	Strongly agree
	%	4.7	4.7	7	34.9	48.8			
My relationship is growing with by group member	F	5	2	4	14	18	3.88	1.331	Agree
	%	11.6	4.7	9.3	32.6	41.9			
Some students never give us chance to speak	F	5	3	4	17	14	3.74	1.311	Agree
	%	11.6	7	9.3	39.5	32.6			
	F	4	3	3	14	19	3.99	1.246	Agree
	%	8.70	6.40	6.97	33.15	44.78			

alone. This positive tendency toward TBL has been observed in several other previous studies; Adam

TABLE 5: Perception about satisfaction with TBL ($n = 43$).

Fifth axes Student satisfaction	Frequencies & ratio	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Respond average	SD	Answer direction
I enjoy the TBL sessions	F	7	2	3	13	18	3.77	1.461	Agree
	%	16.3	4.7	7	30.2	41.9			
TBL is wasting my time	F	11	11	4	9	8	2.81	1.500	Neutral
	%	25.6	25.6	9.3	20.9	18.6			
I'm proud of my participation in TBL	F	2	2	2	20	17	4.12	1.028	
	%	4.7	4.7	4.7	46.5	39.5			Agree
I learn better in the TBL	F	3	1	2	12	25	4.28	1.141	Agree
	%	7	2.3	4.7	27.9	58.1			
Result	F	6	4	3	13	17	3.75	1.282	I agree
	%	13.4	9.31	6.41	31.37	39.51			

TABLE 6: Level of agreement with TBL (one sample t -test) ($n = 43$). Nursing students demonstrated high positive perception on usage of TBL in nursing education.

The field	Mean	Std. deviation	T-test	Sig. (2-tailed)	Agreement level
Learning	4.2287	0.67556	11.926	0.000	High
Accountability	4.0930	0.77860	9.206	0.000	High
Engagement and motivation	4.1814	0.73655	10.518	0.000	High
Communication skills	4.2267	1.81004	4.444	0.000	Medium
Satisfaction	3.7442	0.90549	5.389	0.000	Medium

and his colleagues found that the overall positive perception of students regarding their learning using TBL was 3.59. In addition, the result is consistent with Cheng who found that TBL has positive effect on nursing students' learning [7, 10].

Accountability is an important aspect in TBL; it affects individual learning and team preparedness because the standard of the individual work and teamwork was monitored (by grades), the readiness assurance process may have improved learners' accountability. The students in this study perceived they were highly accountable for their own learning. This positive perception in accountability clearly appears in the students' strong agreement with responsibility about their own learning and the team learning. This result

is similar to study conducted by Aisha Elayed Elaraby and her colleagues who found the highest percentage of nursing students in the study group had a high level of accountability during TBL, also our findings are consistent with the results from Heidi Ann study which found that students feel responsible for their performance [13, 19].

Learner engagement is a key concept in TBL, Haidet *et al.* claimed, "Greater degrees of and higher-quality engagement both with content and other learners are expected to favorably affect a variety of learning outcomes" [20]. This study found that the majority of nursing students thought TBL had a favorable impact on their learning and motivated them to study subjects with a high level of significance. This result is in line

with those of Punja *et al.*, who discovered that TBL increased students' engagement and their understanding of the course material, and similarly with McMullen *et al.*, who discovered that TBL increased engagement among psychiatrists as opposed to becoming familiar with or learning through traditional lectures. The results of this study concur with those of Ibrahim and Wafaa Sleem's study, which found that TBL increased student involvement in nursing management courses more than traditional methods of instruction [8, 9, 21].

Excellent communication skills and the ability to work efficiently in a team are important for patient safety. According to O'Donnell M, Rosenstein A:

Teams put an emphasis on decision-making and problem-solving techniques that encourage good teamwork, collaboration, and communication, all of which reduce the risk of medical errors. TBL trains the health care workers to collaborate with others, analyze data, and interact with patients to deliver safe and efficient patient care. [22]

The majority of nursing students agreed that TBL improved their ability to communicate with other students. This may be because students found it easier to interact with their peers and were motivated to help their team members understand concepts, which required them to think about the best way to convey their ideas. This result is similar to previous studies which found that TBL enhanced students' communication with their team [5, 9, 10, 23].

Although the result of this study showed positive perception toward TBL as teaching strategy, others considered TBL as a waste of time; this may be due to the fact that groups include outstanding students with students with low levels who need more time to understand. This result contradicted other studies. Jonathan and Jacqueline study showed

higher level of satisfaction with TBL compared to traditional lectures, also this result contradicted Aisha Elasyed Elaraby and her colleagues who found high satisfaction (93%) [13, 24].

This study has several limitations; it was conducted on a small group of nursing students in one class of nursing college which lacks its generalizability all over the country, it also depends on convenience sampling and questionnaire for data collection which possess bias in the study. Another limitation was that the study was not designed to evaluate if this positive impression with the TBL was accompanied by a good performance; therefore, we cannot say whether the students had an effective learning with the method used. In addition, this study did not involve teachers to explore their perception about TBL as they play an important role in supporting students when implementing this innovative strategy.

5. Conclusion

The present study concludes that students perceived that implementing TBL method in nursing courses positively and generally improve their behaviors, and communication skills mainly in speaking English and transferring knowledge to others. It is advised that students should be prepared for their new roles in active learning methods through hands-on approach and it is recommended to conduct further research to evaluate the impact of TBL on the academic performance and learning ability of students in nursing education.

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responded and gave them this opportunity to carry out this study on TBL.

Ethical Considerations

The research was conducted after obtaining approval from the research committee at faculty of medicine, International University of Africa and acceptance by Nile University, Faculty of Nursing Sciences. A written informed consent was obtained from students before enrollment in the study. Anonymity, confidentiality, and student withdrawal was highly respected.

Competing Interests

There is no conflict of interest of any type.

Availability of Data and Material

Data and materials supporting the conclusions are available from the corresponding author on reasonable request.

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