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Effect of Team Based Learning on Classroom Engagement, Critical thinking dispositions And Academic Achievement of Nursing Students Enrolled in Principle of Nursing Research Course

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ABSTRACT

Background: Team-based learning is a highly structured, active educational strategy based on small group interaction to foster deep learning. It equips nursing students with critical thinking disposition and problem-solving abilities to solve problems individually, as well, enhance nursing students engagement, satisfaction, collaboration, and has positive effect on learning outcomes in terms of academic achievement.

The aim of this study was to assess the effect of implementing team based learning on classroom engagement, critical thinking disposition and academic achievement of nursing Students enrolled in principle of nursing research course.

Methods: The study was conducted at the College of Nursing, ABHA, King Khalid University, Kingdom of Saudi Arabia, using a quasi-experimental design. A simple random sample from 4th year nursing students (n=36) out from 41 in the level ten they enrolled in the principle of nursing research course in the academic year 2022/2023. Five tools were used for data collection: Readiness Assurance Test for Team based learning, The Team-Based Learning Student Assessment instrument, Classroom Engagement Survey, Modified inventory of the California critical thinking disposition sheet, ,and Students' achievement test (final written exam).

Results: The study findings indicate that the highest percentage of nursing students feel engaged during classroom, and had a positive level of critical thinking dispositions skills, Additionally, the mean score of achievement of nursing students in the final theoretical exam in the units that taught by team based learning was higher than their achievement in the others units that taught by tradition lecture with a highly statistically significant difference.

Conclusion and recommendation: The study findings add to the literature supporting the use of team based learning approach in nursing education. The approach is beneficial for enhancing nursing students' critical thinking dispositions skills, classroom engagement and academic achievement.

J Popul Ther Clin Pharmacol Vol 30(7):e222–e237; 07 April 2023.

Therefore, the study recommends more utilization of team based learning in the nursing college as an interactive learning method, with training workshops aimed at changing the attitude of college teaching staff toward the use of more innovative models of active learning that enhance classroom engagement and critical thinking disposition of nursing students such as team based learning. Further studies should link team based learning with student academic and clinical achievement in other nursing courses.

Key words : *Academic Achievement, Classroom Engagement, Critical thinking dispositions, Nursing Students, Team Based Learning*

INTRODUCTION

Current nursing teaching methodologies for classroom & clinical settings include lecture, discussion, demonstration, simulation and so on. The traditional teacher-centered classroom were prevalent in nursing education practices in the past decades. The most obvious advantage of the traditional teacher-centered classroom was its ability to impart knowledge to students in a limited amount of time. However, this kind of teaching made students receive information passively, which ultimately led to dissatisfactory learning outcomes and the impairment of students' capability for critical thinking and long-term knowledge retention (GC et al, 2016). Currently, nursing schools around the world are shifting from teacher-centered pedagogies with individual-based education to student-centered models that feature group-based education such as team-based learning (TBL) (Lia Ross & Bruderle, 2016 & Liao et al, 2019). Nursing education place strong emphasis on fostering the understanding of research methods. This includes, among other things, gaining familiarity with the steps of the research process, interpreting the meaning of correlations, understanding the differences between experimental and correlational designs, and the implications of these designs for causal interpretations. It is argued that students benefit from an understanding of research methods Thus, teaching students to apply the principles of research methods is a particularly important educational outcome in increased student learning and interest (LaCosse et al, 2017). In the College of Nursing, ABHA, King Khalid University, Kingdom of Saudi Arabia, the nursing research is one of the important course of nursing curriculum that students study at the ten level and introduces students to quantitative and qualitative research in nursing by reviewing, evaluating and critiquing current research studies which use a variety of designs. Throughout the course, an emphasis will be placed on the philosophical underpinnings of the quantitative and qualitative research paradigms as well as the use of research in nursing practice. The nursing research course is widely regarded as difficult subject to teach. Student attitudes toward these topics are often negative, and their interest in them is low. This lack of engagement is likely to impact student outcomes, contributing to poorer grades and higher rates of attrition. However, a basic understanding of research methods is essential in order for students to gain a fuller appreciation of the literature underpinning their later academic, or professional careers. Thus, there appears to be a clear and growing need to identify teaching strategies that are maximally effective at removing barriers to learning research methods through use of active learning approaches that contributing to reduced fail rates by 55% and improved grades by up to half a grade band when compared to didactic teaching methods (Allen and Baughman 2016 & Burton et al, 2021). Team-Based learning (TBL) is one kind of active learning approaches, which is used to improve the study method and permanent learning (Boysen-Osborn et al, 2016). Team-based learning is a highly structured, active educational strategy based on small group interaction to foster deep learning (Gayef, 2019 & Considine et al, 2020). Team-based learning (TBL) model involves a personal or group learning process with immediate feedback. Through active learning and mutual support

among group members, learning goals are achieved collaboratively through group discussion of knowledge acquired in classroom settings (Alberti et al, 2021). The performance of TBL includes the following phases: individual preparation (pre-class), readiness assurance (class), and an application of -focused exercise (class). In the individual preparation phase, students study the material sent by the teacher according to the proposed theme. Readiness assurance phase, students first engage in an individual closed-book knowledge test (iRAT or individual readiness assurance test) to check whether their understanding of the learning materials is sufficient. This typically consists of 10 to 20 multiple choice questions, the same test is repeated by the students in small groups of 5–7 students (tRAT or team readiness assurance test). During the tRAT students discuss and come to a consensus on their team answers, and the correct answers are then revealed. After discussing the answers with the teacher, the method allows the reassessment of the answer of some question by making an appeal based on relevant published material and grounding the argument with theory (Bollela et al, 2014). During the application phase, the small groups engage in a series of exercises encouraging to apply what they have learned. This phase is characterized by the principles that all student teams work on the same problem, which must be significant. Furthermore, student teams are required to make a specific choice from a limited list of options and report their responses simultaneously. Students engage in these activities through intra-and inter-team discussions, accompanied by teacher feedback (Girondi et al, 2017). TBL equips nursing students with critical thinking disposition and problem-solving abilities to solve problems individually and empowers nurses to provide safe patient care with confidence. TBL also facilitates nursing learners to engage in authentic learning tasks and fosters essential generic professional skills and knowledge which are highly valued by nurses (Currey et al, 2018). TBL has also been reported to enhance student engagement, satisfaction, collaboration, has positive effect on learning outcomes in terms of academic achievement and skills development; improving the development of communication skills, inter-professional learning and self-directed learning (Chen et al, 2018 & Hamada et al, 2020). Critical thinking dispositions are affective element of critical thinking. It is recognized as the willingness and motivation to think in a rational and logic manner. Also, it is the attitude to discover numerous perspectives, and the tendency to make judicious decision (Lee, 2018), when the students have positive dispositions toward critical thinking are more prepared to utilize their critical thinking skills because propensity and willingness to think critically play an essential role to exercise and develop critical thinking ability (Shakurnia & Baniasad,2018). Critical Thinking dispositions involve seven traits: truth seeking which means having inclination to seek the best knowledge in a given situation, open- mindedness refers to the tendency to respect the different views of others and consider innovative ideas, systematicity is the predisposition to deal with facts and problems in an ordered manner, cognitive maturity is the tendency to be judicious when making decision and the alertness of the difficulty of the problem, critical thinking self-confidence means having trust in ability of person to reason, inquisitiveness refers to having desire to acquire new information, and analyticity which means the ability to be alert, and analyze surrounding problems and consider potential consequences of choices and situations (Facione, 2015). Academic achievement represents performance outcomes that indicate the extent to which a student has accomplished specific goals that were the focus of activities in instructional environments, specifically in school, college, and university. Academic achievement as measured by the GPA (grade point average) or by standardized assessments designed for selection purpose such as the SAT (Scholastic Assessment Test) determines whether a student will have the opportunity to continue his or her education (e.g., to attend a university) (Steinmayr et al., 2020). Student engagement has many definitions, and includes time, effort, resources, participation, activities, emotions, and feelings within the context of embracing student learning (Hampton and Pearce 2016). Student engagement is a measure for ongoing assessment of the quality of

the nursing program and the success of graduation students. Nursing student engagement is critical for success within nursing programs and with the goal of remaining within the profession with longevity once the students graduate. There are three levels to focus on in relation to student engagement: engagement between the student and teacher, the student connection with their learning, and the student linking with their learning environment (Bowcock & Peters 2016).

Theoretical Framework

The theoretical framework chosen for this study was Knowles' theory of adult learning which is based on andragogy. Knowles' (1973) premise is that adult learners need to know the relevance in learning the specified material and disengage when relevance is not perceived. Andragogy makes five key assumptions about adult learners which are self-concept, adult learner experience, readiness to learn, orientation of learning, and motivation to learn.

Significance of the study

The teaching research methods may require a particular kind of approach than traditional methods such as lecturing to classes was shown to be less effective in terms of student satisfaction and enjoyment. The challenge facing nurse teachers of research methods therefore is to make research methods more applied, relevant and engaging for students, whilst simultaneously improving students' understanding, their grades, and attendance rates through the use of an active learning methodology such as team based learning(TBL) that may include taking part in demonstrations designed to illustrate methodological, participating in authentic research, and working with data the students have been responsible for collecting. Importantly, that appears to be successful at increasing levels of satisfaction, enjoyment and reducing failure rates of students (Freeman et al., 2014; Allen & Baughman 2016). Most the previous international and regional studies assess the impact of applying TBL in different curriculum courses on learning outcome in nursing , medicine and other disciplines (Swanson et al, 20019;Alberti et al, 2021; Burton et al, 2021; Carrasco et al, 2022;), but no any study apply TBL on research course in nursing education whether at national, regional, and international level. So, there is a need to explore and assess the effect of TBL as an instructional strategy on classroom engagement, critical thinking ability and academic achievement of nursing students in nursing research course. Utilizing this instructional strategy that maximally effective at removing barriers to learning research methods, help nursing students to understanding of research methods, evaluate the quality of research, and promotes critiquing of research studies.

Aim of the study

The present study aimed to assess the effect of implementing team based learning on classroom engagement, critical thinking disposition and academic achievement of nursing Students enrolled in principle of nursing research course.

Research hypothesis

The nursing students who learned by team based learning would report high levels of accountability, a preference for TBL, and satisfaction with the TBL approach.

The nursing students who learned by team based learning would report a high levels of engagement in classroom.

The nursing students who learned by team based learning would report positively levels of critical thinking disposition skills.

The academic achievement score of the nursing students who learned a selected units by team based learning will be significantly better than the scores of other units were taught by traditional lecture.

SUBJECT AND METHODS

Research design

A quasi-experimental design was used to achieve the aim of the study.

Setting

This study was conducted at the College of Nursing, ABHA, King Khalid University, Kingdom of Saudi Arabia, which include five scientific departments: Fundamental of nursing care, community nursing care, pediatric nursing, medical surgical nursing, , and maternal and newborn health nursing. The college was established by the decision of the Council of Higher Education No. 14/42/1427 to provide distinguished education, community services, and innovative research in the field of nursing, through the optimal utilization of resources.

Subjects

A simple random sample from 4th year nursing students (n=36) out from 41 in the level ten they enrolled in the principle of nursing research course in the academic year 2022/2023, and who agreed to participate in the study.

Tools of data collection

Five tools were used to collect data for this study.

Tool I: Readiness Assurance Test for Team based learning

It was developed by researcher based on review of current related literature, it consists of ten multiple choice questions to each selected four units taught in the nursing research course out of eight units (sampling, research design, methods of data collection, and ethics in nursing research), and it consists of two parts:

Individual Readiness Assurance Test (IRAT)

The test is taken individually to every student to assess students' readiness to apply knowledge in the class.

Group Readiness Assurance Test (GRAT)

The same test is retaken within the groups to ensure students have prepared for group work.

Scoring system

Questions were scored as 1 for correct answer and zero for incorrect answer and the total score was 10 for each unit.

Tool II: The Team-Based Learning Student Assessment instrument

It was developed by Mennenga (2012) for examining team based learning in nursing students. It consists of 33-item, grouped under three subscales:

1. Accountability subscale:
To asses nursing students' preparation for class and contribution to the team, and consists of 8 items.
2. Preferences for lecture or team based learning subscale:
To identify nursing students preference for team based learning or traditional lecture, and consists of 16 items.
3. Students satisfaction subscale
To asses nursing student satisfaction who are taught with team based learning, and consists of 9 items

Scoring system

It is a structured questionnaire using a five point Likert scale ranging from strongly disagree (1) to strongly agree (5) and reversed score to the negative items.

- If the score more than 24 for accountability subscale indicated a high level of accountability, if the score less than 24 indicated a low level of accountability.
- If the score more than 48 for preference subscale indicated student preference for team based learning, if the score less than 48 indicated student preference lecture.
- If the score more than 27 for satisfaction subscale indicated the students were a satisfied with team based learning, if the score less than 27 indicated no satisfied (Mennenga, 2012).

Tool III: Classroom Engagement Survey

Was developed by members of the Fund for the Improvement of Postsecondary Education (FIPSE 2003), and consist of two parts; the first cover personal characteristic of nursing students such as name, age, and marital status and the second part to measure student engagement during class time and include eight items.

Scoring system

It is a structured questionnaire using a five point Likert scale ranging from strongly disagree (1) to strongly agree (5). Possible scores ranged from 8-40, if the score higher than 24 indicated student engagement in classroom, while the score less than 24 indicated no engagement.

Tool IV

Modified inventory of the California critical thinking disposition sheet CCTDI which developed by Facione et al. (1994). It was used to assess critical thinking dispositions skills among nursing students. It consisted of 75 items grouped under seven dispositional characteristics: truth seeking (12 items), open-mindedness (12 items), and analyticity (11 items), and systematic (11 items), self -confidence (9 items), and inquisitiveness (10 items), and cognitive maturity (10 items). The response was along a continuum of 5-point Likert. Students were asked to state the extent to which they agree or disagree with each of the 75 items. Agreement with an item indicates concordance with a recognized critical thinking (CT) attribute, while disagreement represents opposition to the attribute. The CCTDI Likert-style items scoring system was as the following :- (strongly disagree scored (1), disagree scored (2), neither agree nor disagree scored (3), agree scored (4), strongly agree scored (5). Consequently, the maximum total score was 375 (75x5) and the minimum total score was 75 (75x1). The CCTDI total score is the sum of the score of the seven sub-scales. The total score indicate whether a person is generally disposed to think critically, whether the individual habitually characteristics of an ideal critical thinker.

Scoring system

Nursing students were classified on critical thinking disposition scale into three groups according to their mean percentage scores to questionnaire items as follow:

Score <50 % (Less than 187.5) indicating negatively disposed.

Between 50% to 66. 6% (187.5 – 249.75) indicating ambivalently disposed.

Score >66.6% (More than 249.75) indicating positively disposed.

Tool V: Students' achievement test (final written exam)

It was developed by the researchers based on the contents of principle of nursing research course that the nursing students taught in the level ten at the end of the semester. To assess the different levels of learning (cognitive levels) as knowledge, comprehension, application, analysis, synthesis and evaluation. It consists of 70 questions in the form of multiple choice, true and false, the first 35 questions related to units of the course that the students taught by TBL, and remaining 35 questions are related to the others units of the course that the students taught by and traditional lecture.

Scoring system

Questions were scored as 1 for correct answer and zero for incorrect answer. The students' achievement in the exam will score according to the scoring system at the College of Nursing, ABHA, King Khalid University as follows: Fail (<60%), Pass (60 -<65%), Pass+ (65 -<70%), Good (70-<75%), Good +(75- <80) , Very good (80-<85%), Very good +(85-< 90), and Excellent (90- <95%), Excellent+(95-100).

Content validity & reliability

For all tools of data collection: content validity was established by a jury of experts who assessed the tools for clarity, relevance, comprehensiveness, applicability, and understanding. Internal consistency reliability was established with Cronbach's alpha to assess the consistency of results across items within a test. Cronbach’s alpha coefficients were 0.87, 0.81, 0.72 and 0.75 for team based learning student assessment instrument, classroom engagement survey, readiness assurance test, and Modified inventory of the California critical thinking disposition sheet, respectively by the original authors.

Field work

The current study was carried out through three phases; preparation, implementation, and evaluation.

Preparation phase

Preparation phase started from the beginning of December 2022 to the end of January 2023; the preparation phase includes the following:

- Reviewing theoretical and empirical literature concerning team based learning.
- Preparation and construction of data collection tools.
- Designing team based learning content.

Implementation phase

Implementation phase of this study was executed in two months from the beginning of February to the end of March 2023 in the second semester.

The researcher provided an introduction about principle of nursing research course, the course objectives, and schedule of the course units, also provides an explanation of team-based learning to the students such as design, format, and advantages of TB, the researchers provided students with assurance that they can withdraw at any time. Team-based learning involves a three phase's process: pre-class preparation, readiness assurance tests, and application of course concepts

Phase I: Pre class preparation

During the pre-class preparation phase; assigned readings and group formation occurred.

Assigned readings: the researchers selected four units (sampling, research design, methods of data collection , and ethics in nursing research) out of eight units in principle of nursing research course was delivered by TBL and the other units were delivered by traditional lectures. The researcher informed students to read the four units one week before coming to class, via an online one-hour lecture power point that was tailored to making the more complex aspects of the topic more accessible, promote engagement and understanding of the concepts of students.

Group formation: The researchers' assigned students randomly into teams of six students, divided them into six teams. Once they divided into teams, students selected a name for their team, and the researcher recorded the name of the team and the names of each team member, and every team selected a team leader.

Phase II: Readiness Assurance Tests

The students taking the Individual Readiness Assurance Test (10 Min) and team Readiness Assurance Test (15 Min). The Individual Readiness Assurance Test(iRAT) and team Readiness Assurance Test(tRAT) use the same questions consisting of 10 multiple –choice questions without any accompying notes, books or other resources. At this time, while the students were working on the tRAT, the researchers checked their iRAT answers. After the tRAT, the teams had the opportunity to submit a written appeal (if needed) (5 min) for incorrect answers with supporting references. The group received additional points if the appeal was accepted, and the researchers gave a clarification at the next class session. Subsequently, a mini-lecture was given to the students (15 min) regarding the questions receiving a low score.

Phase III: Application of course concepts

An application exercise in the form of critique to selected research studies in nursing to enhance student understanding of content and increase group cohesion.

Evaluation phase

Immediately after completing application of team based learning in taught a selected units of nursing research course , the researchers invited students to provide their feedback about team based learning as method of teaching as compared to lecture method through filling out Team-Based Learning Student Assessment Instrument questionnaire, measure student engagement during class time using Classroom Engagement Survey and assess critical thinking dispositions skills of students through filling out

Modified inventory of the California critical thinking disposition sheet. At the end of the semester assess knowledge retention of students through Academic achievement test.

Pilot study

A pilot study was carried out on 10% of nursing students (4) to test the clarity of the tools of data collection, and determine the time needed to fill-in the tools. No modification were done so the students were included in the main study sample.

Administrative and ethical considerations

Permission to conduct the study was permissions obtained after explaining the nature of the study from the Dean the Faculty of Nursing, King Khlaid University, ABA. Written explanation of the nature and aim of the study have been explained to all nursing students included in the study. They were given an opportunity to refuse or to participate, and they were notified that they could withdraw at any stage of the study.

Statistical analysis

Data entry and statistical analysis were done using the Statistical Package for Social Science (SPSS) revision16.0 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables. Pearson correlation coefficient (r)) was used for continuous quantitative data and paired t- test to compare means of two independent groups. For all the tests used, statistical significance was considered at p–value < 0.05.

RESULTS

TABLE 1: Personal characteristics of nursing students (N=36)

Personal characteristics	**No**	**%**
Age in years		
20 less than 22	9	25
More than 22	27	75
Mean ± SD	23.85±0. 78	
Gender		
Male		
Female	36	100%
Marital status		
Single	32	88.9
Married	4	11.1

Table (1): shows personal characteristics of nursing students, it is clear from the table the majority of nursing students were in the age group more than 22 years old with mean age 23 years (75%). The highest percentage of nursing students were single (88.9%), and all nursing students were female.

TABLE 2: Mean scores of readiness assurance tests for nursing students who taught by TBL (n=36)

Knowledge	Individual readiness assurance test	Group readiness assurance test	t-test	p-value
	Mean±SD	Mean±SD		
Total	41.7±4.1.	49.6±2.24	109.14	0.000(**)

Table (2) displays mean scores of readiness assurance tests for nursing students who taught by TBL, it is clear from the table that there is a highly statistically significant difference (p=0. 000) between individual and group readiness assurance tests of knowledge and the group readiness assurance test were higher than individual readiness assurance test (49.6±2.24 & 41.7±4.1, respectively).

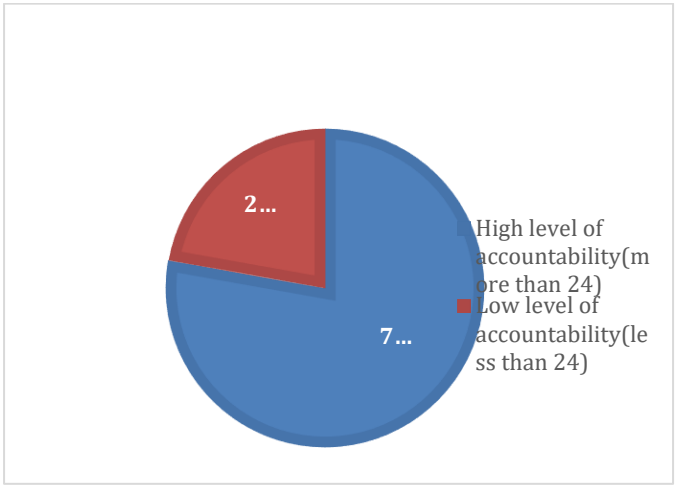

FIGURE 1: Nursing students Accountability level regarding TBL (n=36)

Figure (1) displays nursing students' Accountability level regarding TBL, it is clear from the figure the highest percentage of nursing students (77.8 %) had a high level of accountability during TBL.

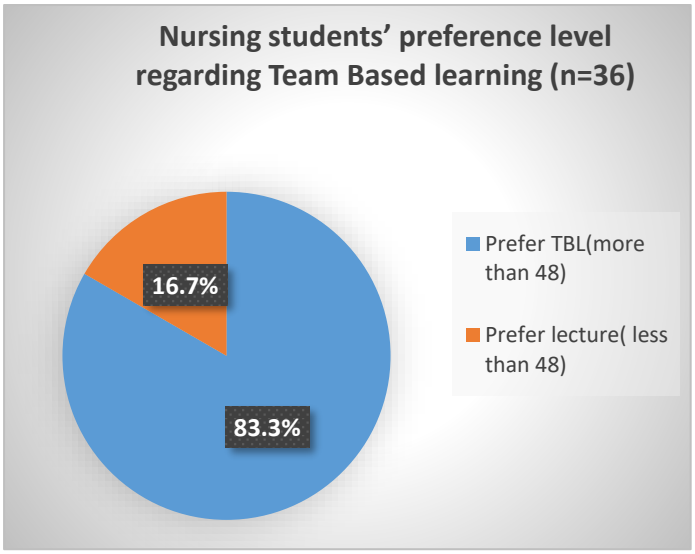

FIGURE 2: Nursing students' preference level regarding Team Based learning (n=36)

The figure (2) illustrates preference for team based learning or lecture as perceived by nursing students, it is clear that the highest percentage of students (83.3%) prefer team based learning as a teaching method than traditional lecture.

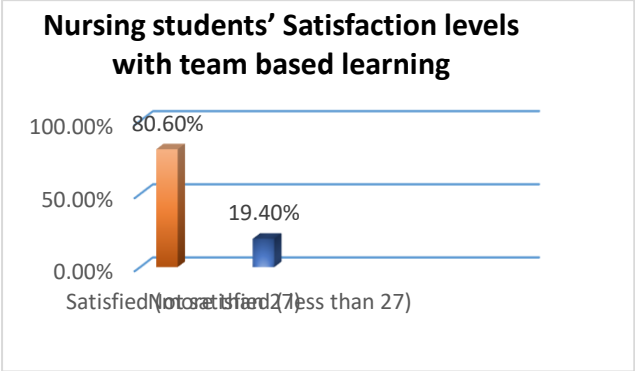

FIGURE 3: Nursing students' Satisfaction levels with team based learning

The figure (3) displays satisfaction of nursing students regarding TBL. As it's clear from the figure that the highest percent of nursing students (80.6 %) was satisfied with the team based learning.

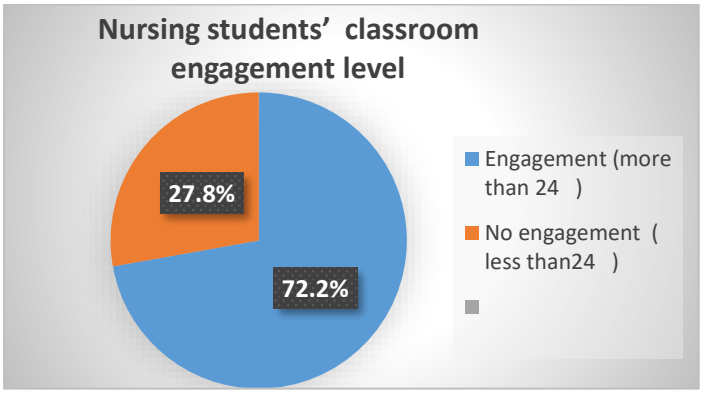

FIGURE 4: Nursing students' classroom engagement level

The figure (4) displays nursing students' classroom engagement level, it is clear from the figure the highest percentage of nursing students (72.2%) feel engaged during classroom.

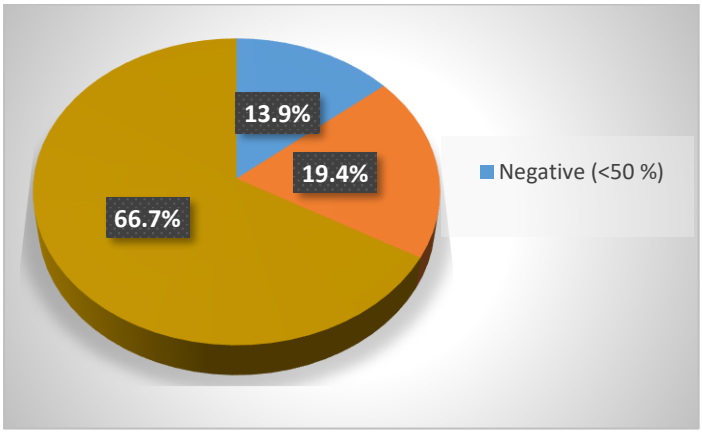

FIGURE 5: Critical thinking disposition level of nursing students

J Popul Ther Clin Pharmacol Vol 30(7):e222–e237; 07 April 2023.

The figure (5) shows critical thinking disposition level of nursing students, it is clear from the figure the highest percentage of nursing students (66.7%) had a positive level of critical thinking disposition.

TABLE 3 : Comparison between nursing students achievement of Final exam in units of the course that taught by TBL and traditional lecture (n=36).

Final exam	Units that students taught by TBL(n=36)		Units that students taught by lecture (n=36)		$\chi 2$	p-value
	No.	%	No.	%		
Excellent+	4	11	1	2.8	21.1	<0.001
Excellent	18	50	4	11	27.8	<0.001
Very good+	10	27.8	2	5.6	25.1	<0.001
Very good	2	5.6	13	36.2	24.6	0.002
Good+	2	5.6	16	44.4	26.2	0.002
Good	-					
Pass+	-					
mean± SD	61.3±4.6		56.1±6.5		t=22.6	<0.001

Table (3): Shows Comparison between nursing students achievement of Final exam in units of the course that taught by TBL and traditional lecture, it shows that the mean score of achievement of nursing students in the final theoretical exam in the units that taught by TBL was higher than their achievement in the units that taught by tradition lecture of the principle of nursing research course (61.3±4.6 & 56.1±6.5, respectively) with a highly statistically significant difference (<0.001) In addition to, the half of nursing students who taught the units by TBL had an excellent level of achievement in final exam(50%), while less than half of nursing students had a Good + level of achievement in the units that taught by tradition lecture(44.4%).

DISCUSSION

The Team-Based Learning (TBL) developed by Larry K. Michaelsen at the University of Oklahoma in 1970, is based on teamwork, in-depth reasoning and critical thinking (Sakamoto et al, 2019). Team-based learning (TBL) is an effective teaching methodology for achieving learning outcomes in undergraduate nursing students. It enhanced learning effect and development in capabilities of interactions and interpersonal skills, the students' capabilities such as communication, collaboration, critical thinking skills, problem-solving, academic achievement, and learning attitudes such as satisfaction and classroom engagement are positively influenced by TBL (Ho et al, 2022 and Yang et al, 2022). The aim of this study is to assess the effect of implementing team based learning on classroom engagement, critical thinking ability and academic achievement of nursing students enrolled in principle of nursing research course. Concerning the personal characteristics of nursing students. The findings of present study indicated that the highest percentage of nursing students were single and aged more than 22 years old, with mean age 23 years. Additionally, all students were female. This may be due to the enrollment to the College of Nursing ABHA, King Khalid University is only for females, as well as, studying in the College of nursing require attendance the theoretical lectures and clinical training whether in the hospital or lab and prepare assignments this put students under overload and stress and have no time to marry and take responsibility of family. The findings of the present study revealed that the group readiness assurance tests of nursing students obtained the highest mean score of knowledge than individual readiness assurance tests and showed a highly statistically significant difference between group and individual readiness assurance tests regarding students'

knowledge. This improvement due to the use of team based learning allow students to learn and teach in the groups and it fosters their learning through all three auditory, kinesthetic and visual compared with traditional lecture allowed students focus on remembering and understanding only. In the same line with the previous studies of Elaraby et al,(2017); Atlasi et al., (2017); Ngoc et al, (2020) They reported that the students' group scores were better than individual scores on readiness assurance tests during the TBL. The finding of the present study revealed that the highest percentage of nursing students had a high level of accountability during TBL, preferred TBL as a teaching strategy, and were satisfied with TBL. This may be due to that TBL is a new method of teaching and the students wished to contribute to their team members learning, and view this method focus on them rather than lecture and they like more classes to be like this TBL session. In addition to, it helps students to gain and retain studying material, communicate effectively with teaching staff to understand studying material, and created an effective learning environment. As well as, TBL made students more satisfied with their learning and felt learning in a team environment surpassed learning on an individual basis and the students enjoyed the course using team-based learning activities; the small group activities increased students' enthusiasm for the course and peer interactions increased overall satisfaction with TBL. This result consistent with the findings of the previous studies of Conway et al, (2018); Feingold et al, (2018); Ibrahim & Sleem, (2018); Touchet & Coon (2018); Burton et al, (2021) They founded that the highest percentage of nursing students were preferred and satisfied with TBL as a teaching strategy, and they reported that TBL clearly increased individual accountability through readiness assurance test and case study preparation. The findings of the current study showed that the highest percentage of nursing students feel engaged during classroom. This could be related to, in TBL, the nursing students are required to share their knowledge and ideas, then discuss the content material with their peers. In team readiness assurance tests activities, for instance, students have to discuss the questions to get one correct answer with their team, as well as in the appeal process and application exercise. Also may be related to team interactions and collaborations during TBL activities which promote nursing students' learning interests, felt they interact well with their teams which promote their discussion and team work that further lead to more active engagement in class assignments and activities. Thus, the TBL activities were the underlying reasons why the students were more engaging in the classes. These results are consistent with the previous studies carried out by Mansy et al, (2019); Hampton et al, (2020); Saleh et al, (2021); Ulfa et al, (2021) They founded that the highest percentage of nursing students reported a higher level of classroom engagement with team based learning strategy. The findings of the current study showed that the highest percentage of nursing students had a positive level of critical thinking dispositions skills. The explanation of this results may be due to during TBL, the students gather relevant information to solve the assigned problem, discuss it in groups, ask questions, and take help from their teacher, enhancing their inquisitive and problem-solving abilities. In addition to this, during group discussion, the team and the facilitator encourage the struggling students, which motivates the students and imparts confidence to them. In the same context, the study done by Lee (2018) who founded that the implementing TBL developing critical thinking ability of nursing students. Also the study carried out by Mansy et al, (2019) who revealed that team based learning enhanced critical thinking disposition skills of nursing students. Again, Mslm et al, (2020) who reported that the highest percentage of nursing students had a positive level of critical thinking dispositions skills. And the study done by Lee & Kang (2021) who showed that use of team based learning to nursing education positive impact on critical thinking of nursing students. Similarly a study carried out by Zeb et al, (2022) who concluded that TBL positively affects students' critical thinking. The results of the present study showed that the mean score of achievement of nursing students in the final theoretical exam in the units that taught by TBL was higher than their achievement in the others units that taught by tradition lecture,

in addition to, the highest percentage of nursing students who taught the units by TBL had an excellent level of achievement in final exam, while the highest percentage of nursing students had a good+ level of achievement in the units that taught by tradition lecture. This might be due to TBL created an environment where nursing students teach and learn together; this collaboration and interaction help students to retention of knowledge than the traditional individual learning so can assist nursing students to meet the increasing demands of nursing education. In addition to, TBL method motivated nursing student to go beyond class information, and in TBL group, students had a preparatory handout for their home study, 1 week before each TBL class. Therefore, they were present with preparation in the class. Moreover, it needs advance preparation to which students have responded interactively, and this approach resulted in the increase of theoretical examination. As well as, allowed researchers to see which concepts were not well understood also gaps and deficiencies of learning was improved as group worked together. Moreover, TBL result in motivating students to go beyond class information. These findings confirm the results of previous studies done by Mansoor et al,(2019); Al Najjar(2020) they reported that the TBL improve theoretical test of students. Again the study of Nawabi et al, (2021) who founded that the test scores of nursing students who covered learning content with TBL had better test scores in cognitive test items. Also the study carried by Rajati, et al. (2023) who reported that TBL has positive effect on student's final theoretical exam than the traditional lecture group.

CONCLUSION

In the light of the main study findings, it can be concluded that the study findings add to the literature supporting the use of team based learning approach in nursing education. The approach is beneficial for enhancing nursing students' critical thinking dispositions skills, classroom engagement and academic achievement.

RECOMMENDATIONS

On the basis of the current study findings, the following recommendations are suggested:

-More utilization of team based learning in the nursing college as an interactive learning method.
-Educational workshops aimed at changing the attitude of college teaching staff toward the use of more innovative models of active learning that enhance classroom engagement and critical thinking disposition of nursing students such as team based learning strategy.
-Prepare booklet containing planning and implementation of team based learning for college teaching staff.
-College teaching staff could use questions that probe the learners to think in depth and breadth to become increasingly aware of their cognitive dispositions.
-Feedback questionnaire should be administered to collect views of nursing students and meeting with students to let them express about their opinions after studying assigned course with team based learning.
-Nursing students should be prepared for their new roles in active learning methods through hands-on orientations to new processes, expectations, and criteria for performance, as well as transparently and repeatedly explaining the pedagogical rationale for implementation.
-Further studies should link team based learning with student academic and clinical achievement in other nursing courses.
-Replicate the study with other and larger populations of nursing students for generalization of results.

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