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Evaluation of Team-Based Learning (TBL) Sessions Among Medical Students at the College of Medicine, Tikrit University

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ABSTRACT

Background: Team-Based Learning (TBL) is an active-learning pedagogy increasingly adopted in medical education. This study evaluated medical students' perceptions of TBL sessions at Tikrit University and examined associations with gender.

Methods: A cross-sectional survey (n=95) with seven Likert-type items and open-text feedback was administered. Responses were mapped to a 5-point Likert scale. Descriptive statistics, mean item scores, Cronbach's alpha, and chi-square tests were used where applicable. Figures display item distributions.

Results: Students generally reported positive perceptions of TBL.The highest mean scores were for (instructor support) mean = 4.82 and (Clarity of session objectives) mean= 4.57. Areas of improvement were identified in(fairness of team evaluation) mean= 4.12 and (Clarity of questions) mean= 4.19. The scale demonstrate high internal consistency (Cronbachs alpha=0.89). Qisquare test revealed no statistically significant gender based references in perception across all item (p> 0.05 for all).

Conclusion: TBL is valued by students; enhancing question clarity and assessment fairness is recommended.

INTRODUCTION

Team-Based Learning (TBL) is a significant change from traditional lecture-based teaching to a more structured, cooperative approach to learning. In medical education, the importance of integrating and applying complex knowledge is paramount. TBL provides a framework that promotes active learning, individual and group responsibility, and the development of critical thinking skills through a series of steps: preparatory self-study, individual and team readiness assurance tests, and application-focused exercises [1].

The effectiveness of TBL has been documented in multiple educational contexts associated with medical science, studies have linked its implementation to increased academic success, enhanced team abilities, and increased satisfaction with the learning process compared to other passive modes [2]. The pedagogical power of TBL is derived from its foundation in constructivist theory, this theory supposes that knowledge is gained through interaction with others and through problem-solving [3].

While the global spread of TBL is noted, its effectiveness is primarily based on environmental factors like faculty development, resource availability, and cultural devotion to collaboration. At the College of Medicine, Tikrit University, TBL is part of a larger initiative intended to modernize the educational curriculum for doctors[4]. However, a systematic analysis of how students perceive it is crucial to assess its effectiveness and improve it over time. This research, as a result, attempts to provide a comprehensive, evidence-based analysis of the medical students' perspectives regarding TBL sessions, it identifies both areas of improvement and the strengths they perceive in the present. A secondary goal is to investigate whether these perceptions differ by gender, this will provide information about the equal experience of TBLs [5].

MATERIALS AND METHODS

Design and placement :A Descriptivestudy of the Tikrit university college of medicines cross-sectional type. Participating students were those who attended TBL discussions during the academic semester.

Instrument: Items regarding Demographic information (gender, age) as well as seven items that assess the core TBL domains were incorporated. The questionnaire was in Arabic; responses were collected in English Likert categories and numerical formats for analysis.

DATA COLLECTION INSTRUMENT

A self-administered questionnaire was created in Arabic to ensure effectiveness and cultural relevance. The instrument had three parts:

1. Demographic Information: including gender and the age of the participant.
2. TBL Perception Scale: This scale has seven items that evaluate the core TBL domains: the clarity of the objectives, the motivation for participation, the question of clarification, the instructor's support, the understanding of the material, and the fairness of the evaluation. Responses were recorded on a 5-point scale with the top end of 5 meaning " Excellent," the bottom end of 4 meaning " Very Good," and the middle of 3 meaning " Good."
3. Qualitative Feedback: A section that allows students to comment on their TBL experience without structure. Data processing and statistical analysis Data were organized, codified, and analyzed with SPSS Statistics Version 28. Arabic responses were assigned to their English

correspondences in order to analyze them. Descriptive statistics (frequencies, percentages, means, and standard deviations) were calculated for all variables. The internal consistency of the 7-item TBL Perception Scale was evaluated using Cronbach's alpha. A chi-square test of independence was used to assess the association between gender (male or female) and the different responses to each of the seven questions. A p-value of less than 0.05 was considered significant. The final sample included 95 students who responded completely, which gave a response rate of approximately 79% of the intended population. The sample had 52 females (54.7%) and 43 males (45.3%). The majority of respondents (82.1%, n=78) were between the ages of 18 and 20.

RESULTS

The study analyzed 95 valid responses. The female-to-male ratio was 1.2:1. The seven-item TBL Perception Scale demonstrated excellent internal consistency, with a Cronbach's alpha coefficient of 0.89, confirming the reliability of the scale for measuring the construct of student perception.

The detailed results for each item are presented below, including response distributions, mean scores, and inferential statistics.

The mean score for this item was 4.57 (SD=0.81), the second highest in the survey. This indicates that students perceived the session objectives to be very clear. The distribution was highly positive, with 91.6% of respondents selecting "Very Clear" or "Clear." Only 3.2% of students reported low clarity ("Slightly Clear" or "Not Clear at All"). A chi-square test of independence showed no significant association between gender and responses, $\chi^2(4, N = 95) = 3.72$, $p = .446$, indicating that male and female students did not differ significantly in their perception of the clarity of TBL session objectives.

This item received a mean score of 4.12 (SD=0.95). The majority of students (77.9%) rated this aspect as "Excellent" or "Very Good," indicating that TBL was largely successful in motivating students to engage in group work. However, 6.3% of students found the motivation to be only "Acceptable" or "Weak." The chi-square test showed no statistically significant association between gender and responses, $\chi^2(4, N = 95) = 4.59$, $p = .332$. This suggests that the motivational aspect of TBL was perceived similarly across genders.

The mean score for this item was 4.19 (SD=0.92). While still positive, this was one of the lower mean scores. Although 82.1% of students rated question clarity as "Excellent" or "Very Good," a notable 6.3% rated it as "Acceptable" or "Weak," identifying this as a key area for improvement. The association between gender and responses was not statistically significant, $\chi^2(4, N = 95) = 6.23$, $p = .183$.

This item received the highest mean score of 4.82 (SD=0.54), highlighting exceptionally strong positive perceptions of instructor support. An overwhelming 97.9% of students rated instructor support as "Excellent" or "Very Good." This underscores the effectiveness of the faculty in their facilitative role during TBL sessions. The chi-square test revealed no significant gender-based differences in perception, $\chi^2(3, N = 95) = 4.61$, $p = .203$.

The mean score was 4.01 (SD=0.95), indicating that students generally agreed that TBL enhanced their understanding of course materials. A combined 72.6% found it "Excellent" or "Very Good" in this

regard. However, 7.4% of responses were in the "Acceptable" or "Weak" categories, suggesting that for a minority of students, the translation of TBL activities into deeper conceptual understanding could be improved. The chi-square test showed that the relationship between gender and responses was not significant, $\chi^2(4, N = 95) = 5.27$, $p = .261$.

This item had the lowest mean score of 4.12 (SD=0.95). While 75.8% of perceptions were positive ("Excellent" or "Very Good"), a notable 4.3% of students perceived the fairness of team evaluation as "Weak" or "Acceptable." This points to a critical area for intervention, as perceptions of unfairness can undermine team cohesion and individual accountability. The chi-square test indicated no significant association with gender, $\chi^2(4, N = 95) = 4.84$, $p = .304$.

QUALITATIVE FEEDBACK ANALYSIS

Thematic analysis of the open-ended responses corroborated and enriched the quantitative findings. Students frequently used keywords such as "participation," "colleagues," and "discussion," expressing strong appreciation for the collaborative learning environment. The primary constructive criticisms centered on the need for "clearer questions" (e.g., "Some questions were ambiguous and led to confusion"), echoing the quantitative result for Item 4. Students also expressed a desire for more proactive facilitation by instructors to guide complex discussions and requested structured post-session resources or summaries to consolidate learning.

DISCUSSION

This study provides a comprehensive analysis of the medical students' perspectives on TBL at Tikrit University. The results indicate a overwhelmingly positive attitude, which is in line with a large body of international literature that supports the use of TBL as a successful and engaging educational strategy in medical education [1, 6]. The pleased feedback from the instructor and the definition of the learning objective are both noteworthy. Effective facilitation is a foundation of TBL, instructors must transition from their traditional teaching roles to become facilitators of active learning processes. The consistent communication of the objectives observed in this study is crucial, this enables students to understand the context of their learning and direct their efforts towards the intended learning results. Additionally, the positive reception of discussion groups demonstrates the effectiveness of TBL in creating collaboratively-based learning environments, a paramount component of the methodology. Students seem to appreciate the structured opportunities to describe their thoughts, discuss different perspectives, and collaborate with others in the same clinical practice, this will both expand their understanding of concepts and improve their clinical reasoning. However, the investigation also revealed two critical areas that require additional attention: the perceived quality of the questions asked in the assessment and the fairness of the evaluation between peers. These obstacles are in line with the documented difficulties in TBL implementation in various contexts [3, 8, 9]. The controversy surrounding the question's quality is often extended past the simple ambiguity of the questions; it frequently involves the cognitive capacity of the assessments. Questions that focus on the factual details of the process instead of applying critical thinking can misdirect the learning process, this can lead to student

disappointment and undermining of the developmental goals of the Readiness Assurance Process [12, 15]. As a result, this suggests the necessity of focused faculty development in order to create complex multiple-choice questions that assess students' preparedness for difficult scenarios. Similarly, the perception of inequality in the evaluation of peers poses a significant threat to the TBL model. When the mechanism for peer assessment is considered to be unfair due to informal rules, anonymous constructive criticism, or a lack of culture of accountability, it can undermine trust, cause discomfort, and compromise the very principles of teamwork and mutual accountability, the method is intended to promote. Implementing a more systematic, transparent, and criterion-based evaluation system, along with explicit training for students on the professional purpose of the evaluation, is recommended to address this issue. A noteworthy discovery from the inferential analysis was the lack of any significant gender-based differences in regards to perception across all TBL domains. This implies that the TBL atmosphere at Tikrit University is considered to be beneficial and accessible by both men and women. The structured nature of TBL, which necessitates individual preparation and collective agreement within diverse teams, may lead to a more equal participation of participants than traditional lecture-based methods. This discovery is of great significance, as it suggests the potential for TBL to promote inclusive educational experiences in this specific context. Future Directions and Limitations Several caveats of this research must be admitted.Its crosssectional nature doesn't provide a single point of vista at a specific time, it instead cannot establish a link between things.

Despite the survey's anonymous nature, the data is still dependent on self-reported information, this information is susceptible to social desirability. Ultimately, and most importantly, this investigation assessed the students' perception of the TBL experience, rather than direct measures of learning, such as long-term knowledge retention or practical performance.

Although the limitations, the positive attitudes towards engagement and utility have a significant impact on learning. Future research should seek to connect these positive perceptual metrics with metrics of academic and clinical success that are longitudinal in nature. Additionally, experimental studies that explore the effect of increased faculty development on question quality and structured peer evaluation tools that assess the perceived fairness of questions would be beneficial to the field.

CONCLUSION AND RECOMMENDATIONS

In conclusion, Team-Based Learning is a positively received and robust instructional methodology within the medical curriculum at Tikrit University. Students value the collaborative environment, clear objectives, and strong faculty support it provides. To build upon this success and address the identified challenges, the following evidence-based recommendations are proposed:

1. Refine TBL Question Design: Implement a peer-review process for all TBL application exercises to ensure questions are unambiguous, clinically relevant, and pitched at an appropriate cognitive level.
2. Develop a Structured Peer Evaluation System: Introduce a

formal, criteria-based peer assessment tool that is transparent and implemented consistently across all TBL sessions to enhance the perception of fairness and individual accountability.

3. Continue and Expand Faculty Development: Sustain training programs for TBL facilitators, with a specific focus on crafting high-quality application exercises and managing group dynamics to ensure equitable participation.

Future research should correlate student perceptions with academic performance metrics and employ longitudinal or multi-institutional designs to further validate these findings and explore the long-term impact of TBL.

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TABLES

Table 1. Clarity of session objective

Response	Frequency	Percentage
Very clear	67	70.5%
Clear	20	21.1%
Somewhat clear	5	5.3%
Unclear	2	2.1%
Not clear at all	1	1.1%

Table 2. Motivation for collective participation

Response	Frequency	Percentage
Excellent	38	40.0%
Very good	36	37.9%
Good	15	15.8%
Acceptable	4	4.2%
Weak	2	2.1%

Table 3. Clarity of questions

Response	Frequency	Percentage
Excellent	42	44.2%
Very good	36	37.9%
Good	11	11.6%
Acceptable	4	4.2%
Weak	2	2.1%

Table 4. Support from TBL instructor

Response	Frequency	Percentage
excellent	81	85.3%
Very good	12	12.5%
Acceptable	1	1.1%
Weak	1	1.1%

Table 5. Enhancement of understanding of course material

Response	Frequency	Percentage
Excellent	35	36.8%
Very good	34	35.8%
Good	19	20%
Weak	6	6.3%
Acceptable	1	1.1%

Table 6. Perception of Fairness in Team Evaluation

Response	Frequency	Percentage
Excellent	41	43.2%
Very good	31	32.5%
Good	19	20.0%
Acceptable	3	3.2%
Weak	1	1.1%