

Teaching Toxicology with Toxic Riddles Using Team-Based Learning: A Prospective Study on Third Phase(1)Medical Students

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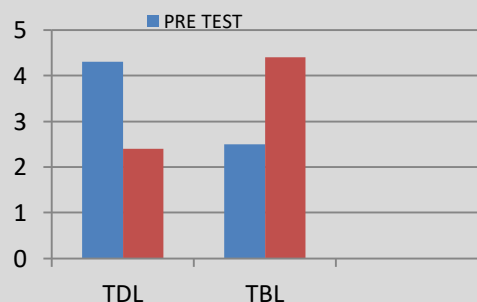
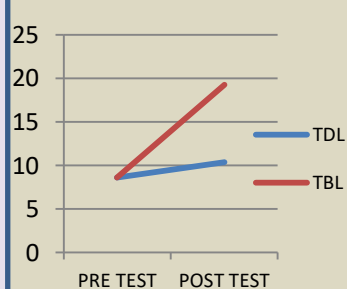
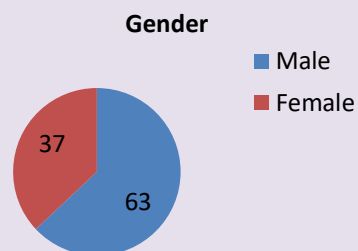
Clinical Toxicology is a specialized field of study that focuses on the diagnosis, management, and prevention of toxic exposures. The gap in the literature regarding the use of TBL in UG Clinical Toxicology education is limited. There is a lack of research that specifically examines TBL effectiveness in enhancing student learning outcomes, critical thinking skills, and knowledge retention in the field of Clinical Toxicology among UGs. Through this study we have tried to assess the impact of team-based learning involving interesting and engaging activity like Riddles and puzzles on Clinical Toxicology education

Aim & Objectives

- To compare (TDL) with (TBL) through Toxic riddles.
- To explore student perceptions and attitudes towards TBL in the context of Clinical Toxicology education.

Material & Methods-modified crossover study involving 144 third-year UGs, using TBL as the active intervention, compared against self-reading as a TDL control, for teaching the two topics.

Observation & Results



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Our study was done on One Hundred and forty four students with two cohorts each having n=72. Those students who were irregular in attending classes were declined participation. The mean age of our participants was 21.6 ± 0.1 years. Males comprised of 63% and 37% were females. GRAT scores were found to be significantly higher than IRAT scores with 70.3% correct answers in GRAT as compared to IRAT with only 52.4 % correct answers. The mean baseline Pre test scores of both cohorts were not statistically significant ($p=1.0$); No gender specific difference was noted ($p = 0.37$) but the scores were higher with high grades (A, B) in internal assessment in comparison to C/D grades (15.03 ± 0.25 vs 13.08 ± 0.44 , $p < 0.001$).

The increase in post test scores after TBL sessions was significantly higher than TDL sessions. Even the number of students scoring more than 90% was higher post TBL sessions. The mean percentage change in the TBL group test scores was significantly greater than in the TDL group (10.61% vs 4.23%, mean difference 6.38%, 95% CI 0.7--8.3%, $p = 0.021$). In the TBL group, test scores increased by the end of TBL. We found no significant interaction of gender on TBL score. However, the effect of internal assessment grades on improvement in test scores was significant from baseline to post-test 1 ($p = 0.007$). We dichotomized the students into 'strong' (A-B examination grades) versus 'weak' (C-D grades) students. In both strong and weak students, the TBL group showed a larger increase in the primary outcome compared to the TDL group. The effect size however was greater in the weak students for both post-tests ($p < 0.02$).

Conclusion

Team-Based Learning (TBL) enhances knowledge retention in undergraduate Clinical Toxicology education. Incorporating toxic riddles into toxicology education can be a valuable teaching strategy. It enhances student engagement and fosters collaborative learning. However, we would recommend further research to explore the long-term impact of this approach.

References

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