

Impact of Team Based Learning on Student Response to Medical Uncertainty

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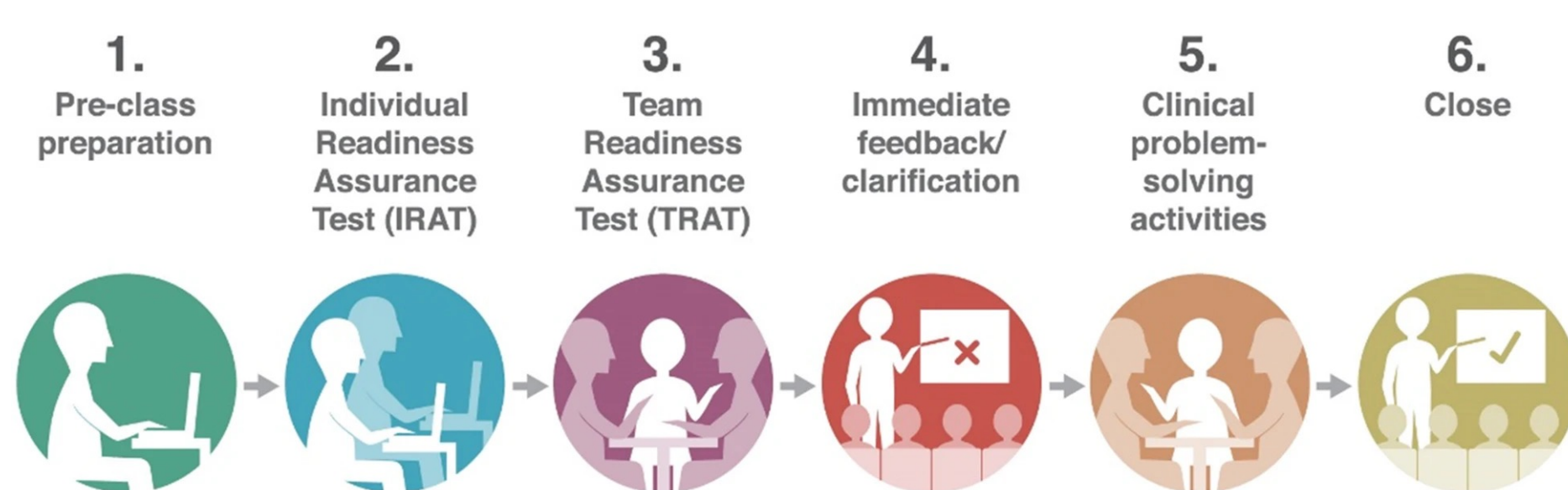
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Introduction

- Healthcare providers frequently face situations where they must make critical decisions despite the absence of well-defined answers.
- Although the importance of medical uncertainty is widely acknowledged, uncertainty in a medical context is dynamic¹ and medical school curricula often lack formal training to prepare students for managing such ambiguity.
- Team-Based Learning (TBL) clinical application exercises may offer a promising approach to teaching students how to recognize and respond to medical uncertainty. They use a standardized process (Fig. 1)².

Fig. 1. The TBL process. From Burgess et al, 2020



- TBL may have benefits to communication and team decision making skills that are increasingly important in the modern medical world³.
- TBL increases active engagement and qualitatively leads to teamwork and communication skill development.⁴
- This study assesses whether TBL application exercises (AEs) improve medical students' ability to navigate uncertainty and develop effective strategies for managing challenging clinical decisions.
- **Hypothesis:** TBL ungraded application exercises will help students identify uncertainty and develop strategies to address negative responses before being faced with real-life clinical scenarios.

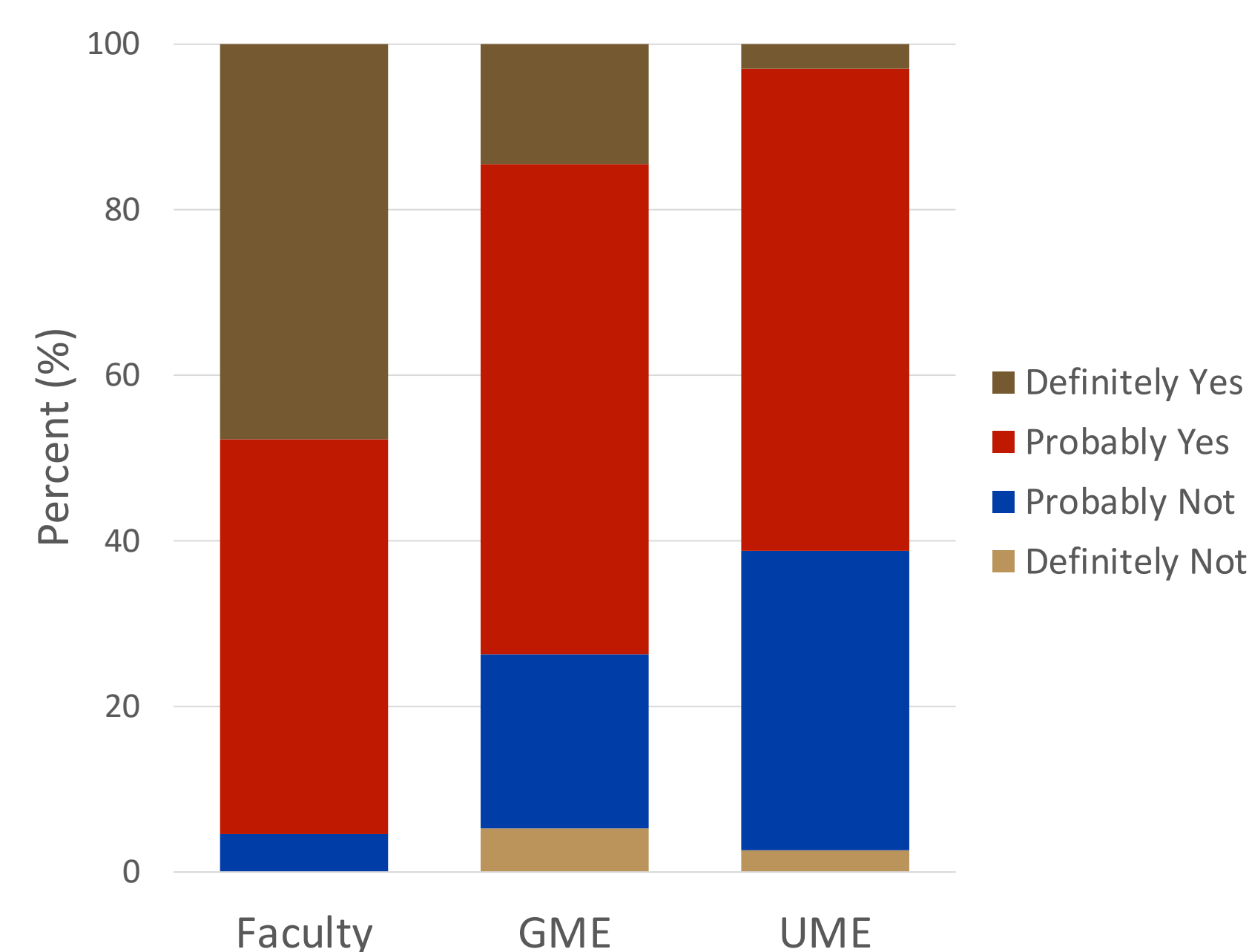
Aims and Objectives

1. Determine how medical students define medical uncertainty.
2. To determine if and how ungraded TBL application exercises (AEs) affect medical students' abilities to respond to uncertainty.

Methods

- Oakland University William Beaumont School of Medicine (OUWB) has used TBL as a core part of the pre-clerkship curriculum since its inception.
- A series of focus groups were organized. Each session comprised of medical students or OUWB alumni. Semi-structured interviews were used to gather their perspectives on medical uncertainty, including its relationship to TBL. Interviews were transcribed, and independent reviewers conducted thematic analysis on the responses
- A validated survey was distributed to current medical students and alumni at OUWB. The questions were designed to explore participants' perspectives on medical uncertainty and the effectiveness of TBL application exercises in helping students navigate uncertainty based on the focus group themes
- There were 92 total participants:
 - Alumni – Attending 22 (24%)
 - Alumni – Residents 19 (21%)
 - Alumni – Fellow 15 (16%)
 - Class of 2027 (M1) – 14 (15%)
 - Class of 2026 (M2) – 11 (12%)
 - Class of 2025 (M3) – 10 (11%)
 - Class of 2024 (M4) – 1 (1%)
- Analyses utilized a combination of descriptive and inferential statistical methods to comprehensively evaluate responses and identify patterns across participant groups.

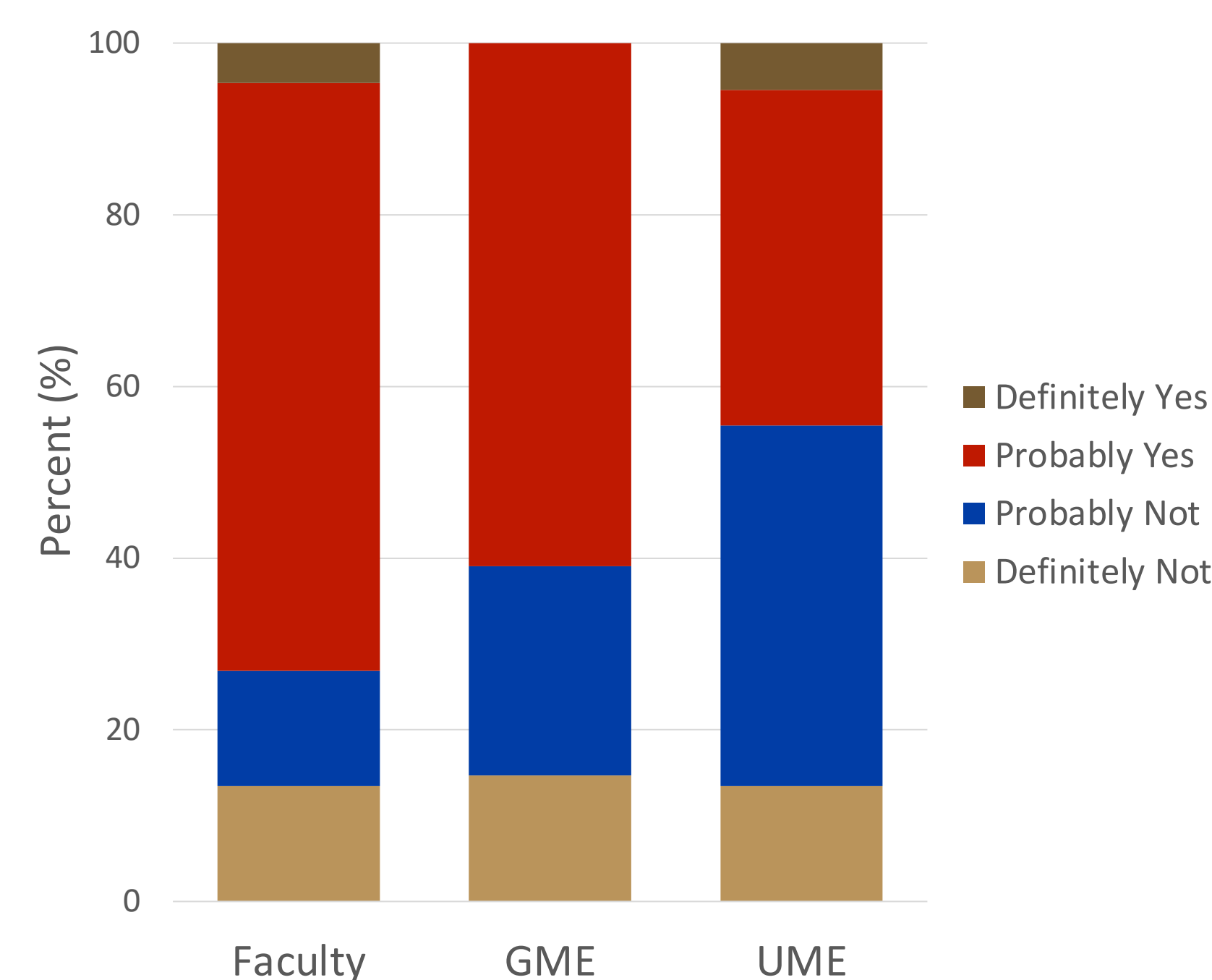
Fig. 2. Has your definition of medical uncertainty changed during medical school?



Results

- The initial focus groups featured 5 first-year students, 12 second-year students, 2 fourth-year students, and 4 alumni (residents and attendings).
- Themes uncovered include:
 - An evolving definition of medical uncertainty over time, influenced by the TBL process and increased exposure to content.
 - The significance of exposure to medical uncertainty, and whether this exposure occurred during clerkship or pre-clerkship stages.
 - Clinical cases were crucial for encountering medical uncertainty in TBL application exercises.
- A total of 92 participants were included in the overall study, comprising alumni at all levels and current medical students.
- All groups were similar in how they defined medical uncertainty, but attendings were significantly more likely than medical students to report a change in their understanding of medical uncertainty (Fig. 2; p < 0.0001).
- All participant groups reported that uncertainty was present at least sometimes in TBL application exercises. Most participants (45-70%) considered TBL clinical cases and complex exercises moderately to highly useful in developing an understanding of medical uncertainty (Fig. 3).

Fig. 3. Has your participation in the TBL AEs contributed to an increased sense of comfort when confronted with uncertainty in medicine?



- All the different characteristics of the application exercises were considered equally valuable for this purpose.

Conclusions

- The findings highlight the utility of TBL in fostering understanding and engagement with medical uncertainty, particularly when exercises incorporate a certain level of complexity.
- Initial experiences with TBL may be pivotal early exposures to medical uncertainty.
- Overall, the results suggest that TBL could be an effective approach for addressing medical uncertainty, with potential for further enhancement through explicit and structured discussions in educational exercises.
- Further research is needed to assess the impact of any changes to TBL processes and the reproducibility of these results across institutions.

References

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