

“Pharmacology Jeopardy” as a Medical Education Tool: Evaluation of Gamification Theory

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Background

Historically, pharmacology has been a challenging component of preclinical medical education for two primary reasons. First, the information is discrete, detailed, and high-volume. Second, information is often tied to clinical cases before students are exposed to or familiar with patient care. The use of jeopardy as a tool in medical education is a growing trend in curricula across the country, with demonstrated benefits for student retention and satisfaction. To evaluate these outcomes, we developed an online jeopardy-based supplement to the second-year cardiology pharmacology curriculum at the Warren Alpert Medical School.

Methods

Our goals were to: 1) create an online virtual medical jeopardy game to serve as a supplement within the traditional cardiology curriculum that applied classroom pharmacology concepts to clinical scenarios, and 2) to evaluate satisfaction and retention of the cardiology pharmacology material in a post-examination survey. The game was designed and reviewed by a team of 3 physicians and 2 third-year medical students using material from the curriculum, reference textbooks, and USMLE review resources. Eighty pharmacology questions were organized into five broad disease categories that focused on the clinical application of pharmacology knowledge, and were divided into three game-boards. The game was delivered through an online platform allowing students to play as individual users or in small, self-appointed teams according to their preferences. After receiving three weeks of access to the game in preparation for a block examination, users were asked to fill out a post-game survey evaluating the game.

Results

A total of 58 second-year students played the virtual medical jeopardy game and completed the evaluation. 72% of 58 second-year medical students who utilized the game to prepare for a block examination found it more useful as a study aide than common learning tools, such as tables or flashcards. Moreover, 64% found it moderately to highly helpful in understanding how drugs are used in a clinical setting. In written evaluations, 75% of students who utilized the game in addition to their normal study routine reported an increased sense of satisfaction when compared with those solely using traditional study materials such as tables, lists or flashcards. These preliminary results suggest that the use of a virtual jeopardy platform is able to improve the experience of studying pharmacology for preclinical medical students. While the data also indicate self-reported improvements in clinical understanding, fully defining this measure by comparing block examination scores or other test results among users and nonusers of the medical pharmacology jeopardy game requires further study. Our pilot study was limited by variation in individual memorization abilities and study habits, as well as a small sample size.

Conclusion

While the use of medical jeopardy in residency programs has been well-studied, there have been relatively few studies aimed at evaluating the use of jeopardy in medical school. Our results suggest that there may be a definite role for a virtual pharmacology game in improving the process of learning pharmacology, a subject that has proven challenging to teach through a traditional didactic approach. While our study showed improved student satisfaction with the online jeopardy tool, defining whether or not the game improves clinical understanding of pharmacology topics will require further study. Future directions include expanding the game to other areas of the curriculum, as well as evaluating the game in larger cohorts of students over multiple semesters. Overall, our pilot study was able to demonstrate how popular memory games such as jeopardy, particularly in a self-directed online format, can be utilized effectively to improve instruction in a particularly difficult avenue of preclinical medical education.

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