

SHORT REPORT

Student physical therapists' confidence in appraising and applying research after participating in a weekly journal club

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Abstract

Introduction: The objective of this study was to assess changes in student physical therapists' confidence in their ability to critically appraise research and use research findings to inform their practice after completing a weekly journal club.

Methods: Thirty-four students in a doctoral-level physical therapist education program completed a questionnaire before and after participating in a weekly journal club. The questionnaire asked students to rate their confidence in critically appraising research and using research to inform their practice.

Results: Over the semester, there was significant improvement in students' confidence in their ability to critically appraise research related to physical therapy practice and their confidence in using research to inform their practice.

Conclusions: In general, it appears that a course-based weekly journal club can be effective for improving student physical therapists' confidence in their ability to perform some of the key functions required for evidence-based practice.

Keywords: allied health; education; evidence-based practice; physiotherapy

Introduction

Healthcare professionals, including physical therapists, are encouraged to adopt an evidence-based practice approach, where they consider available evidence when making clinical decisions while also integrating their experiences and patient preferences (Sackett et al., 1996). To effectively adopt this approach, physical therapists must be able to critically appraise research. While most physical therapists acknowledge the importance of applying evidence in practice, many feel they lack the knowledge and skills needed to effectively appraise evidence (Paci et al., 2021), making it difficult for them to fully adopt the evidence-based practice model.

Physical therapist education programs are generally required to include content and learning experiences related to evidence-based practice. While having standards in place

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helps to ensure that students are taught core concepts related to research methodology, statistics, etc., there is still a need to identify ways to effectively train future physical therapists to critically appraise research and appropriately apply evidence in their practice.

“Journal clubs” are a popular educational activity in healthcare education (Ilic et al., 2020; Lizarondo et al., 2012; Xia et al., 2023). Journal clubs generally involve a group of individuals meeting regularly to critically appraise and discuss research articles. Proponents point out that journal clubs help students and clinicians become more comfortable with critically appraising research and considering how to apply research in clinical practice (Xia et al., 2023). However, there are few studies examining the effectiveness of journal clubs for improving students’ abilities to critically appraise research and apply evidence, or even their confidence in performing these functions (Ilic et al., 2020). In addition, most studies on the topic of journal clubs have involved medical students and/or residents. Efforts to study the effects of journal club participation should expand beyond medical education to other areas, such as physical therapist education (Lizarondo et al., 2012; Xia et al., 2023). Therefore, the primary objective of this study was to assess changes in student physical therapists’ confidence in their ability to critically appraise research and use research findings to inform their clinical practice after completing a weekly journal club.

Methods

Participants

Data from 34 students who completed an evidence-based practice course (January–May 2023) were analysed for this study. The students were in their second year of the 3-year Doctor of Physical Therapy Program at Trine University (Fort Wayne, Indiana, USA). As part of the program, students spend five-and-a-half semesters completing didactic coursework followed by two-and-a-half semesters of full-time clinical experiences. The curriculum includes a three-course evidence-based practice series: Evidence-Based Practice I introduces basic research concepts; Evidence-Based Practice II focuses on statistical analysis; and Evidence-Based Practice III focuses on critically appraising evidence. The journal club activity was part of the Evidence-Based Practice III course, which students take in their fifth semester, prior to full-time clinical experiences. This project was reviewed by the Trine University Institutional Review Board, which determined that it qualified for exempt status (approval code: 2062079-1).

Journal club

For the journal club, students presented articles in pairs, with one or two pairs presenting each week. Presentations were limited to 12–15 minutes. Students were able to choose the article they presented, however it needed to have been published in the past 3 years in a PubMed-indexed journal. Students selected articles from the following journals: *American Journal of Sports Medicine*, *Brain Sciences*, *British Journal of Sports Medicine*,

Journal of Aging Research, Journal of Geriatric Physical Therapy, Journal of Manual & Manipulative Therapy, Journal of Neurologic Physical Therapy, Journal of Orthopaedic & Sports Physical Therapy, Journal of Strength and Conditioning Research, Musculoskeletal Science and Practice, Pediatric Physical Therapy. Presentations needed to include background information, an overview of the methods, key findings, study limitations and recommendations for clinical practice. A 5-minute discussion period followed each presentation. The journal club activity was conducted virtually via Zoom (San Jose, CA, USA). On weeks they were not presenting, prior to the session, students were required to read the articles and submit article review forms. Requiring students to read the articles ahead of time was done to promote better discussion (Gottlieb et al., 2018). For the article review forms, students extracted the following information: study purpose, hypotheses, study design, subject characteristics, research approach, dependent variables, statistical analysis and key findings. They were also required to generate a take-home message and describe possible clinical implications.

Questionnaire

One week before the first session, a questionnaire was shared with students (pre-assessment). The questionnaire included two questions: (1) What is your level of confidence in your ability to critically appraise research related to physical therapy practice? and (2) What is your level of confidence in your ability to use research to inform your practice as a physical therapist? Students rated their level of confidence on a 5-point Likert scale: 1 = *not confident at all*, 2 = *slightly confident*, 3 = *somewhat confident*, 4 = *fairly confident* and 5 = *completely confident*.

Another questionnaire was shared immediately after the last journal club session (post assessment). The questionnaire included the same two questions as the pre-assessment (Questions 1 and 2). It also included two additional questions (Questions 3 and 4) asking students about the impact of the journal club: (1) To what extent do you think the journal club component of this course helped to improve your ability to critically appraise research related to physical therapy practice? and (2) To what extent do you think the journal club component of this course helped to improve your ability to use research to inform your practice as a physical therapist? For these questions, students rated the impact of the journal club on a 5-point Likert scale: 1 = *not at all*, 2 = *very little*, 3 = *somewhat*, 4 = *quite a bit* and 5 = *a great deal*. Students had 1 week from the last session to complete the post assessment.

Questionnaire responses were recorded using Moodle (Perth, AUS). Students did not receive a grade for completing the pre and post assessments, as these assessments were intended for instructor feedback regarding the journal club activity. Student responses were not anonymous, since student identities were needed in order to align students' pre and post assessments, however it was explained to students that their responses would not impact their grade in any way.

Data analysis

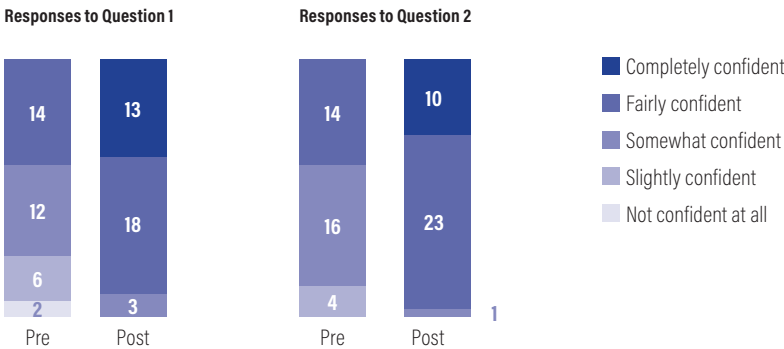
For Questions 1 and 2, Likert-scale responses were transformed to numerical values for analysis (1 = *not confident at all*, 2 = *slightly confident*, 3 = *somewhat confident*, 4 = *fairly confident* and 5 = *completely confident*), and Wilcoxon signed-rank tests were performed to compare pre- and post-assessment responses ($\alpha = 0.05$). Response frequencies and median responses were generated (Sullivan et al., 2013). SPSS was used for analysis (IBM Corp., Armonk, NY, USA).

Results

There was significant improvement in students’ confidence in their ability to critically appraise research related to physical therapy practice ($z = -4.59, p < 0.001$) (Figure 1), with the median response to Question 1 (What is your level of confidence in your ability to critically appraise research related to physical therapy practice?) increasing from 3 (*somewhat confident*) to 4 (*fairly confident*). There was also significant improvement in students’ confidence in their ability to use research to inform their practice as a physical therapist ($z = -4.69, p < 0.001$) (Figure 1), with the median response to Question 2 (What is your level of confidence in your ability to use research to inform your practice as a physical therapist?) increasing from 3 (*somewhat confident*) to 4 (*fairly confident*).

Figure 1

Students Responses to Questions 1 and 2



Note: Stacked column charts showing student responses to Question 1 (What is your level of confidence in your ability to critically appraise research related to physical therapy practice?) and Question 2 (What is your level of confidence in your ability to use research to inform your practice as a physical therapist?) before (pre) and after (post) participating in the journal club. The numbers in each section represent the number of student responses for the various Likert-scale categories.

Regarding the extent to which the students believed the journal club helped to improve their ability to critically appraise research related to physical therapy practice (Question 3), nine students (26%) responded “somewhat”, 17 students (50%) responded “quite a bit” and eight students (24%) responded “a great deal”, while no students responded “very little” or “not at all”.

Regarding the extent to which the students believed the journal club helped to improve their ability to use research to inform their practice as physical therapists (Question 4), nine students (26%) responded “somewhat”, 19 students (56%) responded “quite a bit” and six students (18%) responded “a great deal”, while no students responded “very little” or “not at all”.

Discussion

The primary objective of this study was to assess changes in student physical therapists' confidence in their ability to critically appraise research and use research findings to inform their clinical practice after completing a weekly journal club. Overall, students reported improved confidence in their ability to critically appraise research (Question 1) and use research to inform their practice (Question 2). All students reported that the journal club was at least somewhat helpful for improving their ability to critically appraise research and use research to inform their practice, with most students reporting that it helped “quite a bit” in these regards. It appears that a course-based weekly journal club can be effective for improving student physical therapists' confidence in their ability to perform some of the key functions required for evidence-based practice.

Most studies examining the impact of journal clubs have focused on medical education (Ilic et al., 2020). However, Xia et al. (2023) recently examined the impact of a journal club on student physical therapists' confidence in appraising the validity and clinical applicability of evidence. The students who participated in their study took part in an extracurricular monthly journal club over the course of two semesters. The investigators noted improvements in students' confidence in performing various aspects of evidence appraisal (e.g., developing clinical questions, evaluating internal/external validity, interpreting statistical analyses) over the course of the study. A student focus group that was part of the study by Xia et al. (2023) also described multiple benefits associated with journal club participation, including a feeling of being more confident/efficient consumers of research. However, the students in the focus group also noted that the extracurricular nature of the journal club was a barrier and recommended integrating the journal club into courses within the program. Unlike Xia et al. (2023), the journal club reported on in this study was integrated into a required course within the curriculum. This worked well, as it allowed the formal assessment of student presentations, article review forms and other assigned activities. Incorporating the journal club into a required course also ensured that the time devoted to the journal club activities was accounted for in the students' academic workload, which is more challenging when activities are not associated with a course. Regardless, both the current study and that of Xia et al. (2023) suggest that journal clubs can be an effective educational activity for teaching key evidence-based practice concepts to student physical therapists.

Neither Xia et al. (2023) nor this study examined students' knowledge or behaviours. However, an earlier study by Lizarondo et al. (2012) examined the effects of a monthly

journal club among practising physical therapists and found that knowledge of key evidence-based practice concepts improved over the 6-month study period. The physical therapists in their study also reported greater integration of evidence-based practice concepts into their daily practice after participating in the journal club. In general, it appears that journal clubs can be an effective educational activity for both student physical therapists and practising physical therapists.

Another unique aspect of this study was the virtual journal club format, with participation via video conferencing. A key benefit of this type of virtual journal club is that it allows participants to interact and learn from each other even if they are not in the same geographic location, such as when students are on clinical rotations. Others in health professional education have adopted this type of virtual journal club with similar success (e.g., Musits & Mannix, 2020).

While these findings are relevant to physical therapist educators, it is important to highlight key limitations. First, a pretest–posttest design makes it difficult to determine whether changes in students' confidence were the result of the journal club activity or other experiences they had during the semester. In addition, only students' confidence was assessed. Future studies should attempt to determine whether journal club activities improve students' knowledge and behaviour. Another limitation is that questionnaires were not anonymous, which could have impacted student responses. It is also worth noting that future studies should continue to explore different formats, such as debate-style journal clubs (Johnson et al., 2023) or flipped journal clubs (Bounds et al., 2018).

Conclusion

In general, it appears that a weekly journal club can be effective for improving student physical therapists' confidence in their ability to perform some of the key functions required for evidence-based practice.

Conflicts of interest and funding

The author reports no conflicts of interest. This project was not funded.

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