



Research

## Evaluation of student-led journal clubs

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### Abstract

**Objective:** To evaluate the effect of voluntary student-led journal clubs on students' perceived confidence in ability to evaluate primary literature.

**Methods:** Third-year pharmacy students were invited to voluntarily present a journal article of their choosing. At each session, student presenters and attendees were given pre- and post-session questionnaires to assess confidence in evaluating primary literature. Presenters were also asked additional questions regarding self-confidence in presentation, teaching, and public speaking proficiency. Survey questions were scored using a five-point Likert scale.

**Results:** Four journal clubs were held by four student pairs during the 2013–2014 academic year ( $n = 8$ ). Attendees ( $n = 67$ ) reported a significant improvement in confidence to evaluate primary literature statistical methods ( $3.37 \pm 0.83$  vs.  $3.60 \pm 0.76$ ,  $p = 0.0018$ ), primary literature study designs ( $3.34 \pm 0.88$  vs.  $3.61 \pm 0.78$ ,  $p < 0.0001$ ), and level of understanding of the journal club topic ( $3.36 \pm 1.05$  vs.  $4.10 \pm 0.61$ ,  $p < 0.0001$ ). Presenters reported an increase in all measured parameters.

**Conclusion:** Student-led, extracurricular journal clubs provide an excellent opportunity for students to increase their confidence in evaluating medical literature.

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**Keywords:** Student-led; Journal clubs; Confidence; Evaluation

### Introduction

To provide high-quality patient care, health care professionals must critically evaluate the primary literature and use evidence-based medicine (EBM) to guide treatment decisions. EBM has been defined as, “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients.”<sup>1</sup> Both the 2016 Accreditation Council for Pharmacy Education (ACPE) Accreditation Standards and the 2013 American Association of Colleges of Pharmacy (AACCP) Center

for the Advancement of Pharmacy Education (CAPE) Guidelines require that student pharmacists become proficient in analyzing primary literature and making evidence-based recommendations.<sup>2,3</sup> A survey conducted in 2005 reported that 89% of U.S. professional pharmacy degree programs have instituted at least one didactic drug information course in the curriculum.<sup>4</sup> Some schools (20%) require an advanced pharmacy practice experience (APPE) in drug information, of which 90% require students to participate in a journal club session.<sup>4</sup> It is worthy to note that many students may participate in journal club sessions as part of an APPE outside of a drug information rotation.

Journal clubs have been used as an educational tool for many years to assist in advancing literature evaluation skills. The first organized journal club is believed to have taken place in the late 19th century at McGill University, where Sir William Osler regularly held meetings with the

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purpose of disseminating the available medical literature.<sup>5</sup> These sessions have since been molded into opportunities to discuss study design, implications of study findings, and applicability to patient care. Although there is no gold standard format for conducting journal club sessions, the goals of these meetings are to remain current on available literature, to discuss the clinical impact of the results, and to review literature evaluation techniques with students.<sup>5</sup> These objectives have remained consistent throughout time and across a variety of disciplines.<sup>5</sup>

Journal club sessions held among medical residents increase comprehension of key concepts employed in evaluating primary literature.<sup>6</sup> Clements and Trompeter<sup>7</sup> implemented structured journal club sessions for first-year pharmacy residents.<sup>7</sup> The program required incorporation of a disease state review, an “In the News” discussion, and an evaluation of literature in the first session followed by a patient case discussion in a subsequent session. The sessions were well received by residents; however, no data was provided on the satisfaction of residents participating in the previous journal club format prior to this initiative.

In a study conducted by Arif et al.,<sup>8</sup> journal clubs assigned during fourth-year APPEs increased students’ perceived ability to understand study design, evaluate the strengths and weaknesses of a study, and determine relevance to patient care. Of note, 38% of participants in this study reported feeling unprepared for journal club sessions during fourth-year APPEs.<sup>8</sup> Further exposure to journal clubs in didactic courses may provide increased level of comfort with this material, but limited availability of credit hours often precludes this practice.

The benefit of a third-year elective evidence-based medicine course on pharmacy student performance during APPEs was evaluated by Bookstaver et al.<sup>9</sup> The elective course focused on critically evaluating the medical literature and applying this information to patient care. Surveys were administered to preceptors of APPE students previously enrolled in the elective course. Results indicated that the majority of preceptors (86.9%) agreed that students who completed the elective course had stronger skills in the application of evidence-based medicine to patient care than other students.

The impact of extracurricular student-led journal club sessions on third-year pharmacy student presenters was evaluated by Wallace et al.<sup>10</sup> The journal club sessions were facilitated by a third-year pharmacy student, with assistance from a pharmacy resident or faculty member. Both a pre- and post-survey were administered. Attendees reported improved self-confidence in six of ten competencies, including an improved understanding of journal club preparation, what constitutes primary literature, ability to evaluate statistical analysis results, article strengths, and limitations and clinical significance of a study and application to patient care. Comparative statistics were not performed due to the small sample size in the study ( $n = 12$ ), and the effect on student presenters was not measured.

The Rho-Chi Society chapter at Virginia Commonwealth University (VCU) has implemented voluntary, extracurricular student-led journal clubs that give students more practice in developing primary literature evaluation skills. There is a paucity of data evaluating the efficacy of journal clubs held outside of the curriculum and of data evaluating the effects on the student who led the journal club session. The objective of this study was to evaluate the effect of voluntary student-led journal clubs on students’ perceived confidence in ability to evaluate primary literature.

## Methods

### *Journal club design*

The student-led journal clubs program at VCU was conceived, designed, and implemented by student leaders, with oversight by a faculty member who serves as co-advisor of the Rho-Chi chapter. All third-year pharmacy students were invited to volunteer individually or with a partner to formally present a journal article of their choosing to the student body. Student presenters were not required to be a Rho-Chi Society member. Depending on the article topic, students were instructed to contact a faculty mentor with expertise in the topic. The faculty mentor was encouraged to attend the journal club session of his/her mentee(s).

The voluntary journal club sessions were held during the lunch hour so that any student could attend if on campus, although the sessions were primarily aimed at first through third year students. Only one journal club was scheduled during the hour. Before the journal club sessions, the students, faculty, and Deans were emailed the article and three knowledge-based multiple-choice questions about the article. These questions were intended to highlight important aspects of the article and facilitate discussion at each of the sessions. Attendees were encouraged to read the article and answer the questions before attending the session. Each journal club session was conducted with the use of PowerPoint slides and a standardized journal club summary handout. During the formal presentation, students described background knowledge needed to understand the study, summarized the introduction, methods (including details about statistical tests and study design), results and conclusions, and discussed the clinical implications of the article. Although not required, student presenters could incorporate active-learning techniques and computer-based audience interaction systems. Hard copies of the journal club summary handout, but not PowerPoint slides, were provided for attendees.

### *Assessment methods*

At each journal club session, student attendees were given pre- and post-session article surveys (Fig.). The pre-

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