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Abstract

Purpose: Journal clubs are frequently used by healthcare educators to support learner's critical thinking and clinical application. However, there is a lack of evidence to support the effectiveness of this learning tool for both the learner utilizing this tool and those in attendance. Debates have been proven to support critical thinking and communication skills.

Method: A journal club debate format and rubric were created to promote an engaging format for effective interpretation and application of drug information among fourth year pharmacy students and residents. Sections from relevant articles identified in a literature search were used to create a journal club debate format and rubric. This updated tool was used with pairs of pharmacy students and pharmacy residents. Feedback was obtained from the learners and the pharmacy preceptors in attendance.

Results: A journal club debate is generally well accepted by both learners and preceptors. Benefits include promotion of critical thinking, interpretation of evidence in the scope of supporting literature, and deeper understanding of the relevant disease state and treatment. Opportunities to improve may be the inclusion of limited visual aids for supporting evidence and the expansion of time for discussion and rebuttals.

Conclusion: Journal club debates are an engaging learning tool to promote and develop drug information identification, evaluation, and application to clinical practice among pharmacy students and residents.

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Keywords: Critical thinking; Debate; Journal club; Pharmacy precepting; Scaffolded learning

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1. Purpose

1.1. Overview

Journal clubs are utilized in health education and clinical practice as a way to stay updated on relevant literature and support translation of evidence into patient care.¹ Although there is no “standard” journal club format, common properties have been identified in previous research. The supervisor, or preceptor, generally chooses the paper for the presenter, or learner. The majority of papers are chosen based on clinical focus, but others may be chosen for their methodological or research designs. The presentation of the chosen paper by the learner is provided at a time that allows appropriate attendance, usually lunch or evening. Despite these similarities, it is still unclear as to what the most effective journal club format would be for educational benefit.

Pharmacy literature suggests that incorporation of journal clubs in Advanced Pharmacy Practice Experience (APPE) rotations provides understanding of research design, statistics, and understanding of clinical relevance of studies.^{2,3} However, even though evidence suggests that journal clubs are used to promote literature evaluation, their effectiveness in promoting evidence-based decision making requires further investigation. Effective teaching methods for critical thinking with literature reviews is also lacking. Wenke et al. also noted that there is a lack of evidence to show benefit for those who attend these journal club sessions, regardless of the implementation of standardized evaluation tools.⁴ Recent publications have suggested that interactive formats, such as journal club competitions and “flipped journal clubs”, can increase attendance and participation at journal club events.^{5,6}

Pharmacy faculty preceptors decided to utilize a debate format to promote a higher level of learning and critical thinking for both student and resident learners. Debates have been used across various health fields to enhance communication, promote teamwork, develop knowledge of a subject, and develop critical thinking skills.⁷ Literature evaluations of similar tools by medicine and pharmacy were reviewed and adapted to create a unique format and evaluation tool.

1.2. Journal debate format and rubric

A journal club debate format and rubric were developed by Internal Medicine pharmacy faculty

preceptors as a tool for promoting critical thinking and communication of evidence-based medicine. Both the format of the debate and the accompanying assessment rubric were adapted based on previous models identified in health education literature (Figs. 1 and 2).^{8,9} The format provided the order of presentation sections and accompanying time allotment, with time limited to between 16 and 26 min. Each subsection (Opening Argument, Rebuttal, and Closing Argument) provided clear expectations for information to be provided during the debate. The learners were provided with the format and rubric in advance to provide clear expectations.

In this debate format, learners were assigned to either the “pro” or “con” side of the results for a provided journal article. For example, when provided the article, “Rivaroxaban for Thromboprophylaxis after Hospitalization for Medical Illness”, the learners were assigned to either “in favor of extended prophylaxis” or “against extended prophylaxis”.¹⁰ They were instructed to use evidence from relevant clinical literature, in addition to the provided article, to best argue their perspective and anticipate rebuttal points from the opposing side. Faculty preceptors kept time and guided the format during the live debate.

The accompanying assessment rubric was separated into 5 sections: Knowledge of the Subject, Organization of the Presentation, Use of Supporting Literature, Persuasiveness of the Argument, and Presentation Style. The faculty preceptors purposely weighted the section on “Use of Supporting Literature” more than the other sections in order to emphasize the importance of key literature identification, analysis, and application.

This learning tool has been executed with teams of up to 2 learners per a side (4 total learners). It has also been used to scaffold learning by including opposing teams of Post Graduate Year 1 (PGY-1) Pharmacy Residents and fourth year Advanced Pharmacy Practice Experience (APPE) students. For pharmacy students, the 2013 CAPE Outcomes are met through this learning session through the following areas: Domain 3, 3.1 Problem Solving (most notably 3.1.3), 3.2 Educator (3.2.2) and 3.6 Communication.¹¹ Pharmacy residents are also meeting required learning experience with this tool’s applicability to the American Society of Health-System Pharmacists (ASHP) Accreditation Standard for PGY-1 Residency Programs in Standard 3.2. b which requires competency in patient care, advancing practice and improving patient care, and teaching, education, and dissemination of knowledge.¹² Both the learners and pharmacist preceptors in

attendance for these debates have provided feedback on their perceptions on the implementation of this educational tool.

2. Perception and feedback

2.1. Educational benefit of a journal club debate vs. standard debate formatting

2.1.1. Student

Traditional journal club presentations help students become familiar with navigating primary literature and understanding the basics of biostatistics, study terminology, study design and methodology, and result interpretation. The journal club debate model expands upon the basics, requiring a higher level of critical thinking and application of evidence, which takes a student's skills from a vague familiarity to a more comprehensive and useful application. This is a necessary skill for medical professionals of all types if we are to practice evidence-based medicine. Being able to interpret and utilize the most current knowledge will help to deliver the best care to patients, irrespective to dates of guideline available.

2.1.2. Resident

The typical reaction to journal club presentations is one of resignation with acceptance as a requirement. In contrast, this format was perceived positively as an opportunity to focus greater attention on the external validity and application, with the required incorporation of additional research and articles as supporting evidence.

2.1.3. Preceptor

This debate style format has the clear advantage of providing an informative and engaging environment in which seminal and controversial topics can be discussed. It was evident that the students and residents involved were more excited in their participation as compared to the standard journal club. The debate format appears to incentivize retention of knowledge given the breadth of knowledge displayed by the groups of residents and students witnessed. However, an objective assessment in a follow up study would be needed to support this observation. Ultimately, learning these critical appraisal skills will allow participants to feel confident in their practice decisions.

2.2. Strengths of the journal club debate format

2.2.1. Student

Clinical decision-making is enhanced by the thoughtful review and critical analysis required in journal club debates. This style of learning exercises foundational knowledge and incites analysis of the clinical applicability of literature. It also instills upon the student the necessity of review and interpretation of most recent evidence available.

2.2.2. Resident

The debate required greater understanding of not only the article, but the general application and background of the topic to be prepared for presentation and rebuttal.

This format utilized greater analytical skills, requiring detailed assessment of strengths, limitations, and application with the assigned article and additional pertinent articles.

2.2.3. Preceptor

Preparation for the debate not only requires participants to be familiar with the literature supporting their arguments, but also the literature of the opposing position. This is a key skill to learn when communicating with providers with practice patterns that may be outdated. In the traditional journal club format, students lead the conversation often reading straight from their notes. Conversely, the format and time constraints of the debate format provided little time for presenters to fumble through notes, which enhanced presentation skills.

2.3. Opportunities for improvement with the journal club debates for future

2.3.1. Student

Although the format of the debate is standardized, it can be confusing for first application. A simplified version with only a single rebuttal from both sides could be used to introduce the style, and then additional rebuttals could be gradually added in future debates. It would also be valuable to incorporate mock P&T or guideline recommendations as part of the debate to provide additional learning experiences for students. Finally, further application of this tool could be applied to an impromptu patient case with a requested treatment recommendation.

2.3.2. Resident

There is opportunity to expand the time allotted for certain areas. For example, when preparing for the debate there was much more information to provide on

the background than time allowed. In addition, learning could be further facilitated with a slight extension (1–2 min) in the rebuttal sections. Finally, it is important to ensure that both sides of the debate have

Debate Format

1. Pro opening argument (3–5 min)
2. Con opening argument (3–5 min)
3. Rebuttal #1
 - a. Pro rebuttal to con argument (2–3 min)
 - b. Con response to pro rebuttal (2-3 min)
4. Rebuttal #2
 - a. Con rebuttal to pro argument (2–3 min)
 - b. Pro response to con rebuttal (2-3 min)
5. Pro closing argument (1–2 min)
6. Con closing argument (1–2 min)

Topic (time)	Expectations
Opening Argument (3-5 min)	
Introduction	<ul style="list-style-type: none"> • State your name and position • Define any key terms • Present your thesis statement <ul style="list-style-type: none"> • <i>(i.e. Diabetes is a leading cause of morbidity and mortality in the United States and this therapy may increase adherence and patient outcomes, while simultaneously decreasing healthcare costs.)</i>
	<p style="text-align: center;"><i>and patient outcomes, while simultaneously decreasing healthcare costs.)</i></p>

Fig. 1. Journal club debate format.

Body	<ul style="list-style-type: none"> • Describe the issue and relevance of position arguing • Support your argument with evidence provided in assigned journal article and supported by other primary literature (at least 3 reasons favoring your position) <ul style="list-style-type: none"> • Identify the need for change/problem at hand • Discuss harm or disadvantage of alternative position • Explain statistical results
Conclusion	<ul style="list-style-type: none"> • Summarize your position
Rebuttal (2-3 min)	<ul style="list-style-type: none"> • Refute opponent’s position; point out limitations in reasoning or evidence • Rebuild your case, offer new evidence to support your case • Respond to all arguments from your opponent’s opening statements in an objective manner
Closing Argument (1-2 min)	<ul style="list-style-type: none"> • Emphasize any weak arguments provided by opponent • Respond to objections your opponent made to your argument • Remind audience of your position and how it is clinically relevant and/or superior • Close with a strong appeal to adopt your position in practice

Fig. 1. (continued).

a clear understanding of the Pro vs. Con arguments and expected preparation for the activity so that the learners and attendees can appreciate the value of this experience.

2.3.3. Preceptor

The information for debaters and attendees was primarily auditory with little visual stimulation. Since the activity is typically held in a room with computer and projector availability, it would be helpful to display

relevant figures and tables from the literature presented to help illustrate evidence for supporting arguments. These visuals could be vetted by preceptors to ensure they are limited, relevant, and effective so as not to defeat the point of making an effective oral argument. Additionally, the debate style may reinforce bad habits when it comes to appraisal of statistical outcomes. There are various examples of controversial topics in pharmacy where one side of the argument (often made by the article writers) is based on secondary outcomes,

PRO	Name:		Name:		CON
Assessment	Points	Comments	Comments	Points	Assessment
Knowledge of subject	____/15 5 pts- limited 10 pts- appropriate 15 pts- exceeds expectations			____/15 5 pts- limited 10 pts- appropriate 15 pts- exceeds expectations	Knowledge of subject
Organization	____/15 5 pts- difficult to follow arguments, lack of preparation			____/15 5 pts- difficult to follow arguments, lack of preparation	Organization

Fig. 2. Journal club debate assessment rubric.

non-controlled studies and/or non-statistically significant results. Teams assigned to sides in an argument featuring a potentially incorrect analysis of the literature may come out of the activity not retaining the

critical appraisal skills that the other team acquired. Another improvement noted is that learners tend to spend too much time summarizing the background and methods of the study, which in turn limits their time to

	10 pts- arguments and reasoning flow appropriately			10 pts- arguments and reasoning flow appropriately	
	15 pts- exceptionally clear introduction of information and supporting evidence			15 pts- exceptionally clear introduction of information and supporting evidence	
Use of supporting literature	____/40 20 pts- utilizes article provided, limited data interpretation 30 pts- utilizes article provided with appropriate			____/40 20 pts- utilizes article provided, limited data interpretation 30 pts- utilizes article provided with appropriate	Use of supporting literature

Fig. 2. (continued).

provide their argument points. It may be beneficial to have this objective information as a separate section at the beginning of the debate prior to the opening arguments. Finally, an inherent limitation of this type of

presentation is that it is only conducive to controversial articles, where opposing sides can be discussed. There are still many important studies that impact practice, which are important to review but lack controversy.

	<p>interpretation of data</p> <p>45 pts- utilizes article provided with appropriate interpretation of data plus additional supporting primary literature relevant to topic and argument</p>			<p>interpretation of data</p> <p>45 pts- utilizes article provided with appropriate interpretation of data plus additional supporting primary literature relevant to topic and argument</p>	
Persuasiveness	<p>____/15</p> <p>5 pts- reasonable arguments, lack of convincing evidence</p> <p>10 pts- reasonable</p>			<p>____/15</p> <p>5 pts- reasonable arguments, lack of convincing evidence</p> <p>10 pts- reasonable</p>	Persuasiveness

Fig. 2. (continued).

	arguments, convincing evidence 15 pts- strong arguments with strong convincing evidence			arguments, convincing evidence 15 pts- strong arguments with strong convincing evidence	
Presentation Style	____/15 5 pts- limited eye contact, reliance on notes, difficult to underrated, unable to respond to rebuttals/alternate arguments 10 pts- appropriate eye			____/15 5 pts- limited eye contact, reliance on notes, difficult to underrated, unable to respond to rebuttals/alternate arguments 10 pts- appropriate eye	Presentation Style

Fig. 2. (continued).

	contact and use of notes, spoke clearly, able to respond to some rebuttals/alternate arguments			contact and use of notes, spoke clearly, able to respond to some rebuttals/alternate arguments	
	15 pts- excellent eye contact, limited use of notes, spoke clearly and deliberately, able to respond to almost all rebuttals/alternate arguments			15 pts- excellent eye contact, limited use of notes, spoke clearly and deliberately, able to respond to almost all rebuttals/alternate arguments	
TOTAL	_____ / 100			_____ / 100	TOTAL

Fig. 2. (continued).

3. Conclusion

Journal club debates are an engaging learning tool to promote and develop drug information identification, evaluation, and application

to clinical practice among pharmacy students and residents.

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