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TEACHING TIPS AND TOOLS

Journal Club Revisited: Teaching Evidence-Based Research and Practice to Graduate Students in a Professional Degree Program

ROSEMARY MARTINA CARON, PHD, MPH

ABSTRACT

A Journal Club can be a learning exercise that allows for the critique and pursuant analytic discussion of empirical studies, and encourages the public health, health administration, or health policy student to better understand how evidence-based research contributes to evidence-based practice. The purpose of this paper is to describe a learning exercise that implements the Journal Club to evaluate strengths and limitations of relevant research studies and their potential influence on evidence-based practice. This learning exercise was developed to increase discipline-specific knowledge and improve analytical thinking to form and communicate a well-researched and reasoned critique about current peer-reviewed research. Specifically, the exercise was designed to: (1) identify the peer-review process and its influence on evidence-based practice; (2) curate primary resources for selected health issues; (3) evaluate a published, peer-reviewed research article for its rigor and limitations with respect to reported methods, findings, and applicability to professional practice; and (4) facilitate a discussion about discipline-specific research in a concise, professional manner. At the conclusion of the exercise, graduate students, who are also working professionals, reflected on the utility of examining how evidence-based research impacts evidence-based practice. The benefits of this applied learning approach for students and the faculty instructor are discussed.

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INTRODUCTION

The Centers for Disease Control and Prevention (CDC) defines the public health system as “all public, private, and voluntary entities that contribute to the delivery of essential public health services within a jurisdiction” (CDC, 2019). Representative public health system organizations include local, state, and national public health departments, healthcare provider offices, public safety departments, schools, environmental organizations, and parks and recreation departments (CDC, 2019). These public health entities work to fulfill the public health mission of preventing disease, promoting health, and protecting the health of populations by providing essential public health services to the communities they serve (see Table 1; CDC, 2019).

Table 1
Essential Public Health Services

- 1) Monitor health status to identify and solve community health problems
 - 2) Diagnose and investigate health problems and health hazards in the community
 - 3) Inform, educate, and empower people about health issues
 - 4) Mobilize community partnerships and action to identify and solve health problems
 - 5) Develop policies and plans that support individual and community health efforts
 - 6) Enforce laws and regulations that protect health and ensure safety
 - 7) Link people to needed personal health services and assure the provision of health care when otherwise unavailable
 - 8) Assure competent public and personal health care workforce
 - 9) Evaluate effectiveness, accessibility, and quality of personal and population-based health services
 - 10) Research for new insights and innovative solutions to health problems
-

Source: CDC, The public health system & the 10 essential public health services, <https://www.cdc.gov/publichealthgateway/publichealthservices/essentialhealthservices.html>

“The implementation of this fundamental framework requires a public health workforce not only educated in the core public health sciences but equipped with the interdisciplinary skills necessary to execute strategies to establish and maintain health within the communities they serve. . . . In addition to possessing an understanding of core public health concepts, such as health determinants, health professionals must also be equipped with the skills necessary to implement strategies to promote health within their patient population and the

greater community they serve. For example, they need to know how to measure the health status of a population and how to effectively educate people about health issues. (Caron and Tutko 2009)

Nevertheless, previous research has documented that many practicing, U.S.-based public health professionals do not possess any formal education in public health yet are expected to work toward fulfilling the public health mission (IOM, 2003; Kennedy, Spears, Loe, & Moore, 1999; Turnock, 2001; USDHHS, 2001). Further, a study conducted by the U.S. Department of Health and Human Services found that slightly more than half of all governmental public health workers have formal public health training (USDHHS, 2001). As a result, several graduate programs specializing in public health have been established to increase the quantity of formally educated practitioners entering or continuing to work in the public health field (Caron & Tutko, 2009).

GRADUATE PROFESSIONAL HEALTH EDUCATION

The University of New Hampshire's (UNH) Master of Public Health (MPH) program (administered by the Department of Health Management and Policy in the College of Health and Human Services) was developed to address the shortage of formally educated public health practitioners working in public health in New Hampshire. Many of the students who matriculate in this MPH program have experience working in the public health field. They implement procedures based on how they were trained by their mentors or managers but do not fully understand the rationale for the evidence-based practices they implement daily. Similarly, many students matriculate in this professional graduate degree program having recently completed a baccalaureate degree and possess little to no professional work experience. Yet, others possess significant professional experience in areas that are not health-oriented due to a decision to return to school to change their career.

To accommodate these students, the majority of whom work during the day, the UNH MPH program is offered in a nonresidential setting at a commuter-accessible campus, in the evening, with each course taken in a four-hour block of time, once a week, for eight weeks. Thus, a student may complete UNH's MPH program by taking two courses in each eight-week session for two years, and five elective courses over the academic year and/or during the summer sessions.

Due to the diversity of practical public health experience possessed by the students, many of whom already work as health professionals, the UNH MPH program utilizes pedagogical methods that factor in the learning needs and preferences of this target audience, including: (a) the ability to apply what is learned to one's professional work; (b) flexibility to tailor one's learning to

professional interests and career goals; and (c) an adaptable schedule to balance the demands of school, work, and family (e.g., online and hybrid courses and traditional face-to-face learning environments). To help facilitate the graduate students' learning about how evidence-based research and evidence-based practice are interconnected, a pedagogical tool called a Journal Club is utilized.

A Journal Club consists of a group of individuals (e.g., students, faculty, practitioners) who meet regularly to critically evaluate the peer-reviewed literature in a discipline. A Journal Club helps its members critically appraise the current research in a discipline, including appropriate research methodology and statistics, and engage in discussion about the utility of the results with respect to future research areas or new applications (Afifi, Davis, Khan, Publicover, & Gee, 2006). Although social media has provided a platform for discussions about research and practice via an online Journal Club format (see Topf et al., 2015; Topf et al., 2017), the purpose of this paper is to describe a Journal Club held as an in-person exercise for the student to evaluate the strengths and limitations of relevant research studies and their potential influence on evidence-based practice through discussion of the research in light of current approaches. This learning exercise is developed to increase discipline-specific knowledge and improve analytical thinking to form and communicate a well-researched and reasoned critique about current peer-reviewed research. Further, although this article describes the applicability to a graduate-level public health course, it is certainly generalizable to other academic disciplines. For example, I have implemented a modified Journal Club exercise using an online platform called *hypothes.is* to critically evaluate research on value-based insurance design, drivers of health, and city-level measures of health, for example, in a population health course (manuscript in preparation). Such a course may be offered in graduate health administration programs, for example. Specifically, the exercise was designed to: (1) identify the peer-review process and its influence on evidence-based practice; (2) curate primary resources for selected health issues; (3) evaluate a published, peer-reviewed research article for its rigor and limitations with respect to reported methods, findings, and applicability to professional practice; and (4) facilitate a discussion about discipline-specific research in a concise, professional manner.

EPIDEMIOLOGY

Epidemiology is a required course in the UNH MPH program. Epidemiology and Biostatistics are two course exceptions to the schedule previously described in that they are offered in a 16-week semester due to the quantitative nature of these courses and the additional time the diverse student audience requires

to master the requisite skills taught in these courses. This course typically has no more than 25 students and meets once per week in the evening for a three-hour block.

Serving as the science of public health, this course in epidemiology covers factors associated with the underlying distribution and determinants of health in various human populations (e.g., rural, urban). The course examines the fundamental principles of epidemiology and its importance as an analytical tool in public health and population health. The course offers a solid foundation in epidemiologic concepts and skills, so the student can assess the health of a community's population. Topics addressed include the historical significance of epidemiology, measures of disease occurrence and association, availability and quality of data sources, appropriate study designs to help reduce community health problems, and practical applications to policy and quality improvement, among others. Emphasis is placed on investigative techniques, epidemiologic methodology, and disease prevention approaches.

The course is taught in a seminar format utilizing a mixture of teaching methods, including lecture, class discussion, group work, and the incorporation of literature and the arts to illustrate central themes and course principles. Representative course assessments include the following:

- 1) Reading of a nonfiction account of a significant public health event (e.g., *The Great Influenza: The Story of the Deadliest Pandemic in History* by John M. Barry) and written reflections submitted weekly that address the role epidemiology played in this historical case; the significance of the health and infrastructure challenges present during this time period; and how we, as public health professionals, can work to prevent history from repeating itself
- 2) Discussion of a current public health issue in the news and a written essay that examines the demographics of the affected population; epidemiologic data that describes the issue and how this data contributes to research, policy, and/or practice; community stakeholders involved; current prevention or mitigation efforts; and the proposal of a feasible recommendation
- 3) Epidemiology workshops that address specific skills (e.g., how to identify, access, and report public health data; how to assess the health of a community; how to calculate epidemiologic measures and communicate their significance)
- 4) A culminating written and oral assignment that challenges students to identify and support, with evidence, what they consider to be the greatest public health challenge in the 21st century and how the public health and healthcare communities should prepare for this health threat

JOURNAL CLUB

The Journal Club originated in medical education, where it was utilized to expedite the sharing of expensive periodicals and inform colleagues about the latest in medical research (Greene, 2000). The purpose of a Journal Club has evolved into a regular meeting where a peer-reviewed research article is critiqued and its implications for practice are discussed among a group of interested students, fellows, faculty, and staff (Kleinpell, 2002). Kleinpell (2002) states, with respect to nursing, "There are many advantages of participating in a journal club, including keeping abreast of new knowledge, promoting awareness of current nursing research findings, learning to critique and appraise research, becoming familiar with the best current clinical research, and encouraging research utilization." Kleinpell (2002) further states, "The critical review of clinical research relevant to critical care nursing practice is fundamental if we are to promote an evidence-based practice framework for nursing care." Regardless of the discipline, I reason that in a course where the research-based knowledge contributes to evidence that informs practice, a Journal Club is a useful resource to demonstrate this essential research-practice link.

PEER-REVIEW PROCESS

The exercise began with an instructor-led discussion about the peer review and publication process, which covered the following topics: utility of peer review, types of peer review, selection and role of peer reviewers, potential issues with the peer review process (e.g., time to publication, peer reviewers who lack the required discipline expertise), and the types of decisions and their implications (e.g., Accept, Accept with Major Revisions, Accept with Minor Revisions, Revise and Resubmit, Reject.) The author, to help personalize the process for the students, shared her experiences with publishing her research in peer-reviewed journals.

PEER-REVIEWED JOURNAL ARTICLE

The students were placed into groups of four (there were a total of four groups) and were charged with identifying a peer-reviewed journal article on a public health issue of interest. An assigned group-led approach was implemented for two reasons: (1) since the work done in public health and health management is typically accomplished in a team setting in which an individual often cannot choose whom he or she works with, this exercise is intended to replicate that challenge; and (2) due to time constraints in the semester, there was not enough time to conduct 16 Journal Clubs. The peer-reviewed article was required to be

original research (i.e., have the following components: introduction, methods, results, and discussion) and utilize epidemiological analyses. The instructor provided a listing of representative peer-reviewed public health journals that were freely available to the students via the UNH library (see Table 2). Each group's peer-reviewed journal article was made available to the other student groups and the instructor on the same date. Each student was expected to have carefully read the selected research article for the scheduled Journal Club.

Table 2

Peer-Reviewed Journals

- *American Journal of Public Health*
 - *Public Health Reports*
 - *American Journal of Epidemiology*
 - *American Journal of Preventive Medicine*
 - *Journal of Public Health Management and Practice*
 - *Journal of Community Health*
 - *Journal of Health and Social Behavior*
 - *Population Health Management*
 - *New England Journal of Medicine*
 - *Journal of the American Medical Association*
-

ARTICLE SUMMARY AND CRITIQUE

Guidelines were provided to each student group to help them summarize and critique the article (see Table 3). The instructor recommended that each group conduct their review well in advance of their scheduled Journal Club presentation date.

Table 3

Journal Article Summary and Critique General Guidelines

Summary Guidelines

- What is the purpose of the research?
 - What question(s) is/are the researcher(s) attempting to answer?
 - What is the hypothesis?
 - Why is/are these questions important to address?
 - How does the research being conducted apply to prior research in this area?
 - What epidemiologic methodology did the researchers use to answer the research question(s)?
 - What were the research findings?
 - How do the research findings apply to current research and practice in this area?
-

Table 3 (cont'd)

Journal Article Summary and Critique General Guidelines

Critique Guidelines

Explain the following:

- Did the researchers answer their question?
 - Were the epidemiologic methods used to conduct the research appropriate?
 - Were there other methods that would have assisted in this research?
 - How do the findings relate to the study's hypothesis?
 - Are the results interpreted correctly?
 - Are there alternative interpretations to the study's findings?
 - Do the data support the findings?
 - What aspects of the research lead you to agree or disagree with the study's findings?
 - Although the peer-reviewed article has been accepted for publication, what would be your current recommendation for publication following your review of this research?
 - How does this research progress (or not progress) public health practice?
-

ARTICLE PRESENTATION

The Journal Club met once a week for four weeks, so each group had a chance to lead the exercise. The meetings were each one hour long. Every member of each group was required to contribute (in any way the group saw fit) to their selected Journal Club presentation. Each group could use the one hour allotted time as they planned, and they were required to achieve the following: (1) facilitate a discussion that summarized and critiqued the selected research article, (2) relate their identified research article findings to the course content, and (3) demonstrate how the research progresses (or not) the practice of public health.

Table 4 highlights the relevant public health issues that were discussed from the peer-reviewed literature, the research and practice-based questions that the respective group posed for the class to consider and discuss (which span multiple disciplines and content areas specific, and external, to public health, policy, and health administration), and the varied classroom-based approaches implemented by the assigned group to engage their peers in active learning.

Table 4

Journal Club Topics, Research and Practice Bridges, and Classroom Approaches

Topic #1: Relationship between childhood infection and risk of violent behavior as an adult

- Sample Research-Practice Bridge Discussion:
- Design a feasible public health measure that could improve the impact of environmental factors associated with violent criminal behavior. What confounders would the United States have if this study were conducted here? Are there other countries for which a special confounder would need to be considered and adjusted?

Topic #2: Relationship between adverse childhood experiences (ACEs) and oral health

- Sample Research-Practice Bridge Discussion:
- What could we do at a primary prevention level to improve the quality of oral health? What population do you think would benefit the most? Some ACEs may not preventable. How should we handle this?

Topic #3: Substance use disorders and poverty as predictors of homelessness in the United States

- Sample Research-Practice Bridge Discussion:
- Create an innovative housing policy for at-risk populations. Describe the policy implications for this work.

Topic #4: Consumption of processed foods and cancer risk

- Sample Research-Practice Bridge Discussion:
- Draft an ordinance for food vendors. Would the results have been different if conducted in a different study population?

Classroom Approaches to Journal Club

- Divide student audience into groups to address (the same or select) predetermined questions about the study.
 - Conduct a verbal quiz of how the study relates to current public health/health management knowledge and practice.
 - Utilize media to relate the study to current public health/health management practice.
 - Present prior research that led to the study under review and relate it to current public health/health management knowledge and practice to demonstrate a progression of how evidence-based research informs evidence-based practice over time.
-

CONCLUSION

The Institute of Medicine's (now the Health and Medicine Division of the National Academies of Sciences, Engineering, and Medicine) reports *The Future of Public Health* and *Who Will Keep the Public Healthy?* charged academic institutions offering public health education to creatively educate new students and experienced public health workers to be able to practice in diverse settings (IOM, 1988; IOM, 2003). The Journal Club assignment contributes to answering this call to action by emphasizing the link between research and practice in a structured format that also allows for student creativity in the facilitation of a discussion following the distillation of a great deal of information.

This critical analysis assessment also assists the UNH MPH program in meeting the established Council on Education in Public Health competence, *Evidence-Based Approaches to Public Health*, for accreditation. Specifically, this teaching tool calls for the student to assess the application of epidemiological methods to diverse settings and situations in public health practice via research findings, evaluate the appropriateness of quantitative and qualitative data collection methods for public health research and practice, and appraise the interpretation of results reported from data analysis for public health research and/or practice (CEPH, 2016). The critical analysis approach implemented in the Journal Club allows for these criteria, and others, to be generally assessed. Similarly, a Journal Club can also contribute to complying with the Commission on Accreditation of Healthcare Management Education's criteria pertaining to developing student competencies in critical thinking, analysis, and problem solving (CAHME, 2018).

Two key objectives in this course include: (1) the distillation of a great deal of information, not just reading the research article; and (2) relating how the research findings may (or may not) influence practice; thus, realizing the connection between evidence-based research and evidence-based practice. The students used the Journal Club, an approach they were previously unfamiliar with prior to this course, to curate information, analyze it, and present, concisely and effectively, their evaluation on peer-reviewed research and its implication on professional practice.

Transferring research-based knowledge into practice is an essential skill for today's public health professional. As today's students come to our educational programs from diverse professional backgrounds with varying levels of expertise, educating them about how research and practice inform each other and how this relationship affects their daily work is an essential element that can be transported from one health position to the next over the course of a career. Further, working in an assigned group also taught students how to manage group dynamics, such as conflict resolution, leadership evolution, and

time management. The diversity of experience possessed by the students and the group format of the exercise allowed for a learning environment where the students benefitted from not only helping each other understand the research but also the sharing of “real-world” professional experiences. This engagement led to discussions about the connection between research and practice. It is imperative that faculty who are preparing these students become proficient in developing teaching tools that engage the student in critical analysis—a lifelong, professional skill.

Since the majority of the students in the class had no experience with facilitating a Journal Club, at the conclusion of the assignment, the students were asked to reflect on their experience. Student comments include the following:

“I have been practicing public health for more than a decade and I have not read a research article prior to this class assignment. I have a new appreciation for why I do things the way I do at my job. I now understand how the science informs the practice.”

“I was unfamiliar with the peer-review process prior to working on our Journal Club. Understanding how research comes to be published is a complex process. I see how it is my role to ‘translate’ this research into my practice and explain it to the population I work with in the community.”

“We read a few research articles in my bachelor’s program. I always focused on the abstract. In our Journal Club, I saw how important it is to not only carefully read but evaluate the research.”

“I learned how evidence-based research contributes to evidence-based practice and how the research can contribute to the improvement of practice over time.”

The faculty instructor’s summation following the experience of using a Journal Club in one specific course that is qualitative and quantitative in nature, is that it allowed for: (1) a sustainable engagement with the course material in a community of learners who possessed varied educational backgrounds and professional experience; (2) an increase in the interaction among peers and communication with the instructor while delving into the research that informs practice; and (3) the exposure of students to an approach that encourages critical thinking, which can influence how they work to fulfill the public health mission. The Journal Club exercise described herein could be adapted to teach critical analysis skills and familiarity with the research in other disciplines, as well as be adapted to an undergraduate student. Employers and graduate program accreditors expect our graduates to be proficient in the

skills utilized in the field. To achieve this foundational approach for students who come to our programs with public health and/or health administration experience and no academic credential and vice versa, the utility of the Journal Club in our courses can bridge the world of research and practice for the next generation of public health practitioners.

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