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Research Article

The impact of a research course on pharmacy students' perceptions of research and evidence-based practice☆

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ABSTRACT

Background: Pharmacists need be able to understand and utilize evidence from the literature to provide optimal patient care as well as participate in research to improve care. Thus, it is important for pharmacy students to acquire skills in research and evidence-based practice (EBP).

Objectives: To evaluate the changes in pharmacy student (1) perceptions of research and EBP, (2) interest in research participation, and (3) confidence in understanding the research process and developing a research proposal after completing a research course.

Methods: First-year professional pharmacy students completed a required one-semester research course. Study objectives were assessed pre- and post-semester using a survey that contained seven demographic items, nine Research Perceptions items, and 17 Confidence in Research items (5-point Likert scale; 1 = not at all confident, and 5 = extremely confident). Two years of data were collected (2012: $N = 49$, 2013: $N = 53$) and analyzed using Wilcoxon signed-rank tests and Mann–Whitney U tests as appropriate.

Results: Significant improvements were seen in students' perceptions of the importance (2012: $p = 0.022$, 2013: $p = 0.042$) and usefulness of research ($p = 0.022$). Students' confidence significantly increased on all items for both years ($p < 0.001$). There was no significant change in student plans to perform or participate in future research. More students planned to use EBP in their practice post-semester in 2013 ($p = 0.008$).

Conclusions: A research course can be an effective way to increase student confidence in research and improve perceptions on the importance and usefulness of research and EBP. It may not be an effective way to increase student interest in research as a career.

Introduction

Evidence-based practice (EBP) is an important aspect of health care, including the pharmacy profession. EBP is the process where health care providers incorporate knowledge gained from the best available evidence with clinical expertise in order to make decisions about the care of individual patients, as providing patient-centered care can lead to improved health outcomes.[1,2] Health

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care professionals must gain skills in asking questions, retrieving information, and critiquing literature in order to apply evidence to practice. One critical barrier to the integration of EBP is lacking understanding of research methodology, measurement, and statistical analyses. Thus, research knowledge and skills need to be incorporated in health care professional curricula.[3] Further, these same EBP skills (i.e., ask, acquire, appraise, and apply) are similar to the process that researchers use to answer questions. Thus, by providing students with essential research knowledge, they are equipped with critical and analytical thinking and lifelong learning skills, which can then be applied to both current and future EBP.[4]

While incorporation of research and EBP courses into pharmacy curricula is not directly mandated, the Accreditation Council for Pharmacy Education (ACPE) has stated in the 2016 Standards that research design is a required curricular element of a pharmacy program. This requires educating pharmacy students on the "…evaluation of research methods and protocol design required to conduct valid and reliable studies to test hypotheses or answer research questions, and to appropriately evaluate the validity and reliability of the conclusions of published research studies."[5] The 2016 Standards also state that pharmacy graduates should be able to describe the development of evidence-based best practices, be able to make evidence-based clinical decisions, and have evidence-based clinical reasoning skills for application to patient cases.[5]

Pharmacists also need to have research skills to generate and disseminate knowledge through productive research if they are faculty members,[6,7] since all schools have scholarship expectations for their faculty members.[5] Currently, there is a growing need for pharmacy school faculty.[7–9] Due to the increasing number of pharmacy schools and class sizes, the demand for individuals qualified to teach and advance the profession is growing.[10,11] Equipping students with research knowledge and skills may stimulate student interest in pursuing training for academic pharmacy positions.

Other positions within the practice of pharmacy also require knowledge of research methodology to interpret evidence from journal articles, such as pharmacists working in medication therapy management (MTM) or other clinical roles, managed care settings, and industry. As overall drug use increases, having research methodology knowledge will assist pharmacists in any setting to ensure medication safety and appropriateness. There continues to be an increase in drug development research as well, thereby requiring pharmacists who possess both clinical pharmacotherapy knowledge and biomedical research skills to conduct research studies and assist in interpretation.[10]

Incorporating research and EBP into pharmacy school curricula is beneficial for students.[12–16] Learning about research, as well as applying these skills in research experiences, prepares students for postgraduate training as well as faculty positions.[14–16] Students who have participated in conducting research projects have an advantage over their peers for postgraduate opportunities, such as residencies, fellowships, and positions requiring interpretation of evidence, making them more marketable for competitive positions.[13,15] Opportunities to participate in research may also help students with career decisions and allow them to determine whether a career in research or academia is appealing.[14–17] Graduates who have learned about the research process and understand research methodology, measurement, and statistical analyses have a foundation for EBP; thus, this knowledge improves their ability to utilize medical literature versus their peers.[18] Being educated on the use of EBP also can improve students' performance in their Advanced Pharmacy Practice Experiences (APPEs), as students educated on EBP are portrayed as more confident and efficient and as having a stronger ability to apply medical literature to patient care.[12]

Pharmacy students generally have positive perceptions of research.[13,15,19,20] They view student research projects as valuable learning experiences and opportunities to acquire skills in the key aspects of the research process.[13,19] At different points in their education, students may feel differently about research; yet after graduation, most graduates feel positive about its incorporation. For example, undergraduate pharmacy students are found to perceive research as necessary yet difficult,[20] while final-year pharmacy students report the importance of integrating research into pharmacy programs as minimal and not enough time during their APPE rotation year to complete their projects.[21] While undergraduate and current pharmacy students may not recognize the benefits of research curriculum, graduates are supportive of the research project experience in school.[14,22]

Studies have previously examined student perceptions of research upon completion of a research course or required research project but have not examined how a research course may change students' perceptions of research or EBP.[13–15,19–22] Therefore, the primary objective of this study was to evaluate the changes in pharmacy student perceptions of research and evidence-based practice (EBP) from before and after completing a Research Design and Methodology course. Secondary objectives were to evaluate pharmacy student interest in research participation and confidence by understanding the research process and developing a research proposal before and after completing a Research Design and Methodology course.

Methods

This prospective research project was conducted at Cedarville University in the 2012 and 2013 fall semesters. Institutional Review Board (IRB) exempt status was obtained prior to conducting the study. Participants were first-professional year pharmacy students enrolled in a course on research and evidence-based practice. This three-credit hour, semester-long course introduced students to research concepts and required completion of a research proposal that was presented at the conclusion of the course. All students had been exposed to the research process in a pre-pharmacy course required for admission. During the pre-pharmacy course, students received an active learning lecture on research design and methodology and conducted a small research project or outlined a plan for a literature review.

Curriculum

The research design and methodology course gave students an overview of research design and methodology concepts that are