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Research Article

The importance of clinical research skills according to PharmD students, first-year residents, and residency directors

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ABSTRACT

Purpose: Research has a prominent role within the field of pharmacy practice. However, no studies have assessed the importance of research methods in pharmacy education from the perspective of students, residents, or residency directors.

Methods: Questionnaires were administered online in spring 2014 to four respondent groups: University of Colorado fourth year PharmD (P4) students, post graduate year 1 (PGY1) residents, and PGY1 and post-graduate year 2 (PGY2) residency directors. Descriptive statistics were used to characterize respondents; *t*-tests and chi-square tests were used to compare groups of respondents.

Results: Respondents included 255 PGY1 residency directors, 155 PGY2 residency directors, 35 PGY1 residents, and 87 P4 students. Response rates ranged from 26% (residency directors) to nearly 60% (P4 students and PGY1 residents). PGY1 residents and PGY1/PGY2 residency directors ranked research experience lowest among ten characteristics with respect to their importance when competing for a residency or being a successful resident. Among six specific clinical research skills, PGY1 residents and PGY1/PGY2 residency directors ranked “identifying and writing a research question” as the most important for successfully completing a residency research project or when selecting a PGY1/PGY2 resident.

Conclusions: Perceived importance of clinical research skills by P4 students, current residents, and residency program directors is low. This is in opposition to opinions from several national organizations that proclaim the importance of clinical research skills in doctor of pharmacy curricula. Pharmacy programs must continue to further develop clinical research skills and abilities of future graduates while being cognizant of these perception barriers when developing strategies to enhance research experiences within their curricular programs.

Introduction

Research has a prominent role within the field of pharmacy practice. The American College of Clinical Pharmacy (ACCP) recognized the importance of research and scholarship in their 2014 “Standards of practice for clinical pharmacists.”¹ Within these standards, ACCP emphasized research in their Mission Statement, stating that this organization “... provides leadership, professional development, advocacy, and resources that enable clinical pharmacists to achieve excellence in practice, *research*, and education; and advances clinical pharmacy and pharmacotherapy through support and promotion of *research*, training, and education.”² The American Society of Health-System Pharmacists (ASHP) also included the provision of research as a method to “encourage and

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stimulate the implementation of the ASHP Foundation Practice Advancement Initiative” (Goal 2 of the ASHP 2015 Strategic Plan).³

Training in research and study design along with hands-on research experience can lead to numerous benefits for graduating pharmacy students. These benefits include improved critical thinking and analytical skills that are essential when working in multidisciplinary teams and providing patient care.⁴ Research experience therefore has the potential to improve a graduating pharmacy student's chance of securing a post-graduate year one (PGY1) residency position given desired qualifications for incoming post-graduate residents and skills necessary to complete a residency research project.^{5,6}

While specific research education programs within Doctor of Pharmacy (PharmD) curricula across the United States have been assessed from the viewpoint of students, graduates and preceptors,^{7–13} less is known about how much importance is placed on research skills by graduating students, residents, and residency directors. As part of a needs assessment completed prior to developing a Clinical Research Methods elective course at the University of Colorado (CU) Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS), we assessed the importance of clinical research by surveying current students, residents, and residency directors. Due to the increasing competition for PGY1 training, we focused on the importance of clinical research skills in relation to residencies from the perspective of current SSPPS fourth year PharmD (P4) students, PGY1 residents, and PGY1 and postgraduate year 2 (PGY2) residency directors.

Methods

Data collection

We developed three questionnaires that were administered online in spring 2014 to four respondent groups: SSPPS P4 students (questionnaire 1), PGY1 residents (questionnaire 2), and PGY1 and PGY2 residency directors (questionnaire 3). Each survey included two similar questions to be compared across groups. The first question asked respondents to rank 10 resident characteristics with respect to their importance *when competing for* a PGY1 residency (asked of P4 students who had applied for a PGY1 residency), or *for their success as a resident* (asked of PGY1 residents, and PGY1 and PGY2 residency directors). A ranking of “1” indicated most important while a ranking of “10” indicated least important. The 10 characteristics were communication skills, personable/friendly, ability to organize and manage time, leadership skills, maturity, research experience (i.e., ability to conduct a research project), professionalism, enthusiasm, ability to work well in an interdisciplinary team, and academic performance. These 10 characteristics were chosen based on a recent survey of 252 residency program directors that examined characteristics of ideal PGY1 candidates,⁶ along with a qualitative process of obtaining lists of characteristics from residency directors at SSPPS and identifying consistent characteristics.

The second question asked respondents to rank the following six clinical research skills with respect to their importance *when competing for* a residency (asked of P4 students who had applied for a PGY1 residency), *successfully completing* a PGY1 residency project (asked of PGY1 residents), or *when selecting a PGY1 or PGY2 resident* (asked of PGY1 and PGY2 residency directors): identifying and writing a research question and hypothesis; analyzing data; interpreting results; effectively presenting the research orally; effectively presenting the research using a poster; and writing a research paper. A ranking of “1” indicated most important while a ranking of “6” indicated least important. These six skills were chosen based on work highlighting essential research curriculum for PharmD programs and conducting a successful residency research project.^{4,5}

PGY1 residents were also asked how well educated they felt entering their PGY1 program with respect to the six clinical research skills (very well, somewhat, not at all). Residency directors (PGY1 and PGY2) were asked how well educated residency applicants have been in the past two years with respect to the six clinical research skills (very well, somewhat, not at all). All SSPPS P4 students were asked how well each of the six clinical research skills were covered in their curriculum (very well, somewhat well, not at all); if they would have taken a clinical research methods elective had it been offered; if they had any experience conducting clinical research in the past; and if they had completed, or were in the process of completing, a research rotation or elective. The questionnaires were pilot tested by volunteer students, residents, and local residency directors – two each for a total of six testers.

Study populations

An invitation to complete an online questionnaire was sent to all SSPPS P4 students in spring 2014 (n=154). Invitations were also sent to 60 PGY1 residents, 32 of which were identified through the SSPPS Teaching Certificate Program, which is required of most PGY1 residents in the state of Colorado. The other 28 residents were all graduates of the SSPPS class of 2013 with an available e-mail address. Residency directors were identified from the ASHP online residency directory. In total, survey invitations were sent to all 1010 PGY1 residency directors and all 593 PGY2 residency directors. The survey was anonymous and was expected to take respondents 5–10 min to complete. This study has received “exempt” status from the Colorado Multiple Institutional Review Board.

Statistical analyses

Proportions were used to describe categorical respondent characteristics and survey item responses, while means and standard deviations (SD) were used to describe continuous respondent characteristics and survey item responses. Wilcoxon Rank Sum tests were used to compare the median rank of research skills among the 10 characteristics between groups based on dichotomous variables, such as academic health system residency setting (yes versus no) and prior experience conducting a research project (yes versus no), within each group of respondents. A Kruskal-Wallis test was used to compare the median rank of research skills between

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