



Contents lists available at ScienceDirect

Currents in Pharmacy Teaching and Learning

journal homepage: www.elsevier.com/locate/cptl



Experiences in Teaching and Learning

Educating medical residents through podcasts developed by PharmD students



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ARTICLE INFO

Keywords:

Podcasts
Medical resident
Pharmacy student
Teaching

ABSTRACT

Background and purpose: Podcasts are increasingly popular in education due to their accessibility, portability, and scheduling flexibility. Pharmacy students often interact with resident physicians during advanced pharmacy practice experiences, but few studies have evaluated their ability to teach medical residents about pharmacotherapy concepts or how these interactions might impact their own development. We sought to evaluate the efficacy of pharmacy student-created podcasts in two areas: the ability to increase medical resident understanding of selected medical topics and the effect on the pharmacy student's confidence in teaching.

Educational activity and setting: Eight fourth-year pharmacy students created enhanced podcasts and assessment questions on a medical topic. The assessment questions were split randomly into pre- and post-podcast assessments to be given to residents. The assessment quizzes and podcast comprised content modules that were delivered to consenting medical residents at two week intervals. Pharmacy student confidence was evaluated with pre- and post-experience surveys, which were administered before they created the podcast and after they viewed the aggregate results of resident assessments of their podcast.

Findings: Overall, 79.3% (23/29) of residents participated with an average of 44% participation on each module. Resident knowledge increased as evidenced by the overall aggregate score, significantly improving from 36% prior to podcasts to 76% following podcasts ($p=0.001$). When rated on a 1–10 scale, average pharmacy student confidence in teaching their topic also significantly increased from 5.63 to 8.00 ($p=0.041$).

Summary: Podcasts are an effective method for medical residents to learn from pharmacy students and may also improve pharmacy students' confidence in their abilities.

Background and purpose

Podcasts are becoming increasingly popular in higher education as a way to disperse information to students outside of the classroom.¹ In medical education, podcasts have been used as a teaching tool for subjects as diverse as reviewing heart sounds to advanced dermatology.^{2,3} Not only are podcasts accessible on a range of devices, including smartphones, but they also provide the benefit of on-demand availability to the learner and the ability to replay information.⁴ Enhanced podcasting combines the auditory

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component with video, slides, or other graphics.

In graduate medical education, residents must not only work towards mastering the knowledge of long-established medical diagnostics and treatments but must also implement emerging information about new therapies to patient care plans as they become available. Medical residents must combine biomedical, clinical, epidemiological, and social-behavior information to apply directly to patient care.⁵ With the accelerating availability of medical information, optimizing methods for learning is important, thus the on-demand accessibility of podcasts provides a unique opportunity. Learning from podcasts may be efficient for medical residents as they can select when it will best fit into their highly variable, demanding schedules. Podcasting has been used in graduate medical education to supplement learning in emergency medicine rotations, improve preparedness for anesthesia residencies, and even reduce surgical site infection rates.^{6–8}

In our institution, like many others, pharmacy students commonly interact and learn with resident physicians through advanced pharmacy practice experiences (APPEs). Interprofessional education (IPE) and collaboration with prescribers is a required component of the pharmacy student's education.⁹ Interprofessional education occurs when two or more professions learn with, from, and about each other to improve collaboration and the quality of care.¹⁰ The Accreditation Council for Pharmacy Education (ACPE) endorses three key elements regarding IPE in the pharmacy curriculum: demonstration of competence in interprofessional team dynamics, engaging in interprofessional team education activities, and participating in interprofessional team practice for direct patient care.⁹ Clear, specific communication is certainly integral to successful achievement of these key elements. In fact, interprofessional communication is also one of four core competency domains necessary to prepare students for successful interprofessional practice.¹¹ As a result, ACPE also emphasizes effective communication skills throughout its standards. While communication in the clinical setting is extremely important to interprofessional team dynamics, pharmacy students may be hindered by lack of confidence in their ability to interact with resident physicians. This lack of confidence may possibly stem from insufficient practice in communication or inadequate knowledge of the topic being discussed with the physician.^{12,13} In pharmacy education, podcasting has been found to enhance the learning experience, but the effect of a pharmacy student developing a podcast on their own learning and confidence has not been studied.¹⁴

Pharmacy students and resident physicians in our institution interact daily through patient care activities. While there is likely informal, bidirectional teaching occurring in these clinical settings, the ability for pharmacy students to teach resident physicians has not previously been elucidated. We chose podcasts as a mode of instruction because this could supplement the learning of medical residents at a time and place that would be convenient for them. Furthermore, podcasts would allow pharmacy students a “lower stakes” opportunity to practice their communication skills and reflect on abilities while recording and editing a presentation, without the added pressure of a live audience. In addition, an existing archive of podcasts would augment existing IPE at our institution by allowing pharmacy students to continue to teach residents, even after they have rotated off of their five-week APPE.

We chose to examine the effect of podcasts created by pharmacy students on the learning of medical residents, using questions answered correctly by the resident as a surrogate. We hypothesized that medical residents would be able to gain knowledge from the podcasts that pharmacy students created. Secondarily, we believed that the pharmacy students' confidence level in their ability to teach and communicate with resident physicians would improve through creating podcasts.

Educational activity and setting

Broadlawns Medical Center (BMC) is a publicly-funded community hospital in Des Moines, Iowa. BMC maintains family medicine and transitional residencies accredited by the Accreditation Council for Graduate Medical Education (ACGME). BMC also serves as an experiential rotation site for a number of health professions, including fourth-year pharmacy students from Drake University College of Pharmacy and Health Sciences (DUCPHS). At the time of this study, there were 25 family medicine residents and four transitional residents. Prior to the initiation of this study, the investigators explained the study procedures to the residents and obtained informed consent, and 79.3% (23/29) of the residents elected to participate. This included ten post-graduate year one and transitional year residents, seven post-graduate year two residents, and six post-graduate year three residents.

There were two interconnected components of this study, with separate participants in each (Fig. 1). In the first component, eight pharmacy students from DUCPHS who had been assigned to the BMC Internal Medicine APPE were asked to create an enhanced podcast on a specific medical topic as well as four to six associated assessment questions during the course of their five-week rotation. This activity was in addition to other typical acute care APPE activities, which included daily teaching rounds with BMC's resident physicians. Podcast topics were suggested by residents and teaching faculty at BMC before pharmacy students started their APPE. Prior to creating their materials, the pharmacy students provided informed consent to participate in a survey of the experience. If consented, they received a “Pre-Podcast Student Survey” that examined their baseline attitudes and confidence in teaching medical residents about pharmacotherapy and about communicating with physicians in general. Early in their APPE, pharmacy students received training from the researchers on writing learning objectives, crafting multiple choice questions, and technical aspects of creating a podcast. This training came in the form of pre-recorded videos on Bloom's taxonomy, writing learning objectives, and writing multiple choice questions. This instruction was provided by one of the study investigators. Over the ensuing five weeks, students researched their topic, wrote learning objectives and assessment questions, and created the enhanced podcast content. The pharmacy students also received feedback from their preceptor (who also served as principal investigator) on the content of their podcast and assessment questions; the preceptor also made suggestions for improving materials. Students created their enhanced podcast via screen capture recordings and were asked to limit presentations to ten minutes. Presentations were made as audio over lecture-style slide presentations, and the presenter's face was not visible. Students were able to edit the video file of their presentation prior to posting if they wished. Assessment questions written by the students were checked for factual accuracy by the study

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