

QUALITATIVE RESEARCH IN PHARMACY EDUCATION

An Exploration of Pharmacy Education Researchers' Perceptions and Experiences Conducting Qualitative Research

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Submitted April 23, 2018; accepted March 4, 2019; published March 2020.

Objective. To investigate pharmacy education researchers' experiences in conducting qualitative research and their perceptions of qualitative research in pharmacy education

Methods. A phenomenological approach was used to conduct one-time, in-depth interviews with 19 participants from 12 schools and colleges of pharmacy. Interview transcripts were coded and themes were identified using a modified form of the Sort and Sift, Think and Shift method of data analysis.

Results. Faculty members were the largest subgroup in the sample, followed by graduate students, postdoctoral fellows/scholars, and residents. Pharmacy education researchers had varying levels of training in conducting qualitative research and some had none at all. Salient findings included that pharmacy educators' lack of training and exposure to qualitative research was a barrier to entry to conducting qualitative research; the lack of understanding and value of qualitative research in pharmacy education impacts the acceptability of qualitative research projects in Journals and academic meetings; and qualitative research offers several benefits in answering complex research questions.

Conclusion. The application of rigorous qualitative research in pharmacy education holds great potential in addressing complex and evolving healthcare problems. This work provides empirical evidence of the ongoing anecdotal dialogue that has long existed in pharmacy education concerning why some researchers are hesitant to conduct qualitative research, the challenges encountered by those who employ qualitative approaches, and the benefits qualitative approaches provide.

Keywords: pharmacy, qualitative, educational research, quantitative

INTRODUCTION

Practitioners and researchers in health professions fields are increasingly recognizing the value and critical role of employing rigorous qualitative research approaches in addressing complex and evolving healthcare problems.¹⁻⁵ Unlike quantitative inquiry, qualitative research can provide holistic insights into *why* people engage in particular actions or *how* they experience them.¹⁻⁵ In-depth interviews, focus groups, and participant observations,

among other methods frequently employed in health professions research, have also been vital research tools in pharmacy education. For instance, while some studies focus exclusively on qualitative methods, others have applied this approach to complement or explain quantitative results or serve as a preceding exploratory method to guide quantitative approaches (ie, mixed methods).⁵⁻⁷ Nevertheless, as some researchers have noted, qualitative research methods remain considerably underutilized by most pharmacy education researchers.^{1,5,8} Moreover, ongoing calls (and guidelines) for more rigorous standards in reporting qualitative research are pervasive in the health professions literature.¹⁻⁵

Qualitative research involves the study of social phenomena in natural settings, delving into the meaning, experiences, and views of the participant in the world.^{1,9} Compared to quantitative research, qualitative research approaches offer the advantages of an emergent and fluid design, the exploration of a problem in natural settings, and

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the ability to capture participants' meanings via rich, thick descriptions.^{1,9} Notwithstanding the multiple strengths of qualitative research methods, a significant divide exists among researchers on issues of ontology and epistemology and the standards for methodological rigor. In light of present debates and the increasing significance of this methodological approach, it is essential for pharmacy education researchers to reassess their experience with and preparation for conducting qualitative research. To advance qualitative scholarship within the field, researchers must leverage rigorous qualitative research methods consistent with guidelines issued by the *Journal*.

The purpose of this study was to investigate pharmacy education researchers' experiences conducting qualitative research and their perceptions of qualitative research in pharmacy education. Three central research questions guided this study: What concerns impede pharmacy educators from employing qualitative research? What are the barriers and challenges of employing qualitative research in pharmacy education? What are pharmacy educators' perceptions of the benefits of employing qualitative research?

METHODS

A phenomenological qualitative approach was used to address the study's guiding questions. The phenomenological approach best positioned us to understand the participants' experiences and make meaning of the phenomena under study.¹⁰ This exploratory approach was suitable because no systematic research had yet been published on this topic. The study was approved by the University of North Carolina at Chapel Hill Institutional Review Board for the Protection of Human Subjects in Research.

One-time, in-depth interviews were conducted with 19 participants using a semi-structured protocol. Purposeful sampling (ie, participant selection according to a set of predetermined criteria) was used to capture multiple perspectives and explore information-rich cases.⁹ Participants were selected based on the following predetermined criteria: they were identified as a pharmacy faculty, postdoctoral fellow/scholar, resident, graduate student, and/or staff member; they were affiliated with an accredited school/college of pharmacy; and they had experience conducting pharmacy education research (eg, quantitative, qualitative, and/or mixed methods).

To begin recruitment, the primary investigator sent an introductory email to pharmacy education researchers via listservs (ie, email distribution lists) and contacts from pharmacy education research centers. The researchers

began with listservs from two nationally recognized centers for pharmacy education research: The Wulling Center for Innovation and Scholarship in Pharmacy Education (W-CISPE) at the University of Minnesota, and the Center for Innovative Pharmacy Education and Research at the University of Chapel Hill. These centers were selected because of their dedication to advancing educational research and scholarship in pharmacy education and their expansive listservs of collaborators. In addition to these centers, information on the research project was sent to other pharmacy education insiders across the United States for dissemination. Consistent with snowball sampling, in the initial recruitment email, prospective participants were asked to forward the email to other contacts who might be interested and fit the inclusion criteria.⁹ Before the interview, participants completed an informed consent form and demographic survey online (eg, level of education attained, employee or trainee classification, and prior experience conducting qualitative research). The majority of the interviews were conducted via a video-conference call, while the rest were facilitated in-person or via telephone. Modified from previous work completed by Povee and Roberts,¹¹ our interview protocol questions explored several topics such as how participants defined qualitative research, their past experiences using qualitative research, their exposure to formal or informal training related to qualitative research, and their perceptions of how qualitative approaches might be used to advance pharmacy education research. Each interview was audio recorded. Interviews lasted from 30 to 45 minutes, on average. Upon completion of the interviews, the audio data were professionally transcribed by a third-party (ie, Rev.com, San Francisco, CA). The de-identified transcripts were then uploaded to a password protected drive to begin analysis. Participants did not receive any incentive for participation.

We employed a modified form of the Sort and Sift, Think and Shift method to analyze the data.¹² This approach "is an iterative process whereby analysts dive into data to understand its content, dimensions and properties, and then step back to assess what they have learned and to determine next steps."¹² The Sort and Sift, Think and Shift method is informed by a variety of key qualitative components including: Labov's six identifiable elements of storytelling (abstract, orientation, complicating action, evaluation, result or resolution, and coda),¹³ Seidel's model of qualitative data analysis process (ie, collecting, thinking, noticing, and engaging),¹⁴ and five common qualitative traditions (ie, phenomenology, grounded theory, narrative, ethnography, and case study). The comprehensiveness of the Sort and Sift, Think and Shift process developed a unique framework for data analysis,

conducted through several rounds of coding, review, and consensus building.

The first step in the data analysis process was selecting the five most substantive interviews to review. Then, qualitative data analysis software (ie, Atlas.ti, v.1.6.0; Scientific Software Development GmbH; Berlin, Germany) was used to review each interview transcript and highlight powerful segments of the data (ie, pulse quotations) that were meaningful, interesting, and/or impactful (ie, first round open-coding).

Next, PowerPoint was used to develop a visual depiction of each of the reviewed transcripts (ie, episode profiles) affording an opportunity to connect the data and identify relevant topics within each transcript across three predetermined themes: pharmacy educators' qualitative research experiences, barriers and challenges when considering and conducting qualitative research in pharmacy education, and benefits of employing qualitative research in pharmacy education. Topics (or categories) were selected if they were considered to be relevant to the purpose of the research, impactful, comprehensible, and/or connected to other topics. Upon completion, the five episode profiles were compared and topics were identified across the data. Next, the identified topics were used to develop a codebook. The codebook consisted of a code name, description of the code, and a sample participant quotation for each code. The codebook was then reviewed by members of the research team. The analysts met to discuss any areas of disagreement and come to consensus. The codebook was then modified to reflect the agreed upon changes.

Next, the modified codebook was used to code all interviews in Atlas.ti (second round coding). Upon completion of second round coding, the data were exported from Atlas.ti to an Excel document for a third round of coding. During the third round of coding, each coded quotation was reviewed to ensure that it was captured under the appropriate code and combined similar codes to develop themes and subthemes related to each research question. The final themes were reviewed by all members of the research team, and areas of disagreement were discussed and consensus was established. The employment of this rigorous data analysis process, which included several rounds of extensive coding, afforded us with an opportunity to glean a comprehensive understanding of the participants' experiences and enhance the trustworthiness of our study and results.

RESULTS

Interviews were completed with 19 participants with experience conducting research in pharmacy education. Demographically, faculty members (including administrators

and/or staff members with faculty appointments) (n=15) represented the largest numeric subgroup in the sample, followed by graduate students (n=2), postdoctoral fellows/scholars (n=1), and residents (n=1) (Table 2). All participants had attained either a professional degree and/or a doctoral degree and represented 12 different schools and colleges of pharmacy. The majority of the participants had experience conducting qualitative research, and had either led or contributed to an average of three qualitative projects.

Several themes emerged from this exploratory study. The themes are presented below as aligned with the research questions. Appendix 1 provides additional exemplar participant quotes. Pseudonyms are used in place of the participants' real names. Participant pseudonyms were produced by an online random name generator (<http://random-name-generator.info/random>). Two themes relating to pharmacy educators' qualitative training experiences emerged. Specifically, participants noted that they gained qualitative research training through both formal and informal means. Some participants received formal qualitative research training via courses taken to fulfill requirements for a master's degree (ie, as a resident) or doctorate degree. The levels of training varied. Some participants took courses with a specific focus on qualitative research (ie, Introduction to Qualitative Research). For example, Leonard, a faculty member noted, "I got full training in qualitative through my master's [degree] and my Ph.D., but primarily in my Ph.D. is where I went more in-depth with it." Other participants noted that while they had taken educational research design courses, the units specific to qualitative research were occasionally distributed throughout the courses. For example, in describing his training, a resident, noted, "I would say it would be limited. . . There are a couple [of] classes that either directly or indirectly include qualitative research content. . . sometimes it's like a whole class on qualitative research, but then sometimes it's just looped in through the course as we go." Other pharmacy education researchers received what Sylvia, a faculty member, referred to as "on the job training" or informal training. Specifically, these participants were self-taught, acquiring their qualitative knowledge through a variety of alternative mechanisms.

One way participants received training in qualitative research was by engaging in professional development or continuing education opportunities (eg, workshops, research institutes, short courses, and sessions at professional conference). Participants also received training through trial and error, by designing and engaging in qualitative research projects and figuring it out along the way. Roberta described this as "diving right in." Another

faculty member, Erin, who had not received formal qualitative research training stated, “I haven’t received any formal qualitative research training. I think I’ve mainly learned through jumping in with a few projects here or there.”

Participants also received informal training by reading research and methodology articles and reviewing other sources, such as books, to assist them in designing qualitative research projects: “I’ve been reading about it on my own, whether that’s through books or articles” (Priscilla, faculty member). Willie, a faculty member noted, “I think reading the educational research, you begin to understand what people do when they [conduct] qualitative analysis or do qualitative research. So reading other qualitative studies and reading about qualitative research to help us better understand how to do it.”

The participants also shared how they sought training from colleagues, faculty members, and staff members with expertise in qualitative research within their pharmacy school, at their university, and/or at other institutions. For example, Erin, a faculty member, stated, “So, we’ll go to an expert. . .and just kind of learn by watching their analysis of that information as best I can. . .So, kind of learning how to think through the methodology of a particular project, and the steps that we should go through to have a valid research process.”

The next set of themes conveyed the barriers and challenges the participants faced when conducting qualitative research in pharmacy education. Three barriers and challenges were found. First, participants noted how their lack of training and limited exposure to qualitative research presented a “barrier to entry” to considering and/or conducting qualitative research. Another pharmacy education researcher, Roberta, stated, “Nowhere in our pharmacy education, at least nowhere in my pharmacy education, did we talk about qualitative research.” Participants noted that quantitative approaches (eg, clinical trials) were primarily emphasized during their pharmacy training. As expressed by faculty member Armando, “I’m more comfortable with quantitative because I was trained. . .to do quantitative types of research.” However, participants did express that increased training and exposure to qualitative research, and greater access to colleagues with such expertise would be helpful in increasing their understanding of the value of qualitative research. As Erin explained, “If we became more familiar with how to do qualitative research and understand it, then. . .we would probably become more accepting of it.”

The second barrier identified by the participants included a variety of challenges surrounding recruiting participants, data collection, and data analysis. Concerning recruitment and data collection, participants described difficulties including managing the logistics of

scheduling interviews and focus groups, as well as the time needed to collect qualitative data. Evelyn, a graduate student, stated, “I think it’s challenging to recruit participants because you’re asking for a fairly significant amount of their time. . . I think one of my biggest barriers, number one, is just feeling comfortable asking people for their time. . .Then, number two, finding participants who are willing to give up their time.”

Participants in this study also discussed challenges related to the data analysis process. Spencer, a faculty member, stated, “[Qualitative research] generates a lot of data, which is good but that’s also a disadvantage in that then you’ve got to analyze that data.” Erin expressed similar concerns related to analyzing qualitative data: “It’s harder to access the information and process it. In clinical research, it was very easy to download 100 patients’ hemoglobin A1Cs and rapidly get that into an average with means and standard deviations, and run T-tests on them, and all of that kind of stuff. I think the barrier, [or] onus, of [conducting] qualitative research is processing large amounts of information.” Issues related to analyzing qualitative data included converting audio-recorded interviews into transcribed text, and securing the funds to pay someone or a service to transcribe the recordings. Some participants, such as Mark, a resident, noted that funding for interview transcription within qualitative research projects was scant, “. . . I just begged to get funding for transcription. . .even when you collaborate with faculty, I think some of them don’t really have research money, and that can be difficult. So, I think if there [were] a pool or something that we could apply for that would give the resources and funding, it [would] make it a lot easier. Because there is a lot of work ahead to transcribe that data, analyze it, [and get the paper submitted to] the journal.”

Lastly, participants expressed issues concerning the acceptability, perceived value, and lack of appreciation for qualitative research in pharmacy education. These concerns triggered apprehension for those considering qualitative approaches and served as a barrier to publication for scholars who frequently used the approach. Carmen, a graduate student, stated, “In the pharmacy world, when I’ve tried to conduct qualitative research, I feel this insecurity for legitimacy. . . I have to make it look more like quantitative methods for it to be accepted.” The participants expressed that qualitative research was open to more scrutiny than quantitative approaches and was perceived to be considered less scientific than quantitative approaches, which may impact the legitimacy of qualitative research in pharmacy education. One faculty member, Spencer, described the divide between quantitative and qualitative approaches as a “paradigm war.”

Kelly noted that formal training might contribute to the acceptance and perceived value of qualitative approaches: “because we’re not trained formally in qualitative methodology, there is less acceptance of it.”

Because of perceptions of the acceptability and value of qualitative approaches, participants expressed that it has been difficult to get qualitative research projects accepted for publication in prominent pharmacy education journals and at pharmacy education conferences. The participants communicated that, in some instances, reviewers had questioned the veracity of [their] work,” “wanted to see numbers (instead of words),” and had limited understanding of qualitative research data collection and analysis. Participants also noted that challenges existed in determining the best approach to present their qualitative work through manuscripts. Roberta discussed the challenge of writing as a qualitative researcher: “Qualitative researchers have to be really prolific writers, and describe and tell stories, and paint the picture, and describe the meanings behind what [their] participants are telling [them] or showing [them].” Participants also noted that the jargon used in qualitative research compared to that used in quantitative research might contribute to qualitative approaches not being understood by readers.

The final themes summarized participants’ views of the benefits of employing qualitative research in pharmacy education. Three benefits surfaced from the interviews. First, the participants discussed how the exploratory nature of qualitative research affords an opportunity to investigate a variety of topics in which little to no research exists. The researchers noted that the landscape of pharmacy education is changing. For example, Evelyn stated, “I think our field has a lot to offer, especially because it’s evolving right now... I think capturing it via qualitative methods is... very valuable. In light of the ongoing transformations to pharmacy education and practice, participants expressed that different perspectives might be needed to explore unknown topics. As Sylvia, a faculty member, expressed, “I think [qualitative approaches] gives us a different way to look at some of the things that we’re doing on the educational side of things, that we haven’t had before. I think it’s a different way to communicate... those findings, that information. I think there’s a need for it... [We may] gain some information that will help us do things moving forward.”

The second benefit noted by participants was that qualitative approaches could be employed to answer complex questions that quantitative methods may inadequately address. Verna, a faculty member, noted, “I think a lot of the questions that we need to ask can’t be answered quantitatively. I still come to this with a bias that quantitative research answers some questions better than

qualitative research can, but there’s definitely a place for qualitative research. ...” Similarly, another participant shared their reasoning for employing qualitative approaches: “It’s been pretty clear that multiple questions can’t be answered quantitatively, so that’s why I’m branching out into qualitative research.” However, participants also noted how qualitative and quantitative approaches could be combined (ie, mixed methods) to provide a holistic view of a research problem. Verna explained that she saw qualitative research as a type of precursor that would lead to other questions that could be answered with quantitative research. “I see the two go kind of hand-in-hand because pharmacists like numbers. Let’s face it; they want to look at the numbers, too. But I see that qualitative research has the potential to inform the quantitative research and maybe help expedite or progress that area of pharmacy education research as well.” The final benefit expressed by the participants was that qualitative methods provide greater depth of inquiry via the collection of “rich” data. For example, Erin, a faculty member, noted that qualitative approaches afford an opportunity to “put a human touch on your study” and hear the voices of the participants.

DISCUSSION

The purpose of this study was to explore pharmacy education researchers’ experiences and perceptions of qualitative research. Several themes were found presenting opportunities for the Academy to address gaps in the preparation of researchers in or entering the field. The first two themes reflected the dichotomy of training experiences. Just as faculty members are rarely formally trained to teach, they also are unlikely to be formally trained in qualitative methods, or educational research broadly. Thus, faculty members often seek out professional development to learn these desired skills, which may be problematic for those members with limited resources or insufficient opportunities. This is especially noteworthy considering that researchers (ie, humans) are the “instruments” in qualitative research.^{10,15} As Kuh and Andreas stated, “The integrity of qualitative data depends on the competence of the data collection instruments—human beings. That is, the data are only as good as the qualifications of the inquirer.”^{15,16}

While it may be challenging for faculty members to obtain formal training in qualitative methods, the pharmacy education academy has expanded its offerings in recent years. For example, the *Journal* will release a special-themed issue on qualitative research to provide frameworks and resources and has previously published similar work.¹ Additionally, the American Association of College of Pharmacy has sponsored presentations at various conferences regarding qualitative research.^{17,18}

Further, in 2014, the *Journal of Academic Medicine*, published standards for reporting qualitative research,⁴ and in 2011, the *Journal of Graduate Medicine* published a series on qualitative methods.¹⁹

Like other faculty development models, a mentoring model or community of practice may also be appropriate to help develop qualitative research skills. In fact, some pharmacy education researchers included in the study expressed a need for such mentoring and suggested that increased exposure, training, and understanding of qualitative research may increase its value and acceptability in pharmacy education. This mentoring could be formed through schools and colleges of pharmacy partnering with qualitative research experts within their institutions (ie, schools of education, psychology, etc.) and with national organizations or research consulting firms.

Because faculty members may not have read a substantial number of qualitative research studies and have no formal training in this area, they may be more averse to engaging in this approach. This is consistent with self-determination theory, where self-efficacy is a driving force of motivation.²⁰ This barrier can be addressed in two ways. The first is increased training through the methods mentioned previously. The second is to increase the presence of qualitative research in educational publications read by pharmacy educators. Providing model papers reinforces the appropriate methods and rigor of qualitative research. Journal editors could play an important role here by recognizing and selecting these quality papers for publication and subsequently promoting the works.

Participants also discussed the acceptability or appreciation of qualitative research. Most pharmacy educators are more familiar with quantitative methods. Thus, the lack of appreciation for qualitative approaches may result from an inadequate understanding of the underpinnings of the methodology, which may be linked to the lack of training and exposure to the approach in pharmacy education.^{21,22} This issue could be addressed by having better examples within the literature of qualitative methods and manuscripts that use qualitative methods to “close the loop” on research questions.

When discussing barriers, participants cited the process of conducting the research. One challenge was time, specifically, the time researchers must spend recruiting participants, and collecting, transcribing, and coding the data. According to Archibald and Munce, when conducting qualitative research, recruiting participants “is often the most challenging and resource intensive aspect of a study.”²³ Frequently, researchers misjudge the amount of time needed to recruit participants as well as the participants’ interest, availability, and

eligibility to participate in the study.²³ Perhaps this is not only an issue for qualitative research but also recruiting participants for educational research projects in general. However, in qualitative research, the logistics and time surrounding participant recruitment and data collection (eg, interviews, focus groups) are especially problematic if researchers fail to anticipate challenges and consider options to address these challenges.²³ Archibald and Munce review some of the potential challenges and outline several strategies to employ: designate a member of the research team to lead recruitment efforts; create a recruitment protocol with clear instructions, aligning recruitment strategies with the participant sample (eg, different strategies will be needed to recruit faculty vs students vs patients); anticipate prolonged engagement with the study site and gatekeepers prior and during recruitment to build trust; and provide incentives for participation.²³

According to Harper and Kuh, qualitative data analysis are often perceived to be “labor intensive and cumbersome.”¹⁵ Not surprisingly, some participants with formal qualitative research training identified this as a barrier. Such feelings are amplified for those participants delving into projects with little to no formal training. To alleviate such challenges, some participants noted that they sought the qualitative research expertise of their colleagues. Using a collaborative, team-based approach may decrease the time needed to analyze data (ie, increase efficiency) and enhance meaning-making.¹⁵ However, employing a team-based approach is not without challenges. When developing teams, it is important to be thoughtful about roles, responsibilities, and expectations and have consensus on managing and analyzing the data to increase productivity.²⁴

The participants described several benefits of qualitative research. The benefits centered around the richness of the data, the ability to answer questions for which quantitative approaches may not be best positioned to answer, and the exploratory nature of qualitative research. As stated by Givens, “The term rich data describes the notion that qualitative data and their subsequent representation in [a] text should reveal the complexities and the richness of what is being studied. . . In short, rich, thick description builds on rich data to grab readers, giving them a sense that they are there, experiencing what the researcher is representing.”²⁵ Much of the educational research conducted in pharmacy education centers on people (ie, learners, trainees, faculty members, and/or patients). Conveying their experiences using rich data may provide valuable context and perspective,²⁶ and help to inform decisions and policies made to improve educational outcomes. Participants also mentioned how

employing a mixed method approach may allow for a more holistic picture of a problem. In some instances with mixed methods approaches, qualitative data may inform a quantitative approach. For example, after analyzing qualitative data, a survey could be developed to capture a broader audience's opinions. Conversely, a qualitative approach may follow quantitative approach to delve deeper into the "how" and "why" of the data.

While our work provides key information to propel the dialogue more work should be done to explore the barriers to entry into, challenges with conducting with, and the benefits of qualitative research. Considering the aforementioned, we offer suggestions for future research to provide a deeper and more holistic understanding of these phenomena. For example, the themes emerging from our data may provide a framework for a researcher to sample a larger number of educational researchers via a survey or mixed methods approach to find keys to success and best practices among those who have been successful in conducting qualitative research. There are limitations in this study that should be addressed in future research. Specifically, the study focused on the experiences of a variety of pharmacy educators including faculty members, students, and residents. However, the majority of participants in this study were faculty members. Thus, future studies may consider delving deeper into the experiences of students and residents. As trainees, understanding their perspectives and knowledge of qualitative approaches and research training experiences could provide key insight into what is needed to prepare the next generation of scholar-practitioners.

CONCLUSION

Despite the increasing application of rigorous qualitative approaches in many health professions fields, qualitative research remains mostly underutilized in pharmacy. In this study, we interviewed 19 pharmacy education researchers and cataloged their perceptions of and experiences with conducting qualitative research. Our findings provide empirical evidence to the anecdotal dialogue that has long existed in pharmacy education to explain why some researchers are hesitant to conduct qualitative research, the challenges encountered by those who employed qualitative approaches, and the benefits that qualitative approaches provide. The findings from this study are especially useful in pharmacy and pharmaceutical sciences as the need to address complex problems intensifies in a rapidly evolving environment. Whether as a standalone method or combined with quantitative approaches, qualitative approaches may provide a suitable solution to advance pharmacy education research.

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American Journal of Pharmaceutical Education 2020; 84 (3) Article 7129.

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Appendix 1. Themes and Participant Quotes From Interviews Regarding Views on Qualitative Research

Research Question	Theme	Participant Quotes
1. Pharmacy Educators' Qualitative Training Experiences	1A. Formal qualitative research training via courses taken to fulfill degree requirements	I mean, not much (training). I think in our research and methodology class we learned about it...It was a research and methodology class as part of our pharmacy curriculum. It was the start, because we did a three-year research project as part of our graduation requirements. It was a mandatory, lay the groundwork, this is how we conduct research kind of class. (Margarita, fellow) Yeah, so I would say it would be limited, but I did take [a required course for residents]... There's a couple classes that either directly or indirectly include qualitative research content... Like sometimes it's like a whole class on qualitative research, but then sometimes it's just kind of looped in through the course as we go. (Mark, resident)
	1B. "On the job training": Informal qualitative research training	I've been to a couple of trainings about doing research in general, but there's not a lot of emphasis on [qualitative research]... more about what is qualitative research and their different methods of doing it but no specifics on how to go about doing it. Primarily just lack of experience and in terms of the research design and then analysis. So when I have done it, again, it when there have been other colleagues who know how to do it and have shared their expertise. You know, part of the research team. (Mark, resident) Informal training has been basically I guess you'd call it immersion. I've gotten involved with projects that involved qualitative approaches and so I learned by going through that process what I know about qualitative research... I've been through two projects like that. In each case I learned from others who were more experienced how qualitative work was done. (Armando, faculty member)
2. Barriers and Challenges to Considering and Conducting Qualitative Research in Pharmacy Education	2A. "Barrier to entry": Lack of training and exposure.	I think one [concern or limitation] that impedes pharmacy educators from employing qualitative research in pharmacy education] is lack of knowledge, because they are primarily, even in practice, they primarily live in a quant world. You're doing dosages, calculations... And so I think emanating from a discipline that I think has a quant mindset, even though pharmacy is evolving because they're becoming more patient centered, but predominately it's a quant mindset. (Judy, faculty member) I think there's a big barrier to entry... People not knowing how to get started. Not feeling like they have the training or the confidence, or the authority to jump into it. Not knowing who to collaborate with. Since there's not a lot of publications of solid and big qualitative projects, educators may not know who to look for either at their own institutions, or around the country (Nancy, faculty member) I think it's lack of understanding about or lack of training in qualitative research. It's fear of something different and they've got to learn about it and how to analyze that data. And it's about having that training in place or training available to do that. (Spencer, faculty member)
	2B. Recruitment of participants and collecting data	I think it's challenging to recruit participants, because you're asking for a fairly significant amount of their time... I think one of my biggest barriers, number one, is just feeling comfortable asking people for their time... Then, number two, finding participants who are willing to give up their time. I can think of it even right now with my pharmacy student who's doing research with me. We did the survey piece of [the project] and now she's interviewing. I personally don't have time to interview 20 community pharmacists for an hour. She does, so that's how that's happening. And then if we were to do a focus group, it's the logistics of scheduling and so making sure you have the ability to do that and set that up. That was one of our biggest hurdles when I was doing my training and we were doing our early immersion pilot as well. Keeping those things in mind of who your audience is and how to best access

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Appendix 1. (Continued)

Research Question	Theme	Participant Quotes
		<p>them for the type of research we do. Since if we're interviewing pharmacists, many of them work and [we're] trying to work around their schedules. (Evelyn, faculty member)</p>
2C. Resources needed to analyze qualitative data (eg, time, people, funds)		<p>It's harder to access and [analyze the data]. In clinical research, like I was doing, it was very easy to download 100 patients' hemoglobin A1Cs, and rapidly get that into an average with means and standard deviations, and run T tests on them, and all of that kind of stuff. I think the barrier, kind of onus, of the qualitative research is processing large amounts of information. (Erin, faculty member)</p>
2D. Perceptions of the lack of acceptability, value, and appreciation of qualitative research in pharmacy education		<p>There's an increasing emphasis for all schools and faculty to be pursuing research that draws in funding, and I'm not familiar with all of the funding sources that might fund this type of research. So it might not be valued as much at the institutional level. (Sylvia, faculty member)</p>
		<p>I think as well, one of the other barriers may be to do with publication....Having somewhere suitable to publish. My colleague and I submitted 2 abstracts to a pharmacy conference. And the reviewers' comments that came back just showed that they had absolutely no understanding of what qualitative research was trying to achieve. I can't remember the specific comments, but the abstracts were rejected and they were saying,</p>
		<p>"there's not a big enough sample size, you need to have numbers in it to know," which completely undermines the philosophy of qualitative research. (Cristina, faculty member)</p>
		<p>And more important than understanding, that they appreciate it. Because I think I've found a lot of people that, just because we're taught to be so, especially as pharmacists, so discrete and everything's about numbers and things that are measurable, that sometimes qualitative research gets put in the backseat compared to everything else....Because I think some people do understand it, but they don't appreciate it. Some people don't understand it, and don't appreciate it. I think some people know what you're doing and they understand what you're doing; they just don't think it's robust. Where some people don't even know what it is, I mean wouldn't even know what it is to even have the capacity to appreciate it. (Willie, faculty member)</p>
3. Perceived Benefits of Employing Qualitative Research in Pharmacy Education		<p>One of the things that we're working on right now is trying to assess student perceptions of learning methods that we're using, and getting their perception of whether the activity was built to assist in their learning development, or was it built to assess their performance. There's not really a tool that exists to measure that, so what we're trying to do is basically gather what their thoughts are, and try to identify themes of what creates in their minds a learning activity as something that encourages learning as opposed to something that is there to assess their performance.</p>
		<p>I think we're all hopefully starting to see now that to address the big challenges in education we simply need to understand the learning process better. Education I think is moving away from a redemptionist kind of approach where we try to control everything like education with a clinical trial or anything. A redemptionist approach isn't really going to improve and isolate the way we should do things. So we're needing qualitative methods to better understand context. (Gwendolyn, faculty member)</p>
		<p>We have collected survey data from [students]...And even though I have not attended the classes, it's just amazing. It's almost like through their response...about what they're gaining, and what has helped them to gain that understanding, I am vicariously traveling through the class... I feel like giving them that self-report opportunity with no prompts gives you authentic data from them.... Richness of data. . .It</p>
3A. Exploratory nature of qualitative research and the need to answer complex research problems		
3B. The richness of qualitative data		

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Appendix 1. (Continued)

Research Question	Theme	Participant Quotes
<p>3C. Answering questions quantitative research may not be best positioned to answer 3D. Providing a holistic view of a problem or solution via mixed methods.</p>	<p>opens a possibility of things, because when you do quant, you are limiting your perspective to whatever is on your instrument, or whatever you're collecting...But I feel like with qual, you have a rich terrain to see what is inside, and kind of have a wider perspective of that. You end up getting things that you didn't even envision, so I feel like it's more indicative of the uniqueness of the particular setting, or the particular demographics that you're trying to investigate. (Judy, faculty member)</p> <p>It just provides a better, larger picture and I don't know ...you're hearing someone's voice and it's not just reading numbers off of a paper. That's where I feel it's rich. And even when you read people's reflection papers and you're looking for themes emerging from that. It's their voice, and so that's why I feel like it's rich in the sense that it's not just someone checking a box of yes, no, or sometimes I agree, sometimes I don't. You get the background behind why do they agree on a certain things, or why is it specifically. That's where the richness comes from is the depth. The depth of the responses. (Roberta, faculty member)</p> <p>I think a lot of the questions that we need to ask can't be answered quantitatively. I still kind of come to this with bias that quantitative research answers some questions better than qualitative research can, but there's definitely a place for qualitative research. (Gwendolyn, faculty member)</p> <p>I also see qualitative research sort of as a precursor in some ways to being able to ask other quantitative questions. I see the two go kind of hand-in-hand because pharmacists like numbers. Let's just face it, they want to look at the numbers, too. But I see that qualitative research has the potential to inform the quantitative research and maybe help expedite or progress that area of pharmacy education research as well. (Gwendolyn, faculty member)</p>	