



Pharmacists' experiences and perceptions about simulation use for learning and development of clinical skills in Kuwait

Maram Gamal Katoue¹ · Jean Ker²

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Abstract

Background There has been a worldwide exponential rise in simulation use in health professions education. Most of the evidence about simulation-based education (SBE) comes from Western educational systems. Little is known about simulation use in the education and training of pharmacy students and pharmacists in the Middle Eastern countries. **Objective** To explore pharmacists' experiences, perceptions and attitudes toward simulation use for learning clinical skills in Kuwait. **Setting** Different governmental hospitals across the State of Kuwait. **Method** This was an exploratory descriptive study of pharmacists' perceptions about SBE. A mixed-method research design was employed whereby 110 hospital pharmacists participated in focus groups and completed self-administered surveys. The focus group interviews were audio-recorded, transcribed verbatim and analysed using framework analysis. Descriptive statistics were used to describe characteristics of study participants and survey findings. **Main outcome measure** Pharmacists' experiences, perceptions and attitudes toward SBE. **Results** A total of 110 pharmacists participated in the focus groups, of whom 88 completed the survey (80% response rate). The focus groups revealed that pharmacists had different experiences in relation to simulation use which included learning, assessment, and less frequently reported in their training as practitioners. They identified many benefits of simulation such as enhancing knowledge retention and allowing learners practice and rehearse clinical skills in safe environments. Participants' perceived barriers to simulation use in pharmacy students' training included the need for qualified faculty and simulated patients, time constrains to incorporate simulation in faculty teaching and reluctance of learners/educators to use simulation. Most participants expressed positive attitudes toward simulation and welcomed its integration in pharmacy students' learning. In response to survey, 26.1% of pharmacists reported having no prior experience in the use of simulation. The top reported barriers to using simulation for learning were time constrains (22.7%) and the need for qualified faculty (6.8%). **Conclusion** Pharmacists in Kuwait have diverse experiences regarding simulation use for learning. They expressed positive attitudes toward simulation use for learning clinical skills. Efforts are needed to standardize and expand simulation use in the education and training of pharmacy students, trainees and practitioners to equip them with the clinical skills essential for pharmacy practice.

Keywords Clinical skills · Kuwait · Pharmacists · Simulation · Simulation-based education

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✉ Maram Gamal Katoue
maramk@hsc.edu.kw

¹ Department of Pharmacology and Therapeutics, Faculty of Pharmacy, Kuwait University, P.O. Box 24923, SAFAT, 13110 Kuwait, Kuwait

² National Lead for Clinical Skills and Simulation, NHS Education for Scotland, Ninewells Hospital and Medical School, University of Dundee, Dundee, Scotland, UK

Impacts on practice

- Integrating simulation-based education into pharmacy students' training can enhance their preparation for direct patient care roles, but it comes with several implementation challenges.
- Substantial investment in time, resources and training faculty members on the effective use of simulation for teaching are necessary for the success of simulation-based training programs.

- Efforts are needed to expand simulation use in the education and training of pharmacy students, trainees and practitioners for the acquisition, refinement and maintenance of the clinical skills essential for pharmacy practice in Kuwait.

Introduction

Patient safety and preventable medical errors have gained growing attention by healthcare authorities in many developed countries. Two key governmental reports: ‘An organization with a memory’ issued by the Department of Health, NHS, in the United Kingdom [1] and ‘To Err is Human: Building a Safer Health System’ issued by the Institute of Medicine in the United States [2] highlighted the clinical, humanistic and economic impacts of medical errors. These reports provided several recommendations and practical solutions to enhance patient safety. The Institute of Medicine report recommends simulation training as a viable strategy to prevent medical errors in the clinical setting [2]. Influenced by its long-standing use in military and aviation, simulation has been used to train healthcare professionals on the clinical skills essential for safe practice [3]. Simulation can enhance patient safety through training and recruitment of skilled personnel, decreasing variations in the standards of care, developing and maintaining culture of safety and improving risk management activities [4, 5].

Simulation is an instructional technique that recreates patient care scenarios in a safe environment for the purposes of learning, feedback and assessment [3, 6]. Simulation training sessions are conducted with specific learning objectives [7]. These sessions are structured to include a pre-brief event to prepare learners, implementation of the simulation exercise, followed by facilitated debriefing that includes peer/tutor feedback and analysis of, and reflection on the experience by the learner [6, 7]. Simulation, facilitated debriefing and feedback enable learners to develop clinical skills mastery by identifying their individual learning needs and addressing them in a focused learning experience [7, 8]. Simulation-based education (SBE) involves the use of different methods/techniques such as part-task trainers (full or partial mannequin), integrated simulator models (e.g. whole- or part-body mannequin under computer control), and simulated patients (SPs) [4, 9, 10].

Clinical skills cover a wide range of skills that can be divided into technical and nontechnical skills. Technical skills include the elements necessary for medical diagnosis, treatment and physical procedures [11]. Nontechnical skills, also called human factors, include behavioral aspects of individual and team performances such as communication, decision-making, leadership, professionalism and teamwork skills [5, 12]. Teamwork embraces a set of behaviors that

facilitate effective team member interaction such as communication and decision making [13, 14]. Simulation has been used for training healthcare professionals on technical and nontechnical skills including teamwork skills [3, 13, 14]. It has also been adopted for the assessment of clinical skills [9, 10]. Simulation-based training of healthcare professionals has been shown to be effective in enhancing their clinical performance [15, 16] which often results in improved patient care [5].

The implementation of simulation in clinical skills training can be challenging. A number of barriers hinder the implementation of SBE including the need for faculty training on the effective use of this teaching technique [9, 17], and the time constrains to integrate simulation in their teaching [3, 18]. Establishing specialized simulation facilities requires extensive resources to cover the costs of facility, equipment and personnel [9, 17]. The main challenges in using SPs include the expense, time and effort required for their training [4].

Simulation has been integrated in pharmacy education in many developed countries to prepare students for pharmacy practice [19–21]. It has been successfully implemented to train students on therapeutics, communication, physical assessment, patient safety and healthcare teamwork skills [20]. However, the literature describing the use of simulation in pharmacy education is limited in developing regions including the Middle Eastern countries.

In Kuwait, pharmacy students graduate from Kuwait University Faculty of Pharmacy after completing the 5-year Bachelor of Pharmacy degree program. Most of students’ learning is achieved through large group teaching which is reinforced with small group learning, practical laboratories, and experiential training during the last 2 years of the program. The clinical pharmacy services are in their early stages of development in Kuwait. The practice of most pharmacists still involves performing traditional roles. There are ongoing efforts by Kuwait health authorities and Faculty of Pharmacy to improve pharmacy practice services.

Most of the evidence about SBE and learners’ perceptions about simulation comes from Western educational systems [22–24]. A review of the literature suggests no previous studies describing pharmacists’ perceptions of using simulation for learning clinical skills in Middle Eastern countries, including Kuwait.

Aim of the study

This study aimed to explore pharmacists’ experiences, perceptions and attitudes toward simulation use for learning clinical skills and their opinions about the opportunities and barriers to the use of simulation in the education and training of pharmacy students in Kuwait.

Ethics approval

Ethical approval for the study was obtained from the ethical review committee at the Dasman Diabetes Institute, Kuwait. Participants provided written consent to participate in the study.

Method

Context

In Kuwait, the governmental healthcare system consists of three levels of healthcare delivery: primary, secondary, and tertiary. Primary healthcare is delivered through healthcare centres distributed across Kuwait. Secondary healthcare is provided through six general hospitals and tertiary healthcare is delivered through a number of specialized hospitals and medical centres. Pharmacists working in these settings have diverse educational and cultural backgrounds, with education and training from Kuwait, other Middle Eastern countries, the United Kingdom and India. Kuwait University Faculty of Pharmacy is the only pharmacy school in Kuwait.

The researcher who conducted the focus groups (MK) is a pharmacy educator but she was not involved in the delivery of SBE at the time of the study. She learnt about this instructional technique during her enrollment in a post-graduate program delivered by the University of Dundee to healthcare professionals in Kuwait. She realized the benefits of SBE on healthcare professional performance and patient safety and wanted to explore the role of simulation in preparing pharmacists in Kuwait. There was no relationship between MK and the study participants. During the focus groups, MK tried to keep a neutral position and she encouraged participants to recall their prior experiences and provide their perceptions about simulation use for learning. The co-researcher (JK) is a professor of medical education with long experience in SBE. She was supervising the research project and participated in the analysis and interpretation of the findings.

Research design

This was an exploratory descriptive study of pharmacists' experiences, perceptions and attitudes toward simulation use for leaning clinical skills in Kuwait. A mixed-method research design was employed whereby a broad sample of hospital pharmacists participated in qualitative study (focus groups) and quantitative study (self-administered survey).

Study participants

Pharmacists working in several governmental hospitals (6 general hospitals and 3 specialized hospitals) were invited to participate in the study. The study participants in nine focus groups (G2–G9) were recruited using theoretical sampling, in which participants are selected to reflect a range of the total study population [25]. Pharmacists were selected to be diverse in their personal characteristics (e.g. age, gender, educational institutions attended) to gain breadth of perceptions and experiences about simulation. Purposive sampling was used to select participants of two additional focus groups. In this sampling method, participants are deliberately selected to represent different beliefs and experiences that can be informative to the research question [26, 27]. The first focus group was conducted among a group of pharmacy educators (G1), while the final focus group included a group of newly graduated pharmacists (G11) to investigate if these pharmacists would hold different perceptions about simulation.

Research methods

Triangulation was used to aid in understanding pharmacists' perspectives about simulation. This involves comparing the results from two or more different methods of data collection/sources to corroborate an overall interpretation of data and to ensure comprehensiveness [28, 29]. Focus groups were conducted to gain in-depth understanding of pharmacists' experiences and perceptions about simulation, while survey was used to capture pharmacists' individual responses and to complement data from focus groups. This can be considered an embedded mixed-method research design, in which one research method (focus groups) was the principal method while the other (survey) was used to provide a supportive role [30].

Focus groups

Qualitative research is used to understand experiences, views, and attitudes from the perspectives of respondents [26]. A series of focus groups (G1–G11) were conducted among pharmacists to gain insights into their perspectives about simulation. A semi-structured focus group topic guide was developed to facilitate focus group discussion (Appendix 1). The topic guide was developed to explore pharmacists' experiences and perceptions about simulation based on a literature review on SBE. It was reviewed by a Professor from Faculty of Pharmacy, a Professor in Medical Education, and the principal investigator (a pharmacist) to enhance its content validity. The topic guide was pre-tested by conducting focus group among a group of five pharmacists. Based on the comments provided by these pharmacists,

modifications were made to the topic guide and facilitator's questions to enhance the clarity of questions and flow of discussion.

The number of participants at each focus group ranged from 6 to 12 pharmacists. The focus groups were repeated until data obtained reached saturation. At the outset of the focus group, participants were provided with the following definition of simulation: 'an interactive instructional technique that substitutes or amplifies real clinical experiences with guided educational experiences that evoke or replicate essential elements of the real world' [5]. Examples of simulation methods/techniques and the clinical skills that can be addressed by SBE were outlined to the participants.

Qualitative data analysis

The dialogue from each focus group was audio-recorded and transcribed verbatim. Qualitative data analysis was performed using Spencer and Ritchie's framework analysis [31]. This approach involves familiarization with the data, identification of a thematic framework, indexing the data and charting the codes and the representative quotes under the appropriate themes and sub-themes [31]. Multiple coding of the transcripts was conducted by the two investigators (MK and JK) to enhance the reliability of qualitative data analysis [25, 29]. The two investigators independently coded some transcripts at the initial stage of the coding process. Then, they discussed to compare agreement in the interpretation of the findings, resolve differences and refine the coding frame. Subsequently, the themes/subthemes were identified and reported with the aid of illustrative quotes. The quotes are defined by a code: (P [1–12]: G [1–11]) representing the participant and focus group interview, respectively.

Survey

Participants were asked to complete an anonymous survey (Appendix 2) after the focus groups. The first section of the survey asked for demographic and other characteristics of the respondents. The second section qualitatively explored participants' experiences and views about simulation. Participants were asked in open-ended questions about their previous experience in using simulation for learning and perceived barriers to the use of simulation in training pharmacy students on clinical skills. Prior to its use, the survey was tested for content, readability and comprehension with 5 pharmacists and few changes were made to enhance its clarity.

Analysis of survey data

The quantitative data from the survey (participants' demographic and other characteristics) were entered into the

Statistical Package for Social Sciences (IBM SPSS Statistics for Windows, version 23, Armonk, NY: IBM Corp) and descriptive analysis was conducted. The characteristics of study participants were reported using frequencies and percentages. Responses to the open-ended questions were analysed using content analysis. The written text was read and analysed to identify prevalent themes. Responses were grouped under the relevant themes. The number of responses for each theme was counted to calculate percentages of responses.

Results

Study subjects

A total of 110 pharmacists participated in the focus groups. Of these, 88 completed the survey (80.0% response rate). The mean (SD) age and years of experience as practitioners of the respondents were 34.5 (11.2) years and 10.0 (10.3) years, respectively. Table 1 shows the characteristics of respondents.

Results from focus groups

The analysis of the focus groups transcripts revealed several themes/subthemes overarching under simulation as a learning method for the acquisition of clinical skills (Fig. 1). These are illustrated below with supportive quotes. Additional quotes are presented in Table 2.

1. Prior experience of simulation

The focus groups revealed the experiences of different groups of pharmacists in relation to simulation use for learning. These included pharmacy graduates from Kuwait University, graduates from other countries and pharmacy educators. Participants had varied levels of experiences in simulation use for learning, ranging from no prior experience to well-established experiences. The experiences reported by most pharmacists involved interacting with an SP to learn communication and counseling skills.

Pharmacy graduates from countries such as Egypt, Jordan and India frequently reported no prior experience of simulation:

This is the first time for me to experience this learning method (P2:G2)

Most of the experiences of Kuwait University graduates were related to their learning during undergraduate education:

Table 1 Characteristics of survey respondents (n=88)

	Frequency	Percentage
<i>Gender</i>		
Male	24	27.3
Female	64	72.7
<i>Age (years)^a</i>		
20–29	36	40.9
30–39	27	30.7
≥40	19	21.6
<i>Nationality</i>		
Kuwaiti	54	61.4
Non-Kuwaiti	34	38.6
<i>Basic qualification in pharmacy</i>		
B.Pharm.	79	89.8
M.Pharm.	8	9.1
Pharm. D	1	1.1
<i>University^a</i>		
Kuwait University graduates	40	45.5
Other university graduates	45	51.1
<i>Postgraduate qualification in pharmacy</i>		
M.Sc. Pharm	5	5.7
Ph.D.	2	2.3
M.Phil.	1	1.1
Others	3	3.4
<i>Experience as practitioners (years)^a</i>		
<6	41	46.6
6–10	15	17.0
>10	27	30.7

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^aPercentage may not total 100% due to some missing responses

I experienced this method in my previous leaning on how to dispense prescriptions in the pharmacy practice courses (P3:G6)

A pharmacy educator at Kuwait University Faculty of Pharmacy described his use of simulation as following:

As teachers, we use simulation to train students on counseling. We act as patients and the students are required to have a conversation with the patient/actor (P3:G1)

Some pharmacy graduates from the United Kingdom recalled the use of simulation for assessment of clinical skills during objective structured clinical examination (OSCE):

When we were students, we used to have OSCEs, in which we had to interview doctors or patients and show how to deal with them (P1:G8)

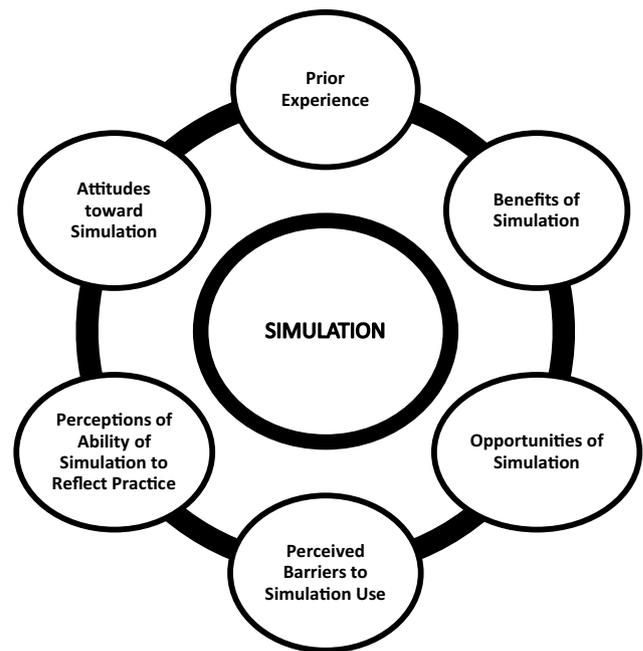


Fig. 1 Key overarching themes under ‘Simulation’

2. Benefits of simulation

Participants recognized many benefits of using simulation for learning. They believed that simulation can enhance knowledge retention by involving learners in practical application of the clinical skill. It also facilitates students’ learning under controlled conditions.

It becomes like a live *practical* demonstration of the skill; that certainly helps in learning (P1:G1)

When you see, you will learn better and you will *remember*. (P2:G6)

Another reported benefit of simulation is to provide the opportunity for students to practice and rehearse skills in a safe environment:

When you work out the scene with students, it becomes educational. They can avoid doing the mistakes while discussing them at the same time (P5:G9)

3. Opportunities of simulation use in training pharmacy students

Participants agreed that simulation would be ideal for training students on communication skills, including communication with healthcare professionals, patients and patients’ caregivers. They proposed the use of simulation to train students on clinical skills relevant to pharmacy practice such as medication dispensing and patient counseling.

Table 2 Main themes from the focus groups and examples of supporting quotes

Theme	Supportive quotes
1. Prior experience of simulation	<p>“We learned through this method when we were at the university. I am a graduate from the UK. The instructors used to assign a case to two or three students and they were asked to present it in front of the class” (P1:G2)</p> <p>“The teaching assistants were acting the role of the patient and we were the pharmacists and we had to interview them” (P2:G6)</p> <p>“The basic skills covered were communication skills and the skills needed within the pharmacy program such as patient counseling” (P1:G4)</p> <p>“We used this method to learn how to retrieve patient history and to provide counseling on medications. This discussion used to take place between me and one of my colleagues. The instructor attended the session, observed the interaction and provided feedback” (P4:G4)</p> <p>“As a preceptor, sometimes I try acting out scenes with my trainees to show them how to communicate with patients” (P5:G1)</p>
2. Benefits of simulation	<p>“I feel that this method is so useful, especially at the level of students who can fully concentrate to learn a new skill” (P3:G2)</p> <p>“For students, this can be an easy method to transfer information” (P3:G4)</p> <p>“I find it a practical way to be used for students’ learning” (P2:G8)</p> <p>“You can control all the circumstances within the simulation scenario when you apply it for students learning at the faculty. This can help students to learn safely without harming any patient” (P4:G8)</p>
3. Opportunities of simulation use in training pharmacy students	<p>“I think simulation can be used for training students on communication, medications dispensing and patient care” (P3:G6)</p> <p>“It can be used to teach students about therapeutics” (P7:G6)</p> <p>“Counseling skills with patient...” (P2:G10)</p> <p>“This method can be used to teach students how the physician and pharmacist can collaborate to choose the proper medications for the patient. It can be used to teach teamwork skills” (P2:G2)</p> <p>“It can be used to teach interprofessional communication. The model can be applied to show the interaction between a pharmacist and a nurse as they both share the responsibility for patient care” (P6:G2)</p> <p>“This method can be used to train students on how to deal with certain difficult situations such as angry or aggressive patients” (P5:G11)</p>
4. Perceived barriers to simulation use in training pharmacy students	<p>“It needs proper training and preparation” (P2:G10)</p> <p>“Simulation sessions require adequate preparation. Learners need some background knowledge about what is going to be explained in the simulation scenario to help them understand” (P3:G1)</p> <p>“One of the barriers is that you may not have good actors” (P6:G4)</p> <p>“Some students might not accept to perform simulation. I personally like to watch it but I don’ like to be part of it” (P4:G7)</p> <p>“The fear of change or resistance to change when you try to apply simulation for students learning. Everyone will consider the additional work needed to use simulation. Whenever you try to improve something, resistance will arise. (P1:G11)</p>
5. Perceptions of ability of simulation to reflect practice	<p>“The simulated scenario can reflect a real patient interaction from our practice” (P8:G6)</p> <p>“It can be realistic and reflect an actual patient scenario, but in reality this kind of detailed interaction with a patient is unlikely to happen due to our heavy workload” (P5:G6)</p> <p>“Simulation scenarios are often ideal and may not always mirror what happens in practice. When we are dispensing medications at the outpatient pharmacy, there is a long line of patients waiting. It would be nice if you could recreate this actual pressure in the simulation scenarios” (P2:G9)</p> <p>“The choice of the actor who enacts the role of the patient is important. I still recall this incident from the time of my study when I had to counsel a male pharmacist about contraceptives use in a simulated case. I felt that wasn’t real” (P4:G6)</p>

Table 2 (continued)

Theme	Supportive quotes
6. Attitudes toward simulation	<p>“For me, I truly like it. I enjoy taking part of simulation scenario” (P1:G11)</p> <p>“I think it is easy to implement and very useful” (P2:G6)</p> <p>“I feel that it fits the students, not the pharmacists. I just feel it is embarrassing to be asked to enact a scenario” (P3:G4)</p>
<p>I think simulation would be perfect for learning how to communicate with others (P4:G7)</p>	<p>Some participants described learners’ reluctance to be involved in simulation due to personal/psychological barriers:</p>
<p>It can be used to illustrate to students the dispensing process and patient counseling (P6:G4)</p>	<p>We used to feel embarrassed as students to be engaged in a scenario with a simulated patient (P2:G6)</p>
<p>Some participants recommended the integration of simulation with other forms of teaching:</p>	<p>5. Perceptions of ability of simulation to reflect practice</p>
<p>A combination of both simulation and lecturing would be ideal for teaching clinical skills. (P6:G9)</p>	<p>Many participants felt that simulation can recreate scenarios that happen in real practice. They expressed positive perceptions about the ability of simulation to recreate patient care scenarios:</p>
<p>A number of participants believed that simulation would provide students with the opportunity to gain wide range of experiences:</p>	<p>It reflects a real scenario that can happen in real practice (P3:G2)</p>
<p>From one patient to patient, the interaction differs. The student can learn how to deal with different types of patients (P3:G6)</p>	<p>Others thought that simulation often portrays ideal scenarios which do not reflect their actual practice. Some participants believed that the ability of simulation to reflect practice diminishes by portraying a setting/work environment that does not reflect the reality of practice:</p>
<p>4. Perceived barriers to simulation use in training pharmacy students</p>	<p>I think you often depict a perfect scenario. In real practice, you may not see something like that (P3:G6)</p>
<p>Participants identified a number of barriers that could impede simulation use in undergraduate pharmacy education. These included the need for preparation, well-trained SPs and qualified faculty in the use of simulation for teaching, and the culture of the organization toward using different approaches to teaching and learning.</p>	<p>6. Participants’ attitudes toward simulation</p>
<p>Simulation needs adequate selection for the examples you present. Not only the scenario, but also the availability of suitable persons who act the scenario (P5:G6)</p>	<p>Most pharmacists expressed positive attitudes toward simulation use for learning. It was considered by many of the newly graduated pharmacists as a novel method for learning clinical skills that they greatly enjoyed.</p>
<p>It depends on the teaching staff. It needs training (P2:G9)</p>	<p>I feel that simulation is a beautiful and easy way of learning clinical skills (P7:G11)</p>
<p>The fear of change when you try applying something new for students’ learning (P1:G11)</p>	<p>Only few participants expressed negative attitudes toward simulation. One pharmacist described his opinion about simulation as following:</p>
<p>Inadequate time to integrate simulation in faculty teaching emerged as another barrier. A pharmacy educator indicated that:</p>	<p>It is boring. I can watch it but I don’ like to be part of it (P4:G7).</p>
<p>Simulation is more time-consuming than regular teaching (P3:G1)</p>	

Results from survey

1. Prior experience of simulation

Table 3 summarizes the different experiences of pharmacists in simulation use for learning. About one quarter of respondents (26.1%) reported having no prior experience in the use of simulation. Some graduates from Kuwait and other countries reported simulation use during undergraduate education. This mostly involved interacting with SPs to learn communication/counseling skills. Only four respondents (4.5%) described experiences with simulation use for training as practitioners.

2. Barriers to simulation use

Table 4 illustrates pharmacists' perceived barriers to simulation use in training pharmacy students. The top reported barriers to implement simulation were: time constrains to use simulation (22.7%) and the need for qualified faculty (6.8%). Other reported barriers included the need for preparation and trained SPs, and reluctance of learners/educators to use simulation.

Discussion

This study provides insights into pharmacists' experiences and perceptions about simulation use for learning clinical skills in Kuwait. Pharmacists in Kuwait have diverse educational experiences regarding simulation use for learning, but they expressed positive attitudes toward simulation. These findings can encourage the development of simulation-based training programs for pharmacy students and pharmacists.

In this study, triangulation was used to provide a comprehensive overview of pharmacists' perspectives about simulation [29]. Focus groups provided in-depth exploration of pharmacists' experiences and perceptions about simulation. Survey documented pharmacists' individual experiences in simulation use for learning and perceived barriers to simulation use in training pharmacy students. The findings from the two methods were aligned and the survey confirmed the findings from the focus groups. The two methods showed that pharmacists had varied levels of experiences in simulation. This included simulation use for learning, assessment, and less frequently reported for training as practitioners. This disparity in pharmacists' experiences could be attributed to the diversity of the pharmacists' population practicing in the healthcare system of Kuwait. Some Kuwait University graduates recalled the use of simulation during their undergraduate education. A very simple form of simulation

Table 3 Pharmacists' responses to the open-ended question about their prior experience of simulation use for learning

Prior experience in simulation	Frequency	Percentage ^a
No prior experience	23	26.1
Simulation use for learning by graduates from Kuwait University	18	20.5
Simulation use for learning by graduates from the United Kingdom	7	8.0
Simulation use for learning by graduates from Middle Eastern countries	5	5.6
Simulation use for training as practitioners	4	4.5

^aPercentage did not total 100% because not all survey respondents (n=88) responded to this open-ended question

Table 4 Pharmacists' responses to the open-ended question about the barriers to simulation use for learning

Barriers to simulation use in students' training	Frequency	Percentage ^a
Time constrains	20	22.7
The need for qualified faculty in simulation use	6	6.8
The need for effort for preparation and careful selection of appropriate case scenarios	4	4.5
The need for trained SPs	3	3.4
Reluctance of learners/educators to use simulation	3	3.4
The limited number of learners in a simulated session	3	3.4
Challenge of accepting change	1	1.1

SPs simulated patients

^aPercentage did not total 100% because not all survey respondents (n=88) responded to this open-ended question

which involves students dispensing simulated prescriptions has long been used to train pharmacy students on patient counseling skills at Kuwait University Faculty of pharmacy [33].

The simulation technique that was reported by most pharmacists involved interacting with SPs to learn about counseling skills. Simulated patients have been widely used for teaching communication and counseling skills for pharmacists at varying levels of competency. For example, Rickles et al. [34] conducted a combined lecture-laboratory course involving SPs to train pharmacy students on communication. Nestel et al. [35] used volunteer SPs in communication training session of pre-registered pharmacists. Monaghan et al. [36] used SPs in teaching physical assessment skills to pharmacists. Participants identified the need for qualified SPs among the prominent challenges to the use of simulation for students learning.

The survey showed that only four participants recalled simulation use in their training as practitioners. There are very few studies in the literature which describe simulation use in training practicing pharmacists in developed countries [36, 37]. Simulation-based continuing education programs can be difficult to implement due to their high expenses in terms of resources, including the costs of simulators and time [3].

Participants perceived simulation to be an effective method for learning clinical skills. Adult learn best when they are actively involved in their learning [38]. Simulation engages learners in their learning in a way that passive teaching methods such as lectures cannot achieve, resulting in more effective learning [7]. Some pharmacists suggested that simulation can augment learning from lectures to achieve best outcomes. This has been previously demonstrated in some studies reported in the literature [39, 40].

Pharmacists identified many opportunities for simulation use in undergraduate pharmacy education such as students learning about communication, teamwork and the clinical skills essential for pharmacy practice. Simulation has been found to be effective for teaching teamwork skills and safe communication and it has been used in interprofessional education of healthcare professionals [3, 14, 41]. It has also been successfully integrated in pharmacy education to train students on therapeutics and patient care skills in developed countries [19–21]. Some participants suggested that simulation can capture the range of variation that can be encountered in clinical practice. Simulation can widen the experiences of learners by exposing them to a broad range of patient problems and consequently, prepare them to deal with these problems in their future practice [6].

The findings from the focus groups and survey showed that pharmacists' top perceived barriers to simulation use for learning included time constraints to incorporate simulation in faculty teaching, the need for qualified faculty,

need for preparation and well-trained SPs, and reluctance of learners/educators to use simulation. Moreover, pharmacy educators acknowledged that simulation requires more time for preparation than other forms of teaching. These findings concur with the barriers to simulation use for learning that have been previously described in the literature [3, 17, 18, 24]. Some pharmacists described learners' reluctance to be engaged in simulation due to personal/psychological barriers. This supports the available evidence that learners frequently find participation in simulation exercises embarrassing, stressful and may put them under pressure [18, 23].

Some participants felt that simulation can recreate scenarios that happen in real practice, while others thought that it may not always reflect the reality of practice. Simulation is only as realistic as participants are willing or able to consider it to be [24]. To maximize the educational benefit from simulation-based programs, trainers need to prepare appropriate scenarios, including realistic supporting clinical materials [17]. They can develop these scenarios based on real patients' experiences and use simulated responses drawn from actual patient narratives to enhance the realism of simulation [42].

Most pharmacists expressed positive attitudes toward simulation use for learning. It was considered by many participants, especially the newly graduated pharmacists as a novel method for learning that they enjoyed. Enjoyment has been identified as an important feature of SBE that motivated students for active participation in simulation exercises [23]. Overall, simulation has been well accepted/received by students and educators [43]. These findings would encourage integrating advanced forms of simulation, such as high-fidelity human patient simulation in pharmacy students' training in Kuwait to enhance their preparation for direct patient care roles.

In view of the recognized benefits of SBE, efforts should be made to expand simulation use in the education and training of pharmacy students and pharmacists in countries of the Middle East, including Kuwait. Substantial investment in time, resources and training faculty members on the effective use of simulation for teaching is necessary for SBE programs to be successful.

Among the strengths of this study is the broad sample included, use of triangulation and attempting to find exceptions (negative cases). Negative cases are the findings that oppose the responses provided by most study participants. The use of triangulation, reporting negative cases, and obtaining high level of saturation (concordance) in category development have been proposed as a means to establish credibility and transferability of qualitative research [44]. Among the limitations of the survey method was the existence of some missing responses. The main limitation of the focus group method is that the information provided by participants could be influenced by the social context and

power dynamic of the interview. Although attempts were made to maintain a neutral position, the facilitator of the focus groups could have introduced some bias during the discussions due to her professional background as a pharmacy educator. By having a facilitator of the focus groups who is an educator, participants might also have provided socially desirable responses. Most of participants were pharmacists practicing in secondary and tertiary hospitals and the sample did not include pharmacists practicing in primary care centres. However, we believe that primary care pharmacists are similar to hospital pharmacists in terms of their educational and cultural backgrounds which would influence their responses to the research questions. As a general limitation of qualitative research, the findings of this study are not intended to be generalizable. These findings may be transferable to other contexts where their appropriateness/applicability can be assessed to be relevant [27].

Conclusion

Pharmacists in Kuwait have varied levels of experiences in simulation use for learning but they expressed positive attitudes toward its use for learning clinical skills. Efforts are needed to expand simulation use in the education and training of pharmacy students, trainees and practitioners for the acquisition, refinement and maintenance of the clinical skills essential for the pharmacy profession. Pharmacists identified several barriers to simulation use in training pharmacy students. Extensive investment in time, resources and faculty training on the effective use of simulation could help overcome these barriers to enhance simulation use in pharmacy education. This would improve pharmacists' preparation to provide safe and effective patient care services.

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