

Assessment of Educational Needs and Design of a Preceptor Development Program for Health Professional Education Programs in Qatar – ‘The Practice Educators’ Academy’

Banan Mukhalalati (✉ banan.m@qu.edu.qa)

Qatar University <https://orcid.org/0000-0002-0049-8879>

A Awaisu

Qatar University

S Elshami

Qatar University

B Paravattil

Qatar University

M Zolezzi

Qatar University

M Abu-Hijleh

Qatar University

A Moslih-Almoslih

Qatar University

A Carr

Qatar University

H Bawadi

Qatar University

M Romanowski

Qatar University

R Almahasneh

Qatar University

R Bacha

Qatar University

Research article

Keywords: Clinical preceptors, clinical training, educational needs’ assessment, experiential learning, health professional educators’ development

Posted Date: November 20th, 2019

DOI: <https://doi.org/10.21203/rs.2.17437/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background: Experiential learning is the backbone of many healthcare professional education programs; however, the quality of learning is profoundly dependent on the skills, experiences, and proficiency of the clinical preceptors who largely contribute to this experience. This study was conducted at the Qatar University Health Cluster, which comprises of the Colleges of Pharmacy, Medicine, and Health Sciences, with a primary objective of identifying the educational and teaching needs of preceptors in order to design and validate an educational professional development program.

Methods: This study adopted a mixed methods approach and was conducted in three stages: 1) assessment of preceptor educational needs; 2) design of 'The Practice Educators' Academy' program; 3) validation and refinement of the designed program. The needs' assessment was conducted at all three colleges through a validated survey and focus groups with preceptors, students, and clinical faculty members. The sample included 209 survey respondents and 11 focus group sessions.

Results: Results yielded five key themes and a variety of individual preferences, which were used to design a five-module face-to-face two-day interactive workshop. For validation of the designed program, the syllabus was shared with purposively selected scholars and experts in the area of health professions education, and their feedback was collected and critically examined. Further refinement of the program was performed based on this feedback resulting in a representative and validated program ready for piloting.

Conclusion: A preceptor development program on experiential teaching and learning skills was successfully designed and validated, with the needs of the clinical preceptors at its core.

Background

Experiential education is a fundamental component of many health profession education programs that aim to develop students' knowledge and skills necessary to practice competently in healthcare settings (1-3). The planning, supervision, and assessment provided by clinical preceptors significantly influence the quality of the learning and skills gained during experiential education activities (Altmann, 2006; Yonge & Myrick, 2004). Clinical preceptors bridge the gap between didactic learning and practical application to prepare competent healthcare professionals (4). They serve as educators, mentors, and role models and should ideally possess both clinical and teaching skills (5). Although preceptors typically receive substantial clinical training, research has shown that most preceptors undergo suboptimal education in teaching and learning methods, assessment, and provision of feedback to students (6, 7). The health profession's education and professional development programs recognize the importance of having skilled and proficient clinical preceptors and are committed to their development as clinical educators. At Qatar University (QU), the College of Pharmacy (CPH), the College of Medicine (CMED), and the College of Health Sciences (CHS) independently offer preceptor development programs aligned with their curricular and accreditation standards. In recent years, the three colleges were joined as part of a Health Cluster,

which aims at sharing resources and unifying the skills of adjunct faculty involved in practice-based teaching.

The CPH experiential education program was established in 2009, and comprises 960 hours of training at a variety of settings including community pharmacies, primary care clinics and hospitals in various specialties. The experiential program is considered an essential component of the pharmacy curriculum at QU, which is accredited by the [Canadian Council for Accreditation of Pharmacy Programs \(CCAPP\)](#). Many of the preceptors recruited at that time were from pharmacy educational backgrounds that lacked experiential education in their curricula (8). The CPH preceptor program was initially intended for novice preceptors, placing significant efforts in the development of their general clinical skills to become effective clinical preceptors. Although the ongoing preceptor development program has improved the clinical skills of preceptors, there has been limited time and resources to focus on the various learning styles of the preceptors. The CHS includes different allied health disciplines, including Nutrition and Dietetics (accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND)), Biomedical Sciences (accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)), Public Health, and most recently, Physiotherapy. All programs offer experiential training ranging from 300 hours to 1200 hours. The nutrition and dietetics program offers preceptor training in Qatar adopted from the Commission of Dietetic Registration, whereas other programs deliver their own preceptor training workshops in response to the needs raised by the preceptors. The CMED was established in 2014 with the main objective of providing a Doctor of Medicine (MD) program. The MD curriculum is a six-year undergraduate program. The program has three phases, the first phase serves as a transition year, the second phase incorporates integrated organ systems and basic medical sciences, and the third phase is the clerkship or clinical phase, which began in January 2019. The CMED preceptor program was developed to support clinical faculty in the healthcare institutions where the medical students attend clinical placements and clerkships. The experience of preceptors was variable and they were from many different countries and cultural backgrounds. Therefore, a suitable faculty development program is required to support all doctors and clinicians teaching and assessing our medical students in different clinical settings.

As it is shown, several preceptors' instructional and educational training has been delivered across several health disciplines. In order to focus strategically on preceptor development efforts, it is essential to understand the importance of conducting a needs' assessment and utilizing it in designing professional development programs. The role of educational needs' assessment in planning for continuing professional education programs in medical fields is similar to the role observed in the general context of adult educational programs (9, 10). It monitors ones' knowledge, skills, and attitudes while identifying gaps between present and desired competencies (9, 10). This was supported by evidence from systematic reviews of the literature which demonstrate the effectiveness of medical education programs that are conducted based on needs' assessment, and this approach was considered as one of the areas of continuing professional development best practice (11, 12). Needs' assessment encourages medical practitioners to determine what and how to learn, and to reflect on what has been learned (13). Thus, preceptors must first develop better recognition of their current performance in relation to professional

expectations in order to take responsibility for improving their teaching skills (14). Preceptors' needs' assessment also encourages their involvement in self-directed life-long learning and continuous professional development (8).

Since preceptors are considered adult learners with their own learning styles, appropriate and comprehensive assessment of their diverse educational needs should be considered when designing successful educational development programs for preceptors in all QU-Health colleges. This may lead to better integration and efficient use of resources. The objectives of this study are to assess the educational needs of QU Health Cluster's adjunct faculty members (preceptors), in order to identify gaps in their preceptorship teaching skills, and to develop and validate an educational professional development program titled 'The Practice Educators' Academy'.

Methods

This study involves three sequential stages: (1) assessment of the educational needs of the preceptors; (2) design of 'The Practice Educators' Academy' program and; (3) validation and refinement of 'The Practice Educators' Academy' program. Details of these stages are provided below.

Stage 1: Assessment of the educational needs of the preceptors

Study design

This stage was conducted using a convergent mixed-methods triangulation study design. Quantitative and qualitative data were collected concurrently, analyzed separately, and the results were integrated, compared, and interpreted.

Quantitative phase

Setting

Preceptors from the Ministry of Public Health (MoPH), hospitals or facilities under the Hamad Medical Corporation (HMC), and primary health centers under the Primary Health Care Corporation (PHCC) in Qatar were involved in this study. Other organizations and medical institutions involved included Qatar Foundation for Education, Science and Community Development (QF), Qatar Cancer Society (QCS), Aspetar Sports Medicine Hospital, Fahad Bin Jassim Kidney Center, and Ebn Sina Pharmacy. The study began with preceptors from three affiliated hospitals for the CMED (Hamad General Hospital, Al Wakra Hospital, and Al Khor Hospital) only. Upon completion of this, the study was expanded to include preceptors from the CPH and the CHS.

Study population and sampling

The study population comprised of all clinical preceptors at the affiliated clinical sites who were involved or potentially could be involved in the experiential and clinical training of undergraduate students at the

CPH, CMED, and CHS at QU. The study included preceptors from the CMED initially and later expanded to include CPH and CHS. The names and contact details of the preceptors were obtained through the clinical training coordinators at the three colleges. Because of the high potential for non-response bias, preceptors that were reachable were targeted and approached as opposed to a random selection. Therefore, we used universal, and convenience sampling techniques and no sample size was determined for the study. The sampling strata were preceptors representing the disciplines of (i) medicine, (ii) pharmacy, and (iii) health sciences (nutrition, biomedical, public health).

Development and validation of survey content

This phase involved utilizing a pre-tested self-reported questionnaire intended to determine the preceptors' perceptions of their educational needs, the roles and context of education and training of preceptors, and their requirements for preceptor development. An iterative process was adopted in developing and validating the survey. The development of the survey began with a review of pertinent literature that described core competencies and professional standards for health professional educators (15); (16); (17); (18); (19); (20). The literature review resulted in a preliminary list of 36 competencies, which the researchers reviewed and then eliminated competencies they thought not relevant to the target clinicians and context of the study. The list was reduced to 13 core competencies that formed the first draft of the survey. The training needs survey included questions about the roles and context of education and training of the preceptors and about their requirements for faculty development. The initial draft of the survey was shared through SurveyMonkey® (Survey Monkey Inc., San Mateo, California, USA) with a group of eight healthcare professionals who were involved in leading the clinical training planning and program delivery at the affiliated hospitals and primary health centers. Their consensus served as a Delphi method as described by Colton et al. (2004), where a web-based tool was used in collecting the input of a panel (21). A two-round Delphi iterative survey-based input from those eight experts was followed by a third face-to-face meeting to achieve face and content validity of the questionnaire via a consensus consultation (22); (23). When the provisional survey questions were shared with the Delphi panel, members were encouraged to respond to the survey and comment on every question that needed revision. Following two rounds of responses, the panel members were invited for a face-to-face group discussion to review the survey for the third time and to verify that they felt it was complete and ready for implementation. The survey was finalized and used in the study with preceptors for the CMED. The final version of the questionnaire comprised three sections: (1) demographic and professional characteristics (six items); (2) educational needs (two items with several sub-items); (3) preferences and motivators (four items). This final version of the survey was adopted by the CPH and the CHS approximately six months later.

Survey administration

The survey was distributed electronically through an e-mail providing a link to the questionnaire at SurveyMonkey® (Survey Monkey Inc., San Mateo, California, USA) to all the preceptors that were recognized to play a role in educating QU Health Cluster students. This included 179 clinical preceptors

who taught or aspired to teach CMED students and 146 preceptors from both CPH and CHS. Reminder e-mails were sent to the study population every two to four weeks in an effort to increase the response rate. The survey was opened from June 2018 to February 2019. The survey questionnaire was anonymous, with no personal identifiers.

Statistical analysis

Data were analyzed using the IBM Statistical Package for the Social Sciences version 24 (BM SPSS® Statistics for Windows; IBM Corp, Armonk, NY, USA). Descriptive statistics, including frequencies and percentages, were used to summarize the responses generated from the study as they were all categorical variables.

Qualitative phase

For this phase of the study, 11 face-to-face focus group (FG) interviews were conducted; 5 student-FG (i.e., 1 CPH: n=14, 3 CHS: n= 8,4,8 and 1 CMED: n= 8), 4 preceptor-FG (i.e., 1 CPH: n=4, 2 CHS: n= 8, 4, and 1 CMED: n= 4), and 2 QU Health Cluster's faculty member-FG (i.e.,1 CPH: n=4 and 1 CHS: n=3). The aim of conducting the FGs was to achieve further exploration of the educational needs of preceptors from different perspectives. Purposive sampling was used to select participants for the focus groups. This involved selecting key informants possessing knowledge of the context and purpose of the study, and who were willing to share this knowledge. Participants were invited to participate voluntarily and provided with participant information leaflets and consent forms. Focus group topic guides contained open-ended questions and probes and were conceptualized and prepared based on the research questions and literature review. The focus groups were conducted by researchers in this study, with particular attention given to consistency in the data collection measures and approach and avoidance of conflicts of interest. Data collection sessions duration ranged in duration from 45 to 75 minutes, and all data collection sessions were audio-recorded. Focus groups were transcribed verbatim. The transcripts were thematically analyzed through assigning codes to common quotes and ideas expressed by participants. Codes were compared and clustered into different categories of themes and subthemes. Two researchers were involved in the analysis process to ensure validity and reliability of coding and theme generation, with any disparity being resolved through consensus by a third researcher. In order to perform the thematic data analysis, the computer-assisted coding software NVIVO® version 12.0.0.71 (QRS International Pty Ltd) was used for data coding and retrieval.

Quality measures

For the quantitative phase, the basic set of scientific rigor, based on an established consensus, of quantitative methods has been assured (24-26). Internal validity, reliability, generalizability are all standards that were closely monitored during the conduction of this phase. As such, internal validity and reliability were established after validating the survey with content experts. Also, the fact that the survey was developed based on an extensive review of the literature for the most essential competencies for all health professional educators ensured generalizability. For the qualitative phase, Table 1 describes the

measures used to ensure quality criteria was met. The researchers kept a research diary as a reflexive measure to ensure that potential influences and biases were disclosed and assessed during the qualitative research process (27).

Table 1. Quality measures

Quality criterion	Measures				
Confirmability	Audit trail	Research process oversight	Research methods description	Data triangulation	Reflection recording
Dependability	Methods description	Peer review	Inter-coder reliability testing	Intra-coder reliability testing	Data triangulation
Credibility	Data triangulation	Member/participant checking	Proper data analysis strategies	Reflection recording	
Transferability	Recording research details	Data interpretation and discussion	Research writing up		

Stage 2: The design of ‘The Practice Educators’ Academy’ program

A provisional draft of the professional development program’s syllabus was designed based on the results of the needs’ assessment conducted in Stage 1, in addition to an extensive literature review completed by an assigned task force. The task force was led by members from the Colleges of Education, Medicine, Pharmacy, and Health Sciences. The Vice President of QU Health Cluster, the Director of Medical Education in Hamad Medical Corporation (HMC), the Head of Hamad Training Center, and leaders in Pharmacy and Allied Health Services at HMC were also consulted during the design stage. The structure, duration, delivery mode, and content of the program were designed after six meetings.

Stages 3: Validation and refinement of ‘The Practice Educators’ Academy’ program

Content experts (i.e., health profession education scholars) from national and international institutions were identified based on their expertise and recognized contribution in experiential learning and preceptors’ training and/or their involvement in designing similar experiential training programs. An individual e-mail was sent to the nominated scholars requesting them to examine and validate ‘The Practice Educators’ Academy’ program and to provide feedback regarding the syllabus. They were asked

to comment on the program duration, content, settings, and expected developed educational skills. Afterward, a refinement team was formed to discuss and analyze the feedback received from the scholars thoroughly. An action plan was developed, and the syllabus was refined accordingly.

Results

Stage 1: Assessment of the educational needs of preceptors

Quantitative phase

Of the 146 preceptors from both CPH and CHS, 91 responded to the survey yielding a response rate of 62.3%. Similarly, 118 preceptors from the CMED responded with a response rate of 65.9%. The majority of respondents from CPH and CHS were female (79.3%) and from countries other than Qatar (72.73%; n=91). In contrast, the majority of respondents from CMED were male (78.6%) and with non-Qatar backgrounds (49.5%; n=118). Out of 91 respondents from CPH and CHS, 16.4% were board certificated by an Arab country, 14.3% certified by a non-Arab country, and 5.5% from other agencies or mixed countries. On the other hand, out of 118 respondents from CMED, 44.9% were board certified by an Arab country, 43.2% certified by a non-Arab country, and 11.8% from other agencies or mixed countries. The majority (24.2%) of respondents at the CPH and CHS reported having 5-9 years of teaching experience with health professional students, while the majority at CMED (30.5%) reported 1 – 4 years. Furthermore, most of the respondents at the CPH and CHS (11%) and the CMED (20.3%) reported having 1-4 years of teaching experience with residents. The majority of respondents from the CPH and CHS indicated that they have been involved or currently involved in student assessment (74.39%), whereas CMED preceptors reported a high percentage of clinical bedside teaching (79.6%). Table 2 illustrates the demographic and professional characteristics of preceptors who participated in the survey (n=209).

Table 2. Demographics and professional characteristics of preceptors

Preceptors' educational needs in frequency and percentages are summarized in Table 3. The identified needs include: adult learning principles, curriculum and course design, writing educational objectives, lecturing and large group teaching, tutorial and small group teaching, facilitating problem-based learning, teaching and learning in clinical settings, providing feedback, assessment in clinical settings, clinical simulation, curriculum and course evaluation, mentoring skills, and educational research skills. Most of these needs were deemed to be a high priority among all respondents.

Table 3. Preceptors' educational needs (n= 209)

Preceptors' needs	Not a priority	Low priority	Medium priority	High priority
Adult learning principles*	6 (2.9%)	19 (9.22%)	58 (28.1%)	123 (59.7%)
Curriculum & course design*	3 (1.4%)	15 (7.25%)	52 (25.1%)	137 (66.2%)
Writing educational objectives*	2 (0.9%)	19 (9.27%)	59 (28.8%)	125 (61%)
Lecturing and large group teaching*	2 (0.9%)	31 (15.0%)	59 (28.6%)	114 (55.3%)
Tutorial and small group teaching*	1 (0.4%)	23 (11.1%)	63 (30.4%)	120 (58%)
Facilitating problem-based learning*	0 (0.0%)	16 (7.77%)	52 (25.2%)	138 (67%)
Teaching and learning in clinical settings*	4 (1.9%)	11 (5.3%)	41 (19.7%)	152 (73.1%)
Providing feedback*	0 (0.0%)	20 (9.71%)	51 (24.8%)	135 (65.5%)
Assessment in clinical settings*	6 (2.9%)	14 (6.7%)	45 (22.1%)	139 (68.1%)
Clinical simulation*	6 (3%)	13 (6.4%)	50 (24.8%)	133 (65.8%)
Curriculum and course evaluation*	0 (0.0%)	16 (7.9%)	56 (27.6%)	131 (64.5%)
Mentoring skills*	0 (0.0%)	15 (7.3%)	42 (20.4%)	149 (72.3%)
Educational research skills	0 (0.0%)	15 (7.2%)	50 (24%)	144 (69%)

* Indicates missing data

Preceptors' preference and motivators for attending professional development programs were also identified. The face-to-face delivery method was the most preferred approach by the respondents of the CPH and CHS (55.6%); however, the blended method (i.e., both face-to-face and online) was ranked the highest by the CMED respondents. Among the weekdays, Thursday and Saturday were the most convenient days to attend such programs for the majority of respondents from the CPH and CHS (46.59%) and the CMED (45.7%). Moreover, registering for professional development programs by preceptors was highly influenced by the announced learning objectives of proposed programs. This motivational factor (i.e., learning objectives of training programs) was the most opted by the majority of the CPH and CHS (86.81%) and the CMED (81.3%) participants. Participants were asked to provide suggestions that help them develop their knowledge and skills to educate the health professional students. Table 4 presents the reported suggestions from the participants.

Table 4. Preceptors' suggestions on how their knowledge and skills to educate health professions students can be developed

Qualitative phase

Five major themes were determined from exploring participants' perceptions about the preceptors' educational skills and needs: planning, instruction and delivery, assessment, feedback, and communication skills.

Planning: Preparation for experiential education is one of the most important areas that need improvement, as reported by study participants. Also, developing learning objectives, managing time, and applying effective strategies for well-organized clinical rotations were highlighted by participants as one of the weakest skills possessed by preceptors.

Instruction and delivery: Students' involvement in the learning experience varied from being exclusively observers to fully independent practitioners under preceptors' supervision. In addition, the FG findings showed that there is a need for a preceptor to improve their styles of teaching. Students experienced a gap between classroom learning and practice because of preceptors' inadequate clinical teaching. The findings also suggest that the level of motivation and enthusiasm displayed by the preceptor during the experiential training of students varies among preceptors. While some show willingness, interest, and passion for teaching, others demonstrate dissatisfaction and impatience.

Assessment: Despite the preceptors' efforts to implement variable assessment approaches, assessment malpractices were reported by students. For example, students indicated incidents where assessment practices were applied inconsistently among preceptors. In addition, there was a tendency demonstrated by preceptors to express judgmental attitudes and lack of objectivity in their evaluation. The participants also illuminated some challenges encountered during this process. For example, time restrictions with long and exhausting assessment forms and disregard for the assessment criteria.

Feedback: The FG findings indicated that there was an apparent lack of comprehensive understanding among preceptors regarding the significance of feedback provision and the skills needed to deliver feedback to students effectively. Lack of professionalism, judgmentality, and harshness are all examples of immoral practices conducted by preceptors when providing feedback. Additionally, although there was satisfaction among students regarding the clinical rotations where they received an end of task or end of day feedback, yet incidences were still reported whereby students either did not receive any feedback or they received it indirectly through a third party. Furthermore, insufficient feedback on preceptors' performance from faculty or administrators in the university was reported by preceptors, indicating their need for clear guidance and observation.

Communication skills: A cohort of participants indicated satisfaction regarding the overall level of communication demonstrated by preceptors. However, there was a claim regarding the preceptors' lack of necessary communication skills such as superiority and judgmental attitudes, use of improper language,

and inappropriate ways of answering students' questions. The finding also highlighted the preceptors' need to learn how to deal with challenging students and cultural diversities. Table 5 provides a summary of the main themes, subthemes, and the participant quotes reflecting preceptor educational needs.

Table 5. Themes, subthemes and quotes reflecting preceptors' educational needs

Integration between qualitative and quantitative phases

This study followed a convergent mixed-methods triangulation study design where both quantitative and qualitative data were collected at the same time, and integrated for analysis. As indicated earlier, the purpose of the quantitative phase was to identify and prioritize the educational needs of preceptors in order to improve them through the most convenient way (e.g., delivering face-to-face or online continuing education programs). Clear evidence emerged from the preceptors' self-assessment, indicating that preceptors possess inadequate skills to almost all studied educational competencies and the real need for improvement. On the other hand, the qualitative phase was meant to capture all thoughts of preceptors, students, and faculty members about preceptors' educational practices in experiential training. Focus group interviews shed light on the areas of proficiency or deficiency, reasons behind the suboptimal educational practices, available or needed support for preceptors, and the experienced challenges in the current system. Notably, an in-depth understanding of the educational needs prioritized in the quantitative phase was achieved by the qualitative FG discussions. For instance, the assessment of students was one of the areas that were ranked as a high priority for most preceptors to learn. Complementary, qualitative evidence points to the unrecognition of the assessment tools and/or assessment criteria among preceptors, which could lead to unfair or irrational assessment. Also, fundamental suggestions for improving preceptors' educational competencies were explicitly captured in the survey's qualitative data and reinforced by the participants' narrations.

Stage 2: The design of 'The Practice Educators' Academy' program

This stage involved six research team meetings to design the provisional syllabus based on the expressed preceptor educational needs while benchmarking against other preceptor educational development programs internationally. The syllabus comprised of five main modules: principles of teaching and learning, planning for the experiential learning, teaching and instructional strategies, students' assessment, and feedback, and finally, communication skills for effective preceptorship and conflict resolution. In addition, the syllabus included the educational needs expressed by the preceptors and learning outcomes for each module that were benchmarked against other available international programs. An agreement was reached by the research team to deliver this program over 12 hours in a weekend, through face-to-face interactive workshops.

Stages 3: Validation and refinement of ‘The Practice Educators’ Academy’ program

Eighteen health professional education scholars from Monash University, University of Toronto, Western University, University of British Columbia, University of Tasmania, National Taipei University of Nursing and Health Sciences, University of Cincinnati, Howard University, Lebanese American University, College of North Atlantic-Qatar, and Qatar University were approached and asked to provide in-depth feedback regarding the designed syllabus. Feedback and general comments were received from around half of the contacted scholars. The followings are examples of the received and considered comments:

“There is lesser exposure to reflective practice in this program.”

(Scholar from the University of Toronto)

“Add a hands-on simulation to allow attendees time to practice.”

(Scholar from Lebanese American University)

Table 6 represents examples of feedback provided by the health education scholars and changes proposed by the research team, while Table 7 illustrates the refined version of the syllabus after considering health education scholars’ feedback.

Table 6. Examples of health education scholars’ feedback and action taken

Table 7. Validated syllabus

Discussion

The purpose of this project was to quantitatively and qualitatively identify the educational needs of preceptors in order to develop an educational program based on the preceptors’ specific needs. This project is a unique intervention in the Gulf Cooperation Council region that aims to develop preceptor teaching skills.

Stage 1: Assessment of the educational needs of the preceptors

The first stage provided evidence identifying preceptors’ educational needs. This data can be used to design continuing professional education and development programs relevant to preceptors and the context in which they are embedded. This approach has been successfully applied by previous studies aiming to develop the educational skills of preceptors (27, 28). Furthermore, this study used a mixed-method design, whereby it relied on the input of the main stakeholders of preceptorship, the preceptors,

and students, in addition to faculty members of QU-Health Cluster to generate data. The use of mixed methods methodology and more than one source of data in this study are consistent with previous studies conducted by Chang et al. and Tsai et al. (29, 30). The expressed educational needs in this study aligned with the expressed educational needs in other qualitative studies (27). For example, Bengtsson and Carlson (2015) argued that preceptors lack the in-depth knowledge of teaching and learning strategies in addition to the proper skills of communication, which both are common to the current study.

Stage 2: The design of ‘The Practice Educators’ Academy’ program

The second stage involved designing the syllabus of the program called ‘The Practice Educators’ Academy’ based on expressed educational needs by the research team in addition to scholars from the practice and other national health institutions. This stage was in keeping with a recently implemented Taiwanese program (i.e., Nurse Preceptor-Centered Training Program (NPCTP)) that was designed based on the objective of meeting nurse preceptors’ training needs (31). Bengtsson and Carlson (2015) also established an advanced level of continuous professional development course based on the expressed needs from a variety of healthcare preceptors (27). Although the learning outcomes of the designed syllabus aimed primarily to match the educational needs of preceptors, other international programs for preceptors were taken in consideration by the research team, in order to benchmark all components and learning outcomes (32-40). Hence, the designed program would potentially be nationally, regionally, and globally applicable. For example, the learning outcome ‘identify learning styles’ is consistent with a component of ‘The Australian Pharmacy Preceptor Program’ (35). Similarly, the ‘Giving and Receiving Feedback’ module in the offered syllabus corresponds to the CHEX program that has been evaluated in a previous study (36). In this second stage, the mode of delivery and the duration of the program was also determined. Concerning the mode of delivery, the decision was made by the research team to deliver this program face-to-face manner. This approach was preferred by almost half of the surveyed preceptors in CPH and CHS and approximately one-third of CMED preceptors. The literature points to this type of delivery by several universities and education centers which report utilizing face-to-face interactive sessions and workshops (39), online (31), or hybrid/blended approaches (40). Although the majority of CMED respondents desired to attend a blended face-to-face and online program (69.4%), a purely online mode of delivery was least preferred by preceptors from all three colleges. This is consistent with the previously generated reports from the use of an online continuing education program [the Collaborative Education Institute CEI] by CPH preceptors which were indicative of an overall underutilization. Delivering this program in a face-to-face approach is advantageous since it offers learners an environment that facilitates direct communication and experience sharing between healthcare professionals (41). In addition, it spares them from facing technical issues that often arise with online approaches as it was found in a case study that assessed the pedagogical and instructional effectiveness of utilizing online continuing professional education programs by health care practitioners (42). The duration allocated for this program seems to be reasonable for the content provided and is similar to other programs with the same mode of delivery (39, 40).

Stages 3: Validation and refinement of ‘The Practice Educators’ Academy’ program

The third stage of the project involved the validation of the designed program framework. Validating the developed continuous professional development programs before implementation is a common practice and is accepted research methodology (43, 44). For this study, health profession education scholars were asked to provide feedback about the designed syllabus. The research team reviewed this feedback and integrated it within the program.

Numerous points of strength support the quality of this project. The use of a mixed-methods study design offered several advantages such as participant openness and increased validity leading to a greater depth of understanding the preceptors’ educational needs (45). Furthermore, examining several sources of data (e.g., semi-structured individual interviews, documents, and focus group discussions) ensured triangulation (45). The design phase relied on two aspects that strengthened the study. First, designing the program by a team that involved representative members from all the three QU Health Colleges in addition to scholars from the College of Education. Including members from the health colleges facilitated the process of benchmarking with preceptors’ development programs offered by the three colleges and broadened the knowledge about the preceptors’ educational needs and skills. This interprofessional nature of the team was also observed in the design of ‘The Australian Clinical Education Program’ (46). The educational scholars provided insight that facilitated the process of writing learning objectives and examined the feasibility of the program’s future delivery. The second main aspect of study strength was the benchmarking of the proposed learning objectives with other validated international preceptors’ development programs adding generalizability to the program. An extensive review of the available preceptor programs was also conducted to formulate a similar interprofessional preceptor education program at the University of Western Ontario (47). An additional strength considered in this project is the validation process with national and international content experts, which ensured the overall quality, comprehensiveness, and the robustness of the processes used to develop the program.

Inevitably, this study has a potential limitation. Although an attempt was taken to distribute the survey among preceptors who currently teach or are expected to teach the QU-Health Cluster students across all possible clinical sites, the number of participants from community pharmacies was relatively low. However, this may not have significantly influenced the results of this study as the experiential learning in the CPH involves a limited number of rotations in the community pharmacy practice setting compared to the hospital pharmacy practice setting.

Conclusions

This study assessed the educational needs of the health professions preceptors affiliated with QU and led to the development of a bespoke, validated educational professional development program based on the assessed needs. The most frequently reported needs with ‘high priority’ included training regarding teaching and learning in clinical settings, mentoring skills, research skills, assessment in clinical settings,

clinical simulation, curriculum and course design, facilitating problem-based learning. Training workshops and seminars were the preferred way to training delivery. Educational needs for preceptors revolved around knowledge and skills related to planning for experiential learning, teaching strategies, students' assessment, feedback, communication skills and conflict resolution. An educational program tailored to preceptors' needs was developed and validated by experts from national and international institutions. Re-wording learning outcomes, inclusion of collaborative learning components, and tailoring the program to the level of preceptors' experience are points raised by experts in the field.

The findings of this study would be further strengthened by the piloting of the 'The Practice Educators' Academy' program, in order to evaluate its utility and effectiveness in improving the self-efficacy of preceptors' knowledge and skills and enhance students' satisfaction. Piloting is recommended to refine the program before full implementation at a national level.

Abbreviations

QU: Qatar University; CPH: College of Pharmacy; CMED: College of Medicine; CHS: College of Health Sciences; FG: Focus Group.

Declarations

Ethical approval and consent to participate:

Ethics approval for the conduct of the study was obtained from the QU- Institutional Review Board (Approval reference number: QU-IRB 894-E/18). Informed consent was obtained from all participants who participated in the quantitative and qualitative phases.

Consent for publication:

Not applicable.

Availability of data and materials

The datasets generated and/or analyzed during the current study are not publicly available due to confidentiality issues but are available from the corresponding author on reasonable request.

Conflict of Interest:

The authors declare that they have no competing interests.

Funding:

This study was funded by Qatar University Internal grant: National Research Capacity Building Program, QUCP-CPH-2018/2019-1.

Authors' contribution:

Study conception and design were done by BM. Data collection and analysis in Stage (1) were performed by RB, SE, BM, AA, AMA, and AC. Further investigations in Stages (2), (3), and (4) were performed by SE, BM, AMA, AA, MZ, HB, RA, and MR. The first draft of the manuscript was written by BM, SE, AMA, RB, AA, BJ, and MA and all authors commented on previous versions of the manuscript. All authors read, edited, and approved the final manuscript.

Acknowledgments:

The authors would like to thank all health professional staff and faculty who participated in this study. The authors would also like to acknowledge the valuable feedback received by national and international health profession education scholars who validated 'The Practice Educators' Academy'.

References

1. Accreditation Council for Pharmacy E. Accreditation standards and key elements for the professional program in pharmacy leading to the doctor of pharmacy degree. 2015.
2. Yardley S, Teunissen PW, Dornan T. Experiential learning: AMEE guide No. 63. Medical teacher. 2012;34(2):e102-e15.
3. Raichura L. Quest. Learning by doing. Nursing times. 1987;83(13):59-61.
4. Siggins Miller C. Promoting quality in clinical placements: Literature review and national stakeholder consultation. Health Workforce Australia Adelaide; 2012.
5. Cuellar LM, Ginsburg DB. Preceptor's handbook for pharmacists: ASHP; 2015.
6. Nasser R, Morley C, Cook S, Coleman J, Berenbaum S. Dietitians' perceptions of precepting: knowledge, skills, attitudes, barriers, and training. Canadian Journal of Dietetic Practice and Research. 2014;75(1):7-14.
7. Palermo C, Beck EJ, Chung A, Ash S, Capra S, Truby H, et al. Work-based assessment: qualitative perspectives of novice nutrition and dietetics educators. Journal of human nutrition and dietetics. 2014;27(5):513-21.
8. Paravattil B. Preceptors' self-assessment of their ability to perform the learning objectives of an experiential program. American journal of pharmaceutical education. 2012;76(9):169.
9. Mazmanian PE. The Role of Educational Needs Assessment in Adult Education and Continuing Medical Education Program Planning. A Monograph. 1977.

10. Sava S. Needs analysis and programme planning in adult education: Opladen [ua]: Verlag Barbara Budrich; 2012.
11. Fox RD, Bennett NL. Continuing medical education: learning and change: implications for continuing medical education. *Bmj*. 1998;316(7129):466.
12. Association for Dental Education in Europe (ADEE). A review of the literature on continuing professional development (CPD). 2019. Available from: https://www.adee.org/userfiles/181205_Full_Report_Review_of_the_Literature_on_CPD_1.pdf. Accessed in 2019.
13. Norman GR, Shannon SI, Marrin ML. The need for needs assessment in continuing medical education. *Bmj*. 2004;328(7446):999-1001.
14. Sachdeva AK. Preceptorship, mentorship, and the adult learner in medical and health sciences education. *Journal of Cancer education*. 1996;11(3):131-6.
15. Harris DL, Krause KC, Parish DC, Smith MU. Academic competencies for medical faculty. *FAMILY MEDICINE-KANSAS CITY-*. 2007;39(5):343.
16. Farley H, Casaletto J, Ankel F, Young KD, Hockberger R. An assessment of the faculty development needs of junior clinical faculty in emergency medicine. *Academic Emergency Medicine*. 2008;15(7):664-8.
17. Amin Z, Hoon K, Seng CY, Hoon TC, Sun GP, Samarasekera DD, et al. A multi-institutional survey on faculty development needs, priorities and preferences in medical education in an Asian medical school. *Medical education online*. 2009;14(1):4509.
18. Academy of medical Educators. Professional Standards for medical, dental and veterinary educators. 3rd edition ed. Cardiff: Academy of Medical Educators; 2014.
19. Görlitz A, Ebert T, Bauer D, Grasl M, Hofer M, Lammerding-Köppel M, et al. Core competencies for medical teachers (KLM) – a position paper of the GMA committee on personal and organizational development in teaching. *GMS Zeitschrift für medizinische Ausbildung*. 2015;32(2).
20. Walsh A, Antao V, Bethune C, Cameron S, Cavett T, Clavet D, et al. Fundamental teaching activities in family medicine: a framework for faculty development. Mississauga, ON: College of Family Physicians of Canada. 2015.
21. Colton S, Hatcher T. The Web-Based Delphi Research Technique as a Method for Content Validation in HRD and Adult Education Research. Online Submission. 2004.
22. Mengual-Andrés S, Roig-Vila R, Mira JB. Delphi study for the design and validation of a questionnaire about digital competences in higher education. *International Journal of Educational Technology in Higher Education*. 2016;13(1):12.
23. Agha RA, Borrelli MR, Farwana R, Koshy K, Fowler AJ, Orgill DP, et al. The SCARE 2018 statement: updating consensus surgical CAse REport (SCARE) guidelines. *International Journal of Surgery*. 2018;60:132-6.
24. Aschengrau A, Seage GR. Essentials of epidemiology in public health: Jones & Bartlett Publishers; 2013.

25. Campbell DT, Cook TD. Quasi-experimentation: Design & analysis issues for field settings: Rand McNally College Publishing Company Chicago; 1979.
26. Hulley SB. Designing clinical research: Lippincott Williams & Wilkins; 2007.
27. Bengtsson M, Carlson E. Knowledge and skills needed to improve as preceptor: development of a continuous professional development course—a qualitative study part I. BMC nursing. 2015;14(1):51.
28. Foy D, Carlson M, White A. RN preceptor learning needs assessment. Journal for Nurses in Professional Development. 2013;29(2):64-9.
29. Chang C-C, Lin L-M, Chen IH, Kang C-M, Chang W-Y. Perceptions and experiences of nurse preceptors regarding their training courses: A mixed method study. Nurse education today. 2015;35(1):220-6.
30. Tsai YM, Lee-Hsieh J, Turton MA, Li SY, Tseng HL, Lin HC, et al. Nurse preceptor training needs assessment: Views of preceptors and new graduate nurses. The Journal of Continuing Education in Nursing. 2014;45(11):497-505.
31. Lee YW, Lin HL, Tseng HL, Tsai YM, Lee-Hsieh J. Using Training Needs Assessment to Develop a Nurse Preceptor–Centered Training Program. The Journal of Continuing Education in Nursing. 2017;48(5):220-9.
32. Kassam R, McLeod E, Kwong M, Tidball G, Collins J, Neufeld L, et al. An interprofessional web-based resource for health professions preceptors. American journal of pharmaceutical education. 2012;76(9):168.
33. Parsons R. Improving preceptor self-efficacy using an online educational program. International Journal of Nursing Education Scholarship. 2007;4(1).
34. Zahner SJ. Partnerships for learning population-based public health nursing: Web-delivered continuing education for public health nurse preceptors. Public Health Nursing. 2006;23(6):547-54.
35. Marriott J, Taylor S, Simpson M, Bull R, Galbraith K, Howarth H, et al. Australian national strategy for pharmacy preceptor education and support. Australian Journal of Rural Health. 2005;13(2):83-90.
36. Bradley C, Erice M, Halfer D, Jordan K, Lebaugh D, Opperman C, et al. The impact of a blended learning approach on instructor and learner satisfaction with preceptor education. Journal for Nurses in Professional Development. 2007;23(4):164-70.
37. Northern Alberta Institute of Technology (NAIT). Training courses 2019. Available from: <http://www.nait.ca/66670.htm>. Accessed in 2019.
38. Mater education. Clinical supervision program. Available from: <https://www.matereducation.qld.edu.au/Professional-development-learning/Communication-Clinical-Supervision/Clinical-Supervision>. Accessed in 2019.
39. Rural Wisconsin Health Cooperative (RWHC). RWHC preceptors training program Available from: <http://www.rwhc.com/Services/EducationalServices/PreceptorTrainingProgram.aspx>. Accessed in 2019.
40. Postgraduate Medical Council of Victoria. Teaching on the run. Available from: <https://www.pmcv.com.au/education/teaching-on-the-run>. Accessed in 2019.

41. Thomas TS. Online vs face-to-face: Educator opinions on professional development delivery methods. 2010.
42. Pullen DL. Online continuing professional education: an evaluative case study. *Journal of adult and continuing education*. 2005;11(2):129-41.
43. Mukhalalati BA, Taylor A. The development of a theory-informed Communities of Practice Framework for pharmacy and other professional healthcare education programmes. *Pharmacy Education*. 2018;18.
44. Adepun R, Shariff A. Development, validation and implementation of continuous professional development programmes for community pharmacists. *Indian journal of pharmaceutical sciences*. 2010;72(5):557.
45. Awaisu A, Mukhalalati B, Ibrahim MIM. *Research Designs and Methodologies Related to Pharmacy Practice*. 2019.
46. Leversha A, Dalton L, Galbraith K. The Australian Clinical Education Program—an interprofessional rural on-line program to educationally prepare health professionals as clinical educators. 2009.
47. Bossers A, Bezzina MB, Hobson S, Kinsella, E.A., MacPhail A, et al. *Preceptor Education Program for health professionals and students*. London: ON: The University of Western Ontario.; 2007 (1st ed.) Available from: www.preceptor.ca.

Tables

Table 1. Quality measures

Quality criterion	Measures				
Confirmability	Audit trail	Research process oversight	Research methods description	Data triangulation	Reflection recording
Dependability	Methods description	Peer review	Inter-coder reliability testing	Intra-coder reliability testing	Data triangulation
Credibility	Data triangulation	Member/participant checking	Proper data analysis strategies	Reflection recording	
Transferability	Recording research details	Data interpretation and discussion	Research writing up		

Table 2. Demographics and professional characteristics of preceptors

Demographics and professional characteristics of preceptors who participated in the survey (n=209)	#CHS and CPH (n=91)	+CMED (n=118)	Total (n=209)
	Frequency (%)		
Gender *			
Female	69 (79.31%)	25 (21.3%)	94 (46%)
Male	18 (20.69%)	92 (78.6%)	110 (54%)
Board Certification * (if applicable)			
Where?			
- Arab country	15 (16.4%)	53 (44.9%)	68 (32.5%)
- Non-Arab country	13 (14.3%)	51 (43.2%)	64 (30.6%)
- Others (agency or mixed)	5 (5.5%)	14 (11.8%)	19 (9.1%)
Years since board certification			
- 1 - 4 years	9 (9.9%)	13 (11.0%)	22 (10.5%)
- 5 - 9 years	7 (7.7%)	39 (33.0%)	46 (22%)
- 10 - 14 years	8 (8.8%)	26 (22.0%)	34 (16.3%)
- 15 - 19 years	6 (6.6%)	25 (21.1%)	31 (14.8%)
- 20 - 24 years	4 (4.4%)	11 (9.3%)	15 (7.17%)
- ≥ 25 years	1 (1.1%)	4 (3.3%)	5 (2.4%)
Number of years of previous teaching experience * (if applicable)			
Health professional students			
- 1 - 4 years	15 (16.5%)	36 (30.5%)	51 (24.4%)
- 5 - 9 years	22 (24.2%)	25 (21.2%)	47 (22.5%)
- 10 - 14 years	7 (7.7%)	7 (5.9%)	14 (6.7%)
- ≥ 15 years	1 (1.1%)	13 (11.1%)	14 (6.7%)
Residents			
- 1 - 4 years	10 (11%)	24 (20.3 %)	34 (16.3%)
- 5 - 9 years	5 (5.5%)	21 (17.8 %)	26 (12.4%)
- 10 - 14 years	1 (1.1%)	16 (13.6 %)	17 (8.14%)
- ≥ 15 years	1 (1.1%)	19 (16.1 %)	20 (9.5%)
Other (Specify)	18 (19.8%)	29 (24.5%)	47 (22.5%)
Academic title with other university * (if applicable)			

Rank/title			
Teaching assistant	1 (1.1%)	1 (0.85%)	2 (0.95%)
Lecturer	1 (1.1%)	7 (5.9%)	8 (3.8%)
Instructor	2 (2.2%)	3 (2.5%)	5 (2.4%)
Health educator	1 (1.1%)	1 (0.85%)	2 (0.95%)
Tutor	0 (0.0%)	1 (0.85%)	1 (0.48%)
Presenter	0 (0.0%)	1 (0.85%)	1 (0.48%)
Resident	0 (0.0%)	2 (1.7%)	2 (0.95%)
Preceptor	1 (1.1%)	0 (0.0%)	1 (0.48%)
Adjunct faculty	2 (2.2%)	0 (0.0%)	2 (0.95%)
Assistant professor	0 (0.0%)	20 (17%)	20 (9.6%)
Associate professor	0 (0.0%)	2 (1.7%)	2 (0.95%)
Professor	0 (0.0%)	3 (2.5%)	3 (1.4%)
Medical Doctor	0 (0.0%)	3 (2.5%)	3 (1.4%)
Fellow	0 (0.0%)	1 (0.85%)	1 (0.48%)
Supervisor	0 (0.0%)	2 (1.7%)	2 (0.95%)
Others	12 (13.2%)	3 (2.5%)	15 (7.2%)
Institute other than QU	21 (23.1%)	48 (40.6%)	69 (33.01%)
Years (from-to)			
- 1992 - 2002	4 (4.4%)	8 (6.8%)	12 (5.7%)
- 2003 - 2013	3 (3.3%)	25 (21.18%)	28 (13.4%)
- 2014 - Present	6 (6.6%)	14 (11.9%)	20 (9.6%)
Nature of activities in which have been or are currently involved *			
- Teaching in large class	38 (46.34%)	42 (35.5%)	80 (40%)
- Teaching in small groups	58 (70.73%)	85 (72.0%)	143 (71.5%)
- Clinical bedside teaching	40 (48.78%)	94 (79.6%)	134 (67%)
- Teaching in clinics and ambulatory settings	31 (37.80%)	68 (57.6%)	99 (49.5%)
- Student assessment	61 (74.39%)	52 (44.0%)	113 (56.5%)
- Problem-Based Learning (PBL)	32 (39.02%)	37 (31.1%)	69 (34.5%)
- Designed or organized educational program	39 (47.56%)	40 (33.8%)	79 (39.5%)

- Organized scientific meetings	27 (32.93%)	44 (37.2%)	71 (35.5%)
- OSCE	28 (34.15%)	15 (12.7%)	43 (21.5%)
Nationality *			
- Qatar	12 (13.64%)	8 (7.2 %)	16 (8.04%)
- Other Arab country	64 (72.73%)	55 (49.5 %)	119 (60%)
- Rest of the world	10 (11.36%)	48 (43.2 %)	58 (29%)

* Indicates missing data

College of Health Sciences and College of Pharmacy

+ College of Medicine

Table 3. Preceptors' educational needs (n= 209)

Preceptors' needs	Not a priority	Low priority	Medium priority	High priority
Adult learning principles*	6 (2.9%)	19 (9.22%)	58 (28.1%)	123 (59.7%)
Curriculum & course design*	3 (1.4%)	15 (7.25%)	52 (25.1%)	137 (66.2%)
Writing educational objectives*	2 (0.9%)	19 (9.27%)	59 (28.8%)	125 (61%)
Lecturing and large group teaching*	2 (0.9%)	31 (15.0%)	59 (28.6%)	114 (55.3%)
Tutorial and small group teaching*	1 (0.4%)	23 (11.1%)	63 (30.4%)	120 (58%)
Facilitating problem-based learning*	0 (0.0%)	16 (7.77%)	52 (25.2%)	138 (67%)
Teaching and learning in clinical settings*	4 (1.9%)	11 (5.3%)	41 (19.7%)	152 (73.1%)
Providing feedback*	0 (0.0%)	20 (9.71%)	51 (24.8%)	135 (65.5%)
Assessment in clinical settings*	6 (2.9%)	14 (6.7%)	45 (22.1%)	139 (68.1%)
Clinical simulation*	6 (3%)	13 (6.4%)	50 (24.8%)	133 (65.8%)
Curriculum and course evaluation*	0 (0.0%)	16 (7.9%)	56 (27.6%)	131 (64.5%)
Mentoring skills*	0 (0.0%)	15 (7.3%)	42 (20.4%)	149 (72.3%)
Educational research skills	0 (0.0%)	15 (7.2%)	50 (24%)	144 (69%)

* Indicates missing data

Table 4. Preceptors' suggestions for developing their knowledge and skills to educate health professions students

Theme	Quote
Conferences, seminars, training workshops and educational related programs	<p><i>"By giving me proper training in teaching fields."</i></p> <p><i>"International courses targeted to teaching skills."</i></p> <p><i>"Some primary training and orientation about the skills to educate."</i></p> <p><i>"By providing educational courses."</i></p> <p><i>"I think training programs and workshops would help."</i></p>
Provide resources	<p><i>"By providing unlimited access to scientific literatures."</i></p> <p><i>"To provide some samples of your current lectures, workshops, etc., that you are currently conducting."</i></p> <p><i>"To circulate presentations and guidelines about the expected outcome from the teachers' sessions."</i></p>
Specialty-related training and resources	<p><i>"Incorporation between theoretical knowledge and clinical practice."</i></p> <p><i>"Bed side teaching and clinical scenarios discussions involved by senior consultants and international faculties."</i></p> <p><i>"Providing the study materials and objectives."</i></p>
E-learning courses	<p><i>"Online courses."</i></p> <p><i>"I prefer online certification courses with updated information from renowned-well known sites."</i></p>
Collaboration and direct communication between faculty and preceptors	<p><i>"Regularly meeting with academic staff."</i></p> <p><i>"Keep me updated with the opportunities available."</i></p> <p><i>"Advertise for your workshops early so we can fit in schedules."</i></p>
Provide protected and/or suitable time for preceptorship related activities	<p><i>"Kindly provide dedicated time for us to attend training sessions and also to spend with students. When students come to a busy clinic, they end up seeing all the crowd and cacophony and will end up picking bad habits as we cannot dedicate enough time to them. This is not fair on the students."</i></p>
Feedback from faculty	<p><i>"Needs feedback from faculty."</i></p> <p><i>"Providing feedback."</i></p>
Preceptors educational needs' assessment	<p><i>"First of all, contact and evaluate me, then you can decide the type of help."</i></p> <p><i>"I think through addressing our educational needs that you will identify here; you will be able to improve our skills in this area through learning activities that address the gaps."</i></p>
Preceptors involvement	<p><i>"Give us monthly topics to read ourselves, prepare, edit and deliver the presentation in audience, easy digestible, clinically relevant way."</i></p>
Financial support	<p><i>"Help me to register to the coming conference it is costly for me."</i></p> <p><i>"Free online courses relevant to educate medical students."</i></p>

Table 5. Themes, subthemes and quotes reflecting preceptors' educational needs

Theme	Subtheme	Quote
Planning	Suboptimal overall organization of the experiential training	<i>"I think the most important improvement needed is preparation for the rotation."</i> CMED, Student
	Poor time management skills	<i>"In one of the labs, the planning for one day is to do two tasks, these tasks could be finished in two hours. What I am going to do for the rest of the hours? Just sitting in the lab not doing anything?"</i> CHS-BIOM, Student
	Lacking the skills of understanding students' baseline level and developing learning objectives	<i>"Understand the student weaknesses and strength, so they can work on them. This is also one of the skills and areas needs to be improved for our supervisors."</i> CHS, Faculty
Instruction and delivery	Students are observers only	<i>"Regarding us, we have only observed, when we ask for a change, the people at the college cannot do anything, they said, 'In Sha'a Allah in the future there will be improvement.'"</i> CHS-PH, Student
	Un-played teaching roles and ineffective strategies	<i>"Definitely the preceptors need teaching skills development. They also need improvement on how to trigger the critical thinking skills, how they can challenge the students to use critical thinking skills and ask for more to be more motivated."</i> CHS, Faculty
	Inability to bridge the gap between theoretical and practical knowledge	<i>"We have difficulty in linking what we learned with what we see in the practice."</i> CHS-NUTR, Student
	Lack of motivation and interest in teaching	<i>"Once or twice, I remember the clinician was not interested in teaching us. He was busy and even when we ask him a question, he used to give us one-word answer and he does not explain much."</i> CMED, Student <i>"Sometimes they think of us as an extra workload for them, so they would not be interested in teaching you."</i> CPH, Student
Assessment	Improper evaluation approaches and evaluation misconducts	<i>"Some preceptors when doing the assessment, they start to compare students. For example, s/he thinks I am not the best of what s/he precepted years ago, S/he does not look at the objective as whether you achieved this or not."</i>

		CPH, PharmD Student
	<p>Challenges in student evaluation:</p> <ul style="list-style-type: none"> - Unfamiliarity with Colleges assessment forms and/or the assessment criteria - Time restrictions with long and exhausting assessment forms - Student evaluation by staff other than the preceptor 	<p><i>"The challenges to assess students are: lack of training and set standards or at least the standard expected for one, two, and how we are using these standards."</i></p> <p>CMED, Preceptor</p> <p><i>"Short time to assess students."</i></p> <p>CHS-NUTR and PH, Preceptor</p> <p><i>"What happens is that sometimes, the one who is doing the evaluation is the site coordinator, and this could be biased as s/he might not even know you, so I think it should be done by the actual preceptor who is actually dealing with you."</i></p> <p>CPH, Student</p>
Feedback	Demonstration of suboptimal understanding of the purpose of feedback provision	<p><i>"Sometimes, some preceptors give comments that are not realistic just for the sake of giving you comments."</i></p> <p>CPH, Student</p>
	Scarcity of the comprehensive and the constructive feedback	<p><i>"What you called a sandwich method, basically just happened in one lab out of the four I have been to until now."</i></p> <p>CHS-BIOM, Student</p>
	Immoral and ineffective skills of approaching feedback to students	<p><i>"In one site, I made a mistake in my presentation. The preceptor criticized me in front of everyone and said: 'You should have done this, not this, the information that you mentioned is not updated.' It was not professional and if it was one to one, it would become much better. "</i></p> <p>CPH, Student</p>
	The need for more frequent and direct-from-preceptor feedback	<p><i>"We do not only need a general assessment, I think we need an assessment after each history taking or physical examination or even daily in each visit. We need to have an assessment of what we have? What are the gaps? What are the strengths?"</i></p> <p>CMED, Student</p>
Communication Skills	Preceptors lack the basics of effective communication skills	<p><i>"During OSCE, there was one doctor I do not know if I would say rude, aggressive."</i></p> <p>CMED, Student</p> <p><i>"The doctor who was in charge of me when I went to the PHCC, I did not find him, so am I supposed to call the doctor</i></p>

	<p><i>every time I go to the PHCC! Or the doctor should inform me that his blog there and I should go to the other doctor."</i></p> <p>CMED, Student</p> <p><i>"In my last site, the communication was based on orders, also they would give you facial expressions that they are very upset from you, that you are making huge mistakes, and they are magnifying whatever mistake you are doing."</i></p> <p>CPH, Student</p>
Incompetence to handle difficult situations and/or to react to students' misconducts properly	<p><i>"We need some workshops about dealing with different kind of students and different kind of situations; this will help us to deal with those students."</i></p> <p>CPH, Preceptor</p>
Preceptors are challenged with cultural competencies and/or dealing with culturally sensitive topics	<p><i>"The extra polite students is an issue. Their politeness despite they do not comply with the curriculum and you need to be very careful with them."</i></p> <p>CPH, Preceptor</p>
Infrequent and/or indirect communication between preceptors and faculty	<p><i>"I have not had that much collaboration with faculty. It is very rare that I contact them for something, or they contact me."</i></p> <p>CPH, Preceptor</p>

-

-

-

-

-

-

Table 6. Examples of health education scholars' feedback and action taken

Scholar's affiliation	Feedback	Action
Qatar University	<p>The title Academy can be a bit confusing.</p> <p>Suggestions:</p> <ul style="list-style-type: none"> - 'The Clinical Preceptor Training Program' - 'The Clinical Educator Training Course' 	<p>Non-implementation of this feedback was agreed upon by the refinement team.</p>
	<p>Some learning outcomes have double action verbs (e.g. Identify and apply).</p> <p>The action verb 'understand' is not measurable.</p>	<p>An implementation of this feedback was agreed upon by the refinement team:</p> <ul style="list-style-type: none"> - Divide the learning outcomes that have double action verbs into two learning outcomes. - Change the verb 'understand' to 'comprehend'.
	<p>In module 2: 'Lack of proper skills to introduce students and students' roles to patients' is not a need for preceptor.</p>	<p>Non-implementation of this feedback was agreed upon by the refinement team.</p> <p>Reason(s):</p> <ul style="list-style-type: none"> - Professional acceptance and socialization are fundamental elements of work base learning through experiential rotations. - This element was explicitly reported as one of the preceptors' educational needs as indicated in table 5.
	<p>Research is missing - an understanding of the importance of research in evidence-based practice for the health care cluster is vital.</p>	<p>Non-implementation of this feedback was agreed upon by the refinement team</p> <p>Reason(s):</p> <ul style="list-style-type: none"> - It does not clearly align with the objective of this academy which is to improve the educational competencies.
University of Toronto, Canada	<p>There is lesser exposure to reflective practice in this program (i.e., teaching and learning of self-assessment skills).</p>	<p>An implementation of this feedback was agreed upon by the refinement team:</p> <ul style="list-style-type: none"> - Add one learning objective in module 3 about teaching and learning of self-assessment skills.
	<p>While collaborative competencies should be more explicitly noted not simply as part of communication skills or conflict management.</p>	<p>An implementation of this feedback was agreed upon by the refinement team:</p> <ul style="list-style-type: none"> - Dedicate a learning outcome to cover collaborative competencies.
College of North	<p>Both delivery options (live or via distance) could be offer, as it is a challenge for preceptors to arrange</p>	<p>A consideration of this feedback will be taken by the research team after the</p>

Atlantic, Qatar	<p>time off to attend courses.</p> <p>Seeking CPD credits to be awarded for this program would give additional motivation for someone to consider becoming a preceptor.</p>	<p>pilot testing of the program.</p> <p>A consideration of this feedback will be taken by the QU-Health Cluster CPD office in the development stage of the program.</p>
Lebanese American University	<p>Consider adding a 'Time management module' as a separate module rather than incorporating it into module 2.</p> <p>Add a hands-on simulation to allow attendees time to practice.</p> <p>In module 3: Provide more time by allowing preceptors to perform a hands-on activity of developing a rubric as an in-class activity.</p>	<p>Non-implementation of this feedback was agreed upon by the refinement team.</p> <p>Reason(s):</p> <ul style="list-style-type: none"> - Due to time constraints of the program. <p>A consideration of this feedback will be taken by the research team in the development stage of the program.</p> <p>A consideration of this feedback will be taken by the research team in the development stage of the program.</p>
Monash University	<p>In module 1: Identify and apply learning styles: Give inventory of learning styles to preceptors</p> <p>A lot of the evidence in this area has been discounted- There are different learning styles, but is there an evidence about tailoring teaching to suit individual learning styles?</p> <p>In module 2: Planning for experiential learning</p> <p>An additional learning outcome relating to tailoring the plan to their level of experience (i.e., 1st year vs 4th year vs registered pharmacist) is needed.</p>	<p>Non-implementation of this feedback was agreed upon by the refinement team</p> <p>Reason(s):</p> <ul style="list-style-type: none"> - Experiential learning involves one-to-one interaction between preceptors and students which makes tailoring teaching to suit individual learning styles more relevant. <p>Non-implementation of this feedback was agreed upon by the refinement team</p> <p>Reason(s):</p> <ul style="list-style-type: none"> - The suggested learning outcome is already covered under: 'Identify students' foundational level and needs'.
University of British Columbia	<p>Ensure your program has a good balance of theory and practical application to help maintain enthusiasm for the content.</p> <p>Consider adding a column to identify the type of activity (e.g., didactic vs. role play etc.) that you will use for new preceptor training modules and those that are being used for existing modules (such as CHS #2 Module #2).</p> <p>How will you assess whether or not the preceptors have achieved the proposed program learning outcomes? You may wish to include preceptor assessment as a final module.</p>	<p>A consideration of this feedback will be taken by the research team in the development stage of the program.</p> <p>A consideration of this feedback will be taken by the research team in the development stage of the program.</p> <p>A consideration of this feedback will be taken by the research team in the evaluation stage of the program.</p>

Table 7. Validated syllabus

Module Name & Duration	Preceptors Needs	Learning Outcomes	Benchmark with other programs
<p>Ø Module 1: Principles of Learning and Teaching</p> <p>Ø Duration: 2 hours</p>	<ul style="list-style-type: none"> - Principles of education: (Adult Learning Principles) - Different styles of delivery: (Teaching, instructing, modelling, facilitating, coaching...) - Being enthusiastic and motivated in teaching 	<ul style="list-style-type: none"> - Recognize the significance of developing yourself as a practitioner and an educator 	<ul style="list-style-type: none"> - The Australian Clinical Education Program
		<ul style="list-style-type: none"> - Identify Principles of learning 	<ul style="list-style-type: none"> - The Australian Clinical Education Program
		<ul style="list-style-type: none"> - Identify adult learning theories 	<ul style="list-style-type: none"> - An Interprofessional Web-Based Resource for Health Professions Preceptors
		<ul style="list-style-type: none"> - Recognize your role as a preceptor 	<ul style="list-style-type: none"> - Preceptor training; North Alberta Institute of Technology
		<ul style="list-style-type: none"> - Comprehend the micro-skills and one-minute preceptor approach - Apply the micro-skills and one-minute preceptor approach 	<ul style="list-style-type: none"> - Preceptor Development Program, University of Virginia
		<ul style="list-style-type: none"> - Recognize elements of professionalism in precepting 	<ul style="list-style-type: none"> - Towards an educational continuing professional development (EdCPD) curriculum for Australian general practice supervisors
		<ul style="list-style-type: none"> - Identify learning styles - Apply learning styles 	<ul style="list-style-type: none"> - Improving Preceptor Self-Efficacy Using an Online Educational Program
		<ul style="list-style-type: none"> - Recognize effective delivery (teaching strategies) style 	<ul style="list-style-type: none"> - Developing and Implementing an Academy of Preceptors
<p>Ø Module 2: Planning for experiential learning</p> <p>Ø Duration: 2 hours</p>	<ul style="list-style-type: none"> - Different ways for planning - How to develop learning objectives - Understanding students' needs and strengths - Lack of proper skills to introduce students and students' roles to patients - Preceptors time management (e.g., allocate enough time to reflect on student performance) 	<ul style="list-style-type: none"> - Identify learning objectives taxonomies 	
		<ul style="list-style-type: none"> - Explain the action verbs in learning objectives - Use the action verbs in learning objectives 	<ul style="list-style-type: none"> - Teaching on the Run
		<ul style="list-style-type: none"> - Develop 'SMART' learning outcomes 	<ul style="list-style-type: none"> - Preceptor Education Program (PEP)
		<ul style="list-style-type: none"> - Differentiate between good and bad learning outcomes 	
		<ul style="list-style-type: none"> - Translate learning outcomes to activities 	<ul style="list-style-type: none"> - Towards an educational continuing professional development (EdCPD)

		<ul style="list-style-type: none"> applicable to specific sites (hands-on) - Outline practice setting criteria (hands-on) 	curriculum for Australian general practice supervisors
		<ul style="list-style-type: none"> - Identify students' foundational level and needs 	<ul style="list-style-type: none"> - Mission possible CD ROM: Instructional tool for preceptors
		<ul style="list-style-type: none"> - Recognize the role of preceptor in introducing and clarifying the students' role to healthcare team and patients 	<ul style="list-style-type: none"> - RWHC preceptor training program
		<ul style="list-style-type: none"> - Recognize different strategies to manage your time 	<ul style="list-style-type: none"> - Preceptor training; North Alberta Institute of Technology
<p>Ø Module 3: Teaching and Instruction strategies</p> <p>Ø Duration: 3 hours</p>	<ul style="list-style-type: none"> - Teaching and learning in clinical settings: (e.g., mentoring skills) - When to let students observe and when to let them do - How to trigger critical thinking - How to bridge the gap between the theory and practice 	<ul style="list-style-type: none"> - Recognize the effective teaching strategies (Mentoring, facilitation, PBL, coaching, shadowing) - Apply the effective teaching strategies (Mentoring, facilitation, PBL, coaching, shadowing) 	<ul style="list-style-type: none"> - The impact of a blended learning approach on instructor and learner satisfaction with preceptor education.
		<ul style="list-style-type: none"> - Recognize teachable moments and story-telling strategies - Apply teachable moments and story-telling strategies 	<ul style="list-style-type: none"> - An Interprofessional Web-Based Resource for Health Professions Preceptors
		<ul style="list-style-type: none"> - Identify concepts of critical thinking - Facilitate and enhance critical thinking among learners - Identify concepts of clinical reasoning and reflective practice - Facilitate and enhance clinical reasoning and reflective practice among learners 	<ul style="list-style-type: none"> - Effective preceptorship: A guide to best practice
		<ul style="list-style-type: none"> - Identify gaps between theory and practice 	<ul style="list-style-type: none"> - The Australian Clinical Education Program

		<ul style="list-style-type: none"> - Resolve gaps between theory and practice 	
		<ul style="list-style-type: none"> - Facilitate inter-professional experiential learning - Facilitate collaborative competencies 	<ul style="list-style-type: none"> - Partnerships for Learning Population-Based Public Health Nursing: Web-Delivered Continuing Education for Public Health Nurse Preceptors
<p>Ø Module 4: Students Assessment and Feedback</p> <p>Ø Duration: 2.5 hours</p>	<ul style="list-style-type: none"> - Assessment and evaluation skills in clinical settings: Fair, individualized, objectivity, non-judgmental evaluation - Being aware of the assessment tools - Activity-specific assessment - Recognition of the purpose and the importance of feedback provision to student - Discuss evaluation with students and provide clear, fair and comprehensive feedback (including both positive and negative ones) - How to communicate the feedback to different students' personalities (e.g. sensitive students) - Frequency of feedback (i.e., after each task) - Mode of feedback delivery (written, verbal, mixed) <p>Ø Receiving feedback from students</p>	<ul style="list-style-type: none"> - Differentiate between summative and formative assessment 	<ul style="list-style-type: none"> - Supporting preceptors: a three-pronged approach for success
		<ul style="list-style-type: none"> - Create a formal assessment plan 	<ul style="list-style-type: none"> - Teaching on the Run
		<ul style="list-style-type: none"> - Recognize what can go wrong in assessment - Deal with what can go wrong in assessment 	<ul style="list-style-type: none"> - Preceptor Development Program, University of Virginia
		<ul style="list-style-type: none"> - Design rubric effectively - Use rubric effectively 	<ul style="list-style-type: none"> - Developing and Implementing an Academy of Preceptors
		<ul style="list-style-type: none"> - Recognize the basic principles of assessment in standard setting 	<ul style="list-style-type: none"> - Towards an educational continuing professional development (EdCPD) curriculum for Australian general practice supervisors
		<ul style="list-style-type: none"> - Provide effective feedback 	<ul style="list-style-type: none"> - Supporting preceptors: a three-pronged approach for success.
		<ul style="list-style-type: none"> - Recognize 'sandwich method' in providing feedback - Apply 'sandwich method' in providing feedback 	
		<ul style="list-style-type: none"> - Apply communication skills in providing the feedback 	
		<ul style="list-style-type: none"> - Consider students constructive feedback and use it for improvement - Comprehend concepts of self-assessment - Apply concepts of self-assessment 	<ul style="list-style-type: none"> - Effective preceptorship: A guide to best practice

<p>Ø Module 5: Communication skills for effective preceptorship and conflicts resolution</p> <p>Ø Duration: 2 hours</p>	<ul style="list-style-type: none"> - Lack of proper communication skills (i.e., effective ways of communication) - How to deal with different and difficult kinds of personalities and situations - Right reactions to students' misconduct (e.g. mistakes, being late) - How to respond to students' questions <p>Ø Cultural competencies and teaching culturally sensitive topics</p>	<ul style="list-style-type: none"> - Apply basic communication skills in precepting students - Identify barriers to effective communication - Recognize and elevate students' anxiety 	<ul style="list-style-type: none"> - Development of an Online, Evidence-Based CRNA Preceptor Training Tutorial (CPiTT): A Quality Improvement Project
		<ul style="list-style-type: none"> - Identify different sources of conflicts - Manage and resolve conflicts 	<ul style="list-style-type: none"> - Towards an educational continuing professional development (EdCPD) curriculum for Australian general practice supervisors
		<ul style="list-style-type: none"> - Recognize multi-generational workplace and learners - Deal with multi-generational workplace and learners 	<ul style="list-style-type: none"> - Preceptor training, Northern Alberta Institute of Technology (NAIT)
		<ul style="list-style-type: none"> - Recognize cultural factors and variables affecting communication and learning - Demonstrate the skills of cultural competency in training students 	<ul style="list-style-type: none"> - Partnerships for Learning Population-Based Public Health Nursing: Web-Delivered Continuing Education for Public Health Nurse Preceptors