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Original Research Article

Pharmacy students' perceptions and attitudes towards experiential training in Jordan and United Kingdom

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Abstract

Purpose: *To examine the quality of pharmaceutical experiential training by developing an experiential training survey.*
Methods: *An online survey was placed on E-learning platforms in Jordan and UK to develop a validated instrument that can assess pharmacy students' perceptions of the experiential program implemented in their curricula.*
Results: *A total of 377 students from Jordan (250 students) and the UK (127 students) completed the survey. Principal component analysis was used to conduct exploratory factor analysis and to assess the factor structure for the data. A two-factor model was applied to the data obtained from the students. These factors included students' feelings toward experiential training (Perceiver Feelings; PF) and their ability to conduct a full Pharmaceutical Care Plan (PCP). Students from both Jordan and the UK showed a higher satisfaction PF score toward the experiential training program compared to PCP. Being female and not having prior practice experience led to significantly lower PCP scores compared to males and having a prior practice experience, respectively.*
Conclusion: *The availability of a validated questionnaire will help in investigating the effectiveness of experiential training courses.*

Keywords: *Experiential training, Factor Analysis, Survey development, Pharmacy*

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INTRODUCTION

Experiential training is an integral part of pharmacy curricula worldwide. Training under the mentorship of an experienced pharmacist provides students with the opportunity to emphasize, shape and develop the necessary knowledge and skills while practicing direct patient care [1] and that is true for other professions too, including nursing [2]. It is assumed that training students reduces undesirable variation in pharmacy practice, such as managing drug therapy in direct patient care settings and taking the responsibility of ensuring optimal patient outcomes, and improves patients' outcomes [3].

Recently, there has been an increase in awareness of the importance of experiential training as a certification requirement from the Accreditation and Quality Assurance Commission for Higher Education Institutions (AQACHEI) in Jordan. Whereas, in UK, training is recognized as a vital part of pharmacy certification as stated by the General Pharmaceutical Council. The philosophy behind experiential training is to expose students to the pharmacy profession in a structured educational environment in order to facilitate their transition from academic life into the professional one [4]. In order to meet with the changing requirements of the pharmacy profession, feedback from the students, preceptors (academic tutors), and course instructors about the usefulness and the structure of the experiential training program should be taken into account for any future implementation. Importantly, students' opinions are surveyed to ensure the training improves knowledge and skills that will be later translated into an improved pharmaceutical decision-making. Indeed, a previous study found that early rotations in the professional program were considered as beneficial by students in terms of improved knowledge and skills [5].

The Accreditation Council for Pharmacy Education (ACPE) highlights the importance and the necessity for valid and reliable tools for the assessment of student learning outcomes [6]. However, measurement tools for experiential training are sparse and, to the best of our knowledge, there is no validated method for testing the feedback of students. Thus, the development of an experiential training survey is warranted. In a previous study, Fitzpatrick and colleagues emphasized the important role of qualitative research in influencing social and cognitive pharmacy skills. Importantly, qualitative studies, such as internal validity and generalizability theory, can inform use of quantitative or experimental methods [7].

Training of health professionals typically involves students obtaining and combining knowledge and skills in undertaking clinical activities under the direction of experienced clinical academic tutors. Feedback is essential in elevating these experiences. Indeed, academic tutors can offer information that might improve students' performance and support desirable behaviors. Data have confirmed that feedback is most useful when it is obtained from a reliable source giving specific input based on direct observations accompanied by an action plan [8]. Students' attitudes and opinions toward experiential training can influence their learning and future counseling behavior. Thus, getting students' feedback and attitude is essential in the success of implementing any new program including experiential training.

Previous work in the USA has assessed the structure of experiential training programs and related issues to the training sites and preceptors [9]. Similarly, studies were conducted nationwide for the experiential learning in masters of pharmacy degrees (MPharm) in UK universities and with Danish pharmacy students [10,11]. The aims of the current study were to first, develop a validated instrument to assess students' perceptions of experiential programs, and second to use this instrument to investigate students' feedback and attitudes toward experiential learning courses in Jordan and the UK.

METHODS

Study design

This was a cross-sectional survey of pharmacy students, who registered and passed the experiential training placement. Approval was given to conduct this study (approval no. 8/18/2018-2019). At the time of the study, only five out of 27 Faculties of Pharmacy in Jordan offered an experiential training course.

The UK survey was sent via email to all MPharm students at the University of Sunderland outlining the purpose of the questionnaire and how to access it. Students across all four academic years of the program were invited to participate; students at each level will have undertaken a community pharmacy placement. The questionnaire was uploaded electronically at the end of the 2019/2020 academic year and remained available until November 2020 to ensure maximum responses. A reminder email was sent out at the start of the 2020/21 academic year and a week before the end of the data collection period.

Participants

A total of 377 students from United Kingdom (127) and Jordan (250) completed the questionnaire (Table 1). Of these, 76.9 % were female. The mean age for females was 22.14 (± 2.40) and 24.37 (± 5.52) for males. 39.8 % of the students had previous pharmacy practice experience. About half (48.5 %) of the students' parents had bachelor's degrees and a further 28.4 % of them had high school education.

Table 1: Demographics of the sample (frequencies and percentages or means and standard and deviations, n=377)

Variable		Frequency (%) or Mean (SD)
Country	United Kingdom	127 (33.7)
	Jordan	250 (66.3)
Gender	Female	290 (76.9)
	Male	87 (23.1)
Parents' education status	Illiterate	5 (1.3)
	High school	107 (28.4)
	Bachelor's degree	183 (48.5)
	Master's degree	41 (10.9)
	PhD	41 (10.9)
Mean age (years)	Female	22.14 (2.40)
	Male	24.37 (5.52)
Do you have any prior pharmacy practice experience?	Yes	150 (39.8)
	No	227 (60.2)
Does any member of your family own a pharmacy?	Yes	39 (10.3)
	No	338 (89.7)
Is the pharmacy placement program graded?	Yes	277 (60.2)
	No	150 (39.8)
Degree class	First-class degree	67 (19.5)
	Upper-second class	113 (32.8)
	Lower-second class	115 (33.4)
	Third class or lower	49 (14.2)

Pilot study

Seven pharmacist faculty members with varying expertise in experiential training, survey design, English and pharmacy education performed face and content validations. The survey was pilot-tested on ten students that completed the training course in order to assess their comprehension of the survey and the time taken to complete it. These ten students were excluded from the study. Based on the pilot study, recommendations were suggested to improve the survey's technical features, which were implemented. The survey took between 15-20 minutes to finish. After the amendments were completed, the test and retest of the survey was conducted on 53 students who were enrolled in the training course and the results from these 53 students were also excluded from the study.

Instruments and procedure

The survey consisted of three sections; the first section was an anonymous self-report information about the students consisting of seven questions; the second section consisted of 33 questions to measure students' opinions and feelings on different aspects concerning the experiential training course; and the last part consisted of 10 questions in order to find out the various tasks that were required from students during the training. A score was computed for task completion; each completed task was granted one point and the maximum possible score was 10. Under the first section, demographic details that were deemed relevant to experiential training were obtained (Table 1). In the second section, participants were asked to rate their opinions on a scale from 1 (strongly agree) to 5 (strongly disagree) (Table 2).

The questionnaire and respondent information sheet were posted on an Internet site, and the link was emailed and shared on all five Jordanian universities' social media pages. No financial incentives were offered, and reminder emails were sent out to all universities two weeks after the initial email.

Data analysis

The survey questions were treated as ordinals and kurtosis values were calculated to evaluate the normality of scores on each subscale of each model. Normality was assumed if kurtosis was between -2 and +2. The Kaiser-Meyer-Olkin value (KMO) and Bartlett's Test of Sphericity were used to assess the data's appropriateness for factor analysis. Principal-components analysis (PCA) was used for exploratory factor analysis (EFA) to determine the best model for the data. Scree plots were used to assess the optimal amount of components to extract in parallel analysis. Parallel analysis was conducted by comparing eigenvalues extracted from the data with eigenvalues from randomly composed correlation matrices, where the number of factors retained was the number of eigenvalues

generated from the data that are larger than the corresponding random eigenvalues. The correlation matrix revealed that the factors generated were highly associated (r = 0.56), hence the pattern matrix was generated using Oblimin rotation. Items with a score of less than 0.3 were eliminated from the study. Additionally, any item with a loading of 0.4 or larger in more than one element was removed, as was any item with no loading of 0.4 or greater in any factor. To determine discriminant validity, the factor correlation matrix was analyzed. Cronbach's alpha was used to determine the internal consistency of each subscale.

The ceiling and floor effects were assessed by calculating the percentage of participants who received the greatest or lowest possible scores; the effects were deemed existent when these scores were attained by more than 15% of the subjects. The final model was re-evaluated using Confirmatory Factor Analysis (CFA) on the same data in accordance with Bengt Muthén method, maximum likelihood extraction method was also used. Goodness of fit of the suggested final model was evaluated by calculating CMIN/DF (minimum discrepancy per degree of freedom) TLI (Tucker-Lewis coefficient), and CFI (comparative fit index. Acceptable values were < 5 for CMIN/DF [26], and > 0.8 for CFI and TLI[27]. T-test and analysis of variance (ANOVA) were used to assess the association between factor means, pharmacists' task completion scores, and sample characteristics when normality was assumed. Mann Whitney-U and Kruskal–Wallis tests were used if normality assumptions were not met. Finally, test-retest reliability was conducted on data from 53 students using Pearson's correlations. Pearson's correlation was also conducted to measure the correlation between the factor means and the pharmacists' task completion scores. Confirmatory factor analysis on the two-factor model was conducted using AMOS 22 and SPSS 25.

RESULTS

Exploratory factor analysis was done to evaluate the most suitable model for the data. The Kaiser-Meyer-Olkin test result was 0.931 and Bartlett's Test of Sphericity was significant, $\chi^2(435) = 6512.24$, $p < 0.01$, which indicated the suitability of the data for factor analysis. When examining the communalities, questions number 24 ('The community pharmacy's location was NEAR to where I live'), 25 ('I located the training site EASILY'), 26 ('I put EFFORT into the training course'), had low communalities (< 0.35) and so were excluded from analysis. Exploratory factor analysis was rerun after excluding these questions. The scree plot was examined which suggested two factors (Figure 1).

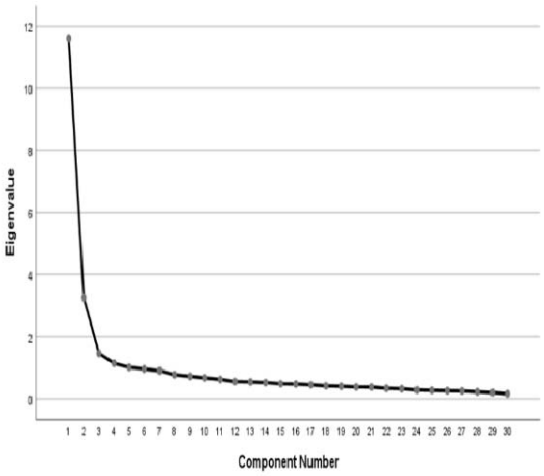

Figure 1: Scree plot for factor analysis

As shown in Table 2, the two-factor model was reconfirmed when conducting parallel analysis with 100 replications. The two-factor model included students' feelings on the experiential training course (*Perceiver feeling, PF*) and their perception of their ability to give pharmaceutical care plan (*PCP*).

Table 2: Parallel analysis outcome

Factor	Eigenvalue of randomly generated data	Eigenvalue of the study data
1	1.65	11.60
2	1.54	3.25
3	1.47	1.46

Table 3 shows that the communalities of the questions included in the two-factor model were all above or equal to 0.30. Cronbach's alpha values were investigated; 0.944 for *PCP* factor and 0.865 for *PF* factor. Removing any further questions did not enhance reliability. The kurtosis for the two subscales was between -2 and +2, and the skewness was between -3 and 3, which revealed normality.

Factor loading, item-total correlations, Cronbach's alphas if item deleted, means, standard deviations and ranges of the two factors are shown in Table 4 and Table 5. For the *PCP* factor, the highest factor loading was 0.85 for Question 9 and the lowest factor loading was 0.43 for Question 30. The highest communality for the first factor was 0.63 for Question 9, and the lowest was 0.30 for Question 13. For the *PF* factor, the highest communality was 0.65 for

Table 3: Subscale names, item numbers, communalities, Cronbach's alpha, means, SD, kurtosis, and skewness for the Experiential Training survey model

Subscale (Question number)	Communalities (min-max)	Cronbach's alpha	Mean (SD)	Kurtosis	Skewness
Pharmaceutical care Plan (9, 8, 7, 29, 11, 2, 3, 12, 10, 1, 33, 31, 6, 5, 32, 15, 17, 14, 16, 13, 4, 30)	0.30-0.63	0.944	3.75 (0.64)	0.57	-0.44
Perceiver feeling (20, 19, 18, 21, 22, 23, 28, 27)	0.35-0.65	0.865	3.99 (0.75)	0.20	-0.70

Question 21 and the lowest was 0.35 for Question 28. The highest factor loading in the second factor was 0.82 for Question 20 and the lowest was 0.50 for Question 27.

The correlation matrix indicated that there was significant correlation between the factors (r = 0.38). However, the correlation was less than 0.85 indicating good discriminant validity.

The CFA of the suggested two-factor model containing the 30 remaining questions with six error covariance in the same factors produced acceptable model fit indicators (CMIN/DF = 3.511,

TLI = 0.82, CFI = 0.84). Test-retest reliability was tested by using Pearson's correlations, where all questions were found to be highly correlated, with most above 0.8 and 0.9, except for Question 6 (0.56), Question 14 (0.59), Question 18 (0.64), and Question 32 (0.69). Ceiling and floor effects were tested by calculating the percentage of subjects that had the highest or lowest possible scores, and none of the factors exceed the 15% cut-off point.

Table 6 shows the association between the factor means and different sample characteristics. Jordanian students had significantly lower *PF* means when compared to British students. For *PCP* factor means, females had significantly lower means than males. Likewise, students with no prior pharmacy practice experience had significantly lower means than students with experience.

Table 7 represents the pharmacists' tasks that students conduct while training. The most performed tasks were stocking inventory (63.1 %), prescriptions filling (60.2 %), and using computer systems (57.6 %). While the least performed tasks were compounding (19.9 %) and creating an employee work schedule (11.4 %).

A score for pharmacists' tasks completion was calculated. The association between this score and different sample characteristics is shown in Table 8. UK students had significantly higher scores than Jordanian students. Other characteristics that had significantly higher scores were being male (mean = 4.82) and having prior pharmacy practice experience (mean = 4.83)

PCP and *PF* means had significantly positive correlation with the pharmacists' tasks completion score (r = 0.44 and r = 0.30 respectively, both $p < 0.01$).

DISCUSSION

This study developed and validated a survey of experiential training as well as compared the opinions and attitudes of the students that went through experiential training in Jordan and UK.

The result of the EFA suggested a two-factor model would fit the survey. These factors were students' feelings concerning the training course (PF) and students' opinions on their ability to perform a complete PCP (PCP). Assessment of experiential training is complex. Interestingly, experiential training from the preceptor's point of view was evaluated but none from the students' perspectives [12,13]. This survey was developed according to the Center for the Advancement of Pharmacy Education (CAPE) educational outcomes and adapted according to the settings in Jordan, the study objectives and a review of the literature. Three questions were omitted from the analysis of the initial 33 questions survey for different reasons. After establishing construct validity, the finalized version of the survey consisted of 30 questions (22 questions for PCP and 8 questions for the PF).

Objective evaluation of experiential training is essential to ensure the effectiveness of the training course and that the students have gained sufficient knowledge and skills during the training process [14]. Lack of validated methods to measure the attitude and abilities of students in professional settings affects the overall outcomes of the pharmacy students.

Table 4: The final model factor loadings, item-total correlations, Cronbach's alphas if item deleted, means, standard deviations and ranges

Variable	Factor loading	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Mean	SD	Range
Pharmacy Care Plan Factor (PCP)						
I can independently provide comprehensive follow-up care and evaluate the outcomes	0.85	0.71	0.94	3.39	1.07	4.00
I can independently develop comprehensive and concise care plans	0.79	0.67	0.94	3.37	1.02	4.00
I can better identify and prioritize all drug therapy problems	0.77	0.68	0.94	3.41	1.00	4.00
I can handle any inquires related to OTC medications	0.77	0.72	0.94	3.54	0.95	4.00
I can actively incorporate current information on health and wellness promotion in the community pharmacy daily practice	0.77	0.71	0.94	3.70	0.85	4.00
I can communicate and adapt more easily to situations presented by specific patients	0.73	0.75	0.94	3.87	0.86	4.00
I can council the patient clearly using the basic communication skills	0.71	0.70	0.94	3.91	0.88	4.00
I can detect and try to resolve any situation presenting ethical issues	0.69	0.63	0.94	3.50	1.01	4.00
I can independently seek out current information on health and wellness promotion	0.69	0.62	0.94	3.73	0.90	4.00
I can develop an appropriate professional relationship with the patients	0.69	0.71	0.94	3.88	0.89	4.00
I know when to refer patients	0.69	0.62	0.94	3.79	0.96	4.00
I feel more confident dealing with different patients	0.67	0.69	0.94	3.90	0.93	4.00
I can promote/advocate for patient health and wellness	0.67	0.66	0.94	3.99	0.82	4.00
I can understand, interact, and collaborate better with a wide range of health care providers	0.66	0.73	0.94	3.88	0.91	4.00
I was able to spend adequate time collecting the required patient information and to counsel patients	0.66	0.57	0.94	3.52	1.01	4.00

Table 5: The final model factor loadings, item-total correlations, Cronbach's alphas if item deleted, means, standard deviations and ranges (***(contd)***

Variable	Factor loading	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Mean	SD	Range
Pharmacy Care Plan Factor (PCP) *(contd)*						
I have better knowledge of the medications that are sold in the local market	0.58	0.63	0.94	4.00	0.84	4.00
I have better knowledge of medication procurement procedures and the payment systems employed by community pharmacies	0.58	0.54	0.94	3.66	1.03	4.00
I can better dispense any prescription	0.57	0.61	0.94	3.82	0.98	4.00
I have better knowledge of medication distributors and suppliers operating in the local market and the medications that are supplied by each of them	0.56	0.58	0.94	3.74	1.05	4.00
I can accept responsibility and accountability for my own decisions and actions concerning any ethical situation	0.53	0.51	0.94	3.75	1.04	4.00
I can develop intra-professional relationships within the community pharmacy	0.45	0.53	0.94	4.19	0.79	4.00
I feel more confident working at a community pharmacy	0.43	0.55	0.94	4.07	0.88	4.00
Perceiver feelings *(PF)*						
The pharmacist in charge did not communicate with me	0.82	0.66	0.84	3.75	1.20	4.00
I did not benefit from the pharmacist in charge	0.80	0.68	0.84	3.90	1.16	4.00
This placement is a waste of time	0.79	0.63	0.85	3.97	1.19	4.00
I enjoyed training under the pharmacist	0.75	0.73	0.83	3.90	1.07	4.00
This training placement was interesting	0.71	0.69	0.84	3.99	1.01	4.00
I looked forward to going to the community pharmacy	0.59	0.56	0.85	3.93	1.02	4.00
The pharmacist in charge talked to me as an individual	0.58	0.50	0.86	4.13	0.92	4.00
I paid attention to what the pharmacist in charge said	0.50	0.48	0.86	4.37	0.69	4.00

Table 6: Association between sample characteristics and factor means

Variable		Pharmaceutical care Plan *(PCP)*	Perceiver feeling *(PF)*
Country	United Kingdom	3.73 (0.65)	4.11 (0.79)
	Jordan	3.77 (0.63)	3.93 (0.72) *
Sex	Female	3.70 (0.62) *	3.99 (0.75)
	Male	3.94 (0.67)	3.99 (0.74)
Do you have any prior pharmacy practice experience?	Yes	3.96 (0.65)	4.01 (0.77)
	No	3.62 (0.59) *	3.98 (0.74)
Does any member of your family own a pharmacy?	Yes	3.89 (0.60)	3.98 (0.73)
	No	3.74 (0.64)	3.99 (0.75)
Is the pharmacy placement program graded?	Yes	3.77 (0.68)	3.95 (0.75)
	No	3.73 (0.57)	4.06 (0.74)
Degree class	First-class degree	3.72 (0.64)	3.89 (0.86)
	Upper-second class	3.85 (0.60)	4.06 (0.68)
	Lower-second class	3.68 (0.64)*	3.85 (0.75)
	Third class or lower	3.98 (0.60)	4.08 (0.62)

*Significant at $p < 0.05$

Table 7: Frequency of the pharmacists' tasks performed by students during experiential training

Pharmacists' task	Frequency (%)
Operating the cash register	173 (45.9)
Fill request	227 (60.2)
Stocking inventory	238 (63.1)
Entering a new prescription	167 (44.3)
Using the computer system	217 (57.6)
Clarifying a prescription with another healthcare provider (eg GP).	203 (53.8)
Compounding	75 (19.9)
Workflow	197 (52.3)
Creating an employee work schedule	43 (11.4)
Resolving conflict with patients	78 (20.7)

Indeed, the absence of a systemic evaluation of experiential training in the literature warranted the need to develop and validate a tool to measure it. The ACPE was among the first organizations to emphasize the importance of experiential training for pharmacy students. Importantly, the ACPE stresses on having a credible, fair, and defensible assessment of the training course [15]. It is expected that a significant increase in the knowledge and skills will be observed by using a validated questionnaire that can reliably relate students' opinions and attitudes toward experiential training. Now that a valid instrument is available, assessment of experiential training may, and we believe should, become routine and as part of quality assurance practices among Faculties of Pharmacy. Using this validated survey would help universities to examine the opinions and attitudes of students toward experiential training courses to ensure their effectiveness.

According to ACPE requirements, experiential training needs to be integrated within the pharmacy curriculum [16]. This is true for any pharmacy program around the world. Indeed, experiential training in pharmacy programs is regarded as a key stipulation for producing confident graduates who are able and willing to assume accountability and responsibility for drug therapy management [17]. In order to achieve these skills, we must optimize the quality of the program by getting student feedback.

The results from this questionnaire showed no statistical difference between Jordanian and UK students in their feelings about their ability to conduct a full PCP. Conversely, a statistical difference was found in the feedback related to PF, with UK students reporting higher satisfaction than Jordanian students. This might be in part due to the different structure of the two programs. The number of contact hours in experiential training (time that the student spent in the community pharmacy) is relatively similar in Jordan and UK (90 hours in Jordan versus 100 hours in UK). However, the distribution of the contact hours differs. In Jordan there is no distribution, student have one course of experiential training where they typically spend a

whole semester training in their fifth year. Whereas in UK, the contact hours are distributed in 4 different levels to achieve a total of 100 contact hours.

Similarly, we found that male students and having a previous experience training had a higher score in the ability of students to perform PCP. Community pharmacists have a key role in the provision of medical services for ambulatory care patients, particularly in medication counseling and recognizing, resolving, and avoiding medication-related problems [18,19]. In addition, previous research demonstrated that students learn practical skills at the workplace through self-directed learning and practical experience rather than formal training [20]. Thus, having previous experience would help students in their ability to perform PCP. Little is known about the influence of gender in education in general and experiential training in particular. One study showed that using a self-assessment tool for Drug Information in advanced pharmacy practice experience, the initial assessment showed that, male students' ratings were significantly higher than female students' ratings on ability to work independently. However, all other initial self-ratings did not significantly differ. In addition, there were no significant differences between male and female students' scores at the end of advanced pharmacy practice experience self-assessments [21]. Conversely, in this study we showed that males have higher rating in their ability to give PCP.

As the profession advances with the execution of the Blueprint for Pharmacy's Vision for Pharmacy, there has been a lot of discussion regarding what kind of experiential training programs will better equip pharmacy students for their future roles [22]. There has also been discussion over whether the needed quality and quantity of training can be provided utilizing the present experiential training approaches in use across the country. This study provides background and context for the present debate, as well as the problems that hospitals confront in offering high-quality experiential programs using current training paradigms.

Future work

This study is the first stage of a longer-term, more thorough validation approach with the goal of optimizing experiential training. Future work may include the implementation of the results obtained from the questionnaire. These results will then help to improve programs to ensure maximum benefit for students.

Strengths

The survey scale may reveal a small percentage of bias, as all reported scales do. We tried managing this limitation by making the survey anonymous to ensure that students knew that the data would not be used to criticize or affect their performance on the training course.

Participation was based on convenience sampling. It is possible that the students taking this survey have more positive feedback compared to non-responders. However, the responses were anonymous to ensure students knew that their data would not be used to criticize or affect students' performance in the training course. As this study is investigative, the findings are not meant to be generalized, but can hopefully help in assessing other similar teaching settings. A further limitation was the potential for participants to misinterpret the survey questions. To minimize this, we conducted a validation process where the survey was reviewed by several faculty members and a test-retest analysis for 53 different students was carried out. In addition, the survey did not capture the rationale of why the experiential training is structured the way it is, nor did it measure the quality of the experiential learning. Further studies are warranted to evaluate the quality of experiential training in different training settings.

Moreover, the acceptable response rates for the survey plus the completeness of the data (no missing values were identified) increased the reliability of the results. To the best of the authors' knowledge, 450 students from the four different universities which entered the study were taking the training course at the time of the study. The overall response rates were considered to be acceptable [23]. Furthermore, the sample size of 377 students from Jordan and UK appeared to be a reliable sample according to other validation studies and the minimum sample size for factor analysis. Previous studies recommended that the sample size be at least 100 [24]. Guidelines of recommendations for the ratio between sample size and number of questions were also discussed in previous studies, which recommended that this ratio should be within 3 to 6. This study has a ratio of 6.9 which makes the standard errors of correlation coefficients sufficiently small so that the factor analysis of this study would yield to stable solutions. Overall, this study offers a user friendly and robust self-reported assessment tool that may be utilized for different experiential training programs with the aim to improve their effectiveness.

Limitations of this study

The students' self-reporting of attitudes and beliefs of preparedness to deliver experiential instruction could be a potential limitation of this study. Students' self-reported opinions and attitudes toward experiential training may not always represent their real opinions and attitudes. As a result, these data should be evaluated with caution in conjunction with the results of objective evaluations of students competencies by academics and preceptors. Another potential drawback is that what is regarded to be the “correct” answer may affect students’ responses. Respondents may be skewed by a desire to produce socially acceptable responses.

CONCLUSION

In this study, a validated instrument to assess students' perceptions of experiential programs has been successfully developed, and used to investigate students’ feedback and attitudes toward experiential learning courses in Jordan and the UK. A two-factor model included students' feelings on the experiential training course (*Perceiver feeling, PF*) and their perception of their ability to give pharmaceutical care plan (*PCP*) has also been developed. The only factors that influence PCP are gender and previous experiential training, which emphasize the importance of training and integrating in the curriculum. The validated version of the survey may be used to evaluate students’ opinions and attitudes toward experiential training around the world. This survey will help in assessing different experiential training courses and aid in improving and ensuring their quality.

DECLARATIONS

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Ethical approval

None provided.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Conflict of interest

No conflict of interest is associated with this work.

Contribution of authors

We declare that this work was done by the authors named in this article and all liabilities pertaining to claims relating to the content of this article will be borne by the authors. This study was conceived and designed by Alaa Hammad, Walid Al-Qerem, Suhair Sunoqrot, Rasha Arabyat and Haneen Amawi. The data were collected by Alaa Hammad, Walid Al-Qerem, Suhair Sunoqrot, Rasha Arabyat, Haneen Amawi, Jonathan Ling and Carlie Robertshaw. The data analysis was done by Walid Al-Qerem. The article was written by Walid Al-Qerem, Alaa Hammad, Suhair Sunoqrot, Rasha Arabyat, Haneen Amawi, Carlie Robertshaw and Jonathan Ling.

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