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Interprofessional Education in the Arabic Speaking Middle East: Perspectives of Pharmacy Academics

Abstract

The current status of interprofessional education (IPE) in Arabic Middle Eastern countries is largely unexamined and there is a need to assess IPE and collaborative practice in these countries. As faculty attitudes towards IPE are believed to be one of the main factors that affect the successful integration of IPE into the different healthcare curricula, this paper aims to explore the attitudes and views of pharmacy academics in Arabic speaking Middle Eastern countries towards IPE and collaborative practice. The findings from this paper are part of a larger study investigating pharmacy's perspectives of IPE and collaborative practice in Qatar and the Middle East. An online survey which included three validated scales was used to gather information from pharmacy academics at 89 pharmacy schools in 14 countries. The response rate was 107 out of 334 (32%) and the majority of the respondents were from Jordan, Qatar, Lebanon and Saudi Arabia. Statistical analysis was completed descriptively as well as inferentially using a series of independent t-tests. Overall pharmacy academics had positive attitudes towards IPE. The majority of the respondents 90.8% (n=99) perceived IPE to be important. Age, likelihood to engage in IPE and years of IPE experience were the factors that were related to faculty members' attitudes towards IPE. Highly perceived barriers for implementing IPE included cultural challenges for each profession, scheduling common courses and activities in addition to limited resources. The study findings indicated that pharmacy academics in the Middle East are ready to pursue IPE. These results can serve as impetus for implementing IPE in Middle Eastern countries.

Introduction

In an interprofessional education (IPE) environment, students are provided with a structured opportunity to interact with other healthcare professional students to acquire the knowledge, skills and professional attitudes. IPE studies suggest that students when they have graduated can translate this learning into actions in practice (Horsburgh, Lamdin, & Williamson, 2001; Reeves et al., 2016). The World Health Organization (WHO) published a "Framework for Action on Interprofessional Education and Collaborative Practice" that advocated the development and integration of IPE into healthcare curricula (WHO, 2010). While there is strong emphasis on incorporating IPE into the curricula across western countries, the status of IPE in Arabic Middle Eastern countries is largely unexamined. Rodger and Hoffman reported the results of a WHO survey of health care academics where a very small percentage (4%) of faculty from the Middle East reported any IPE activity (Rodger & J. Hoffman, 2010). Additionally, there are few health professions' schools in the Middle East with reported IPE experiences (Wilbur, Hasnani-Samnani, & Kelly, 2015; Wilby et al., 2015). There could be a number of reasons for these findings, firstly, there may be no consensus on an IPE definition or no data regarding students' attitudes and views of IPE (El-Zubeir, Rizk, & Al-Khalil, 2006). Cultural and contextual factors in the Middle East may be significantly different from those in other areas of the world which would result in diverse interpretations and perspectives. Other reasons could be that IPE is perceived to be a western phenomenon; studies may have been published in other languages and are less accessible; or resources are lacking to evaluate the programme in this region (Irajpour, Barr, Abedi, Salehi, & Changiz, 2010).

Integrating IPE into the different healthcare curricula remains a challenge despite the evidence that supports and promotes IPE in health professional education (Hammick, Freeth, Koppel, Reeves, & Barr, 2007; Reeves et al., 2008; Reeves et al., 2016). Barriers can be divided into three categories: organizational, structural and attitudinal. In Parsell and Bligh's seminal work on IPE attitudinal questionnaires they extrapolated that although organizational and structural barriers can be very challenging to overcome, it is the attitudinal barrier that might be the most problematic (Parsell & Bligh, 1999). It is not only the learner's attitude which could be a barrier to implementing IPE, but also faculty attitudes (Curran, Sharpe, & Forristall, 2007; Hoffman & Redman-Bentley, 2012). Furthermore, it has been suggested that faculty characteristics such as profession, prior IPE experiences and their intent to engage with IPE are linked to their positive IPE attitudes while the link between gender and attitudes has not been confirmed. Other faculty characteristics that have failed to demonstrate any effect on attitude include age, employment status, current faculty position, highest level of education, and years of experience as a healthcare professional (Curran et al., 2007; Olenick & Allen, 2013).

This study focused on the perspectives of pharmacy academics in the Middle East. Pharmacists are integral members of the healthcare team and their role has significantly evolved since the introduction of the pharmaceutical care concept by (Hepler & Strand, 1990). However, although the position of the pharmacists in the interprofessional team is already recognized and they are represented in the interprofessional literature, their perspective on interprofessional working is not explicit. Furthermore, information about the perspectives of pharmacy academics in the Middle East is not available. The aim of

this study was to explore the attitudes and views towards IPE and collaborative practice, of pharmacy academics in Arabic Speaking Middle Eastern countries. This research is part of a larger study investigating pharmacy perspectives of interprofessional education and collaborative practice in Qatar & the Middle East (El-Awaisi, Diack, Joseph, & El Hajj, 2014, 2016)

Methods

Study design

The design of this study was a cross sectional survey of academics at pharmacy schools in Arabic Speaking Middle Eastern countries.

Data collection

A self-administered anonymous online survey that was created in Snap 10 Professional® and had the potential for completion in 20 minutes. The survey included three different validated scales (Curran, Sharpe et al. 2007). To meet all the study's objectives further questions based on published literature (Buring et al., 2009) and based on the study team's previous IPE experiences, were added to the survey to provide a broader perspective on IPE in the Middle East.

The survey contained questions related to the following domains: (1) respondent characteristics (e.g. gender, age, academic discipline, number of years in academia, primary academic role); (2) respondent opinions and experiences of IPE (e.g. identifying statements describing IPE, grading the importance of topics for IPE, grading the

potential benefits of IPE, importance of assessing students readiness for IPE activities); 3) respondent likelihood to engage in IPE.

Multi-select questions were included based on the following: opportunities envisaged for IPE in their pharmacy program for the next five years, anticipated learning outcomes students should possess having experienced IPE, educator attributes an instructor implementing IPE should possess, perceived barriers potentially encountered while implementing IPE, pathways for IPE implementation in their curriculum, healthcare professions to be included.

Respondents' attitudes towards IPE were assessed by using a 42 item five-point Likert scale which comprised the following three validated instruments: 14-item Likert scale adapted to measure attitudes toward interprofessional health care teams (Heinemann, Schmitt, Farrell, & Brallier, 1999); 15-item Likert scale to assess attitudes towards IPE (Parsell & Bligh, 1999) and 13-item Likert scale adapted to assess attitudes towards interprofessional learning in the campus-based academic setting (Gardner, Chamberlin, Heestand, & Stowe, 2002).

Open-ended questions were also included which asked respondents about perceived factors that may facilitate or hinder their involvement in IPE. The final section of the survey offered respondents an opportunity to provide any additional (open-ended) comments they may have about IPE.

Before piloting, the survey was reviewed for face and content validity, by the authors and three academics (two from Scotland and one from Qatar). Piloting was conducted with three pharmacy academics in the Middle East who were excluded from the actual study thereafter. Only minor modifications to the text were made after piloting to make it easier to read and understand.

Survey implementation

During the development phase a database of pharmacy schools in Arabic speaking Middle Eastern countries was created. In total, 89 pharmacy schools in 14 countries were listed in this database namely: Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Yemen and United Arab Emirates and all were approached to take part in this study. These countries belong to the same geographical region and have similar cultural traditions and social characteristics (N. Kheir et al., 2008). Two reminders at 2 weeks' interval were sent to the study respondents

Analysis

Data were imported into SPSS® version 22 for analysis. Respondents' characteristics and multi select questions were analysed descriptively using frequencies and percentages. For the purpose of analysing the Likert scale questions the following scores were attributed: a score of 1 to strongly disagree, 2 to disagree, 3 to undecided, 4 to agree and 5 to strongly agree. Overall, mean ratings for the three attitudinal scales were calculated and expressed as means and standard deviations taking into

consideration that a reverse coding technique was used for negatively worded statements. To examine the effect of faculty characteristics on their IPE attitudes, a series of independent t-tests were conducted. Independent variables considered included age, gender, years of experience and years of experience with IPE, likelihood of engaging in IPE, identifying the correct IPE definition. P values at ≤0.05 were considered significant. Years of experience with IPE were grouped into two categories: one category is for respondents with none or less than 1-year experience and the other category is for the other respondents. Reliability analysis was performed on each of the attitudinal scales by obtaining a value for Cronbach's coefficient alpha. Thematic analysis was performed manually for responses from the open ended questions.

Ethical considerations

The study was approved by Life Sciences and Qatar University (QU) and Robert Gordon University School of Pharmacy Ethics Review Boards. Participation in this study was voluntary and informed consent was implied when the participant submitted their completed responses. A covering letter and participant information leaflet was attached with the invitation to take part.

Results

The study data were collected over two months. One hundred and seven surveys were submitted. The response rate was 107 out of 334 (32%).

Demographic data

Table 1 highlights the sociodemographic and academic characteristics of respondents. More than 72.4% of respondents were aged between 25 and 44 years old with the majority being males (51.4%). Respondents were mostly from Jordan (22%), Qatar (19.3%) and Lebanon (18.3%). Most respondents (45.9%) were at assistant professor rank and 6 out of 10 had a clinical pharmacy background. More than half of respondents had been working in higher education for more than 5 years (63.3%).

[table 1]

The three IPE attitudinal scales & reliability analysis

Table 2 summarises the overall mean scores on the three attitudinal scales and the reliability analysis which revealed high internal consistency. Cronbach's alpha for the three scales = 0.807, 0.911 and 0.801 respectively. Overall, respondents had very positive attitudes toward IPE. For scale 1 in relation to pharmacy academics' attitudes towards Interprofessional Health Care Teams, the percentage of agreement varied between 30.9% and 91.8%, with a mean percentage of agreement of 74.2%. The highest percentage was perceived for the following statement 'Developing a patient care plan with other team members avoids errors in delivering care (n=106)' where 91.8% agreed or strongly agreed with this statement. The least percentage of agreement (30.9%) was perceived for 'Working in an interprofessional manner unnecessarily complicates things most of the time (n=107)'.

[table 2]

For scale 2 related to the pharmacy academics' attitudes towards IPE, the percentage of agreement varied between 15% and 92.8%, with a mean percentage of agreement of 80.3%. The highest percentage of (92,8%) of agreement or strong agreement was perceived for the following two statements: "'Interprofessional learning will help students think positively about other health care professionals (n=107)." and 'For small-group learning to work, students need to trust and respect each other (n=105)'. The least percentage of agreement (15%) was seen for the following statement:'It is not necessary for undergraduate health care students to learn together' (n=104).

For scale 3 which related to the pharmacy academics' attitudes towards IPL in the university setting, the percentage of agreement varied between 16.3% and 90%, with a mean percentage of agreement of 58.7%. The highest percentage (90%) was perceived for the following statements: 'It is important for academic health center campuses to provide interprofessional learning opportunities (n=104)' with the least 16.3% seen for the following statement: 'Interprofessional efforts weaken course content (n=104)'. Additionally, nearly 40% of respondents were undecided towards some statements such as 'Faculty like teaching students in other academic departments'; 'Students like courses that include students from other academic departments'; and 'Students like courses taught by faculty from other academic departments'.

The overwhelming majority of respondents (90.8%) perceived IPE to be moderately important or very important. The survey also asked respondents to indicate with which health care profession students they would like their students to interact. Medical

students were ranked the highest (n=104, 95.4 %) followed by nursing (n=94; 86.2%) and then Health sciences (n=69; 63.3%). Table 3 shows the variables that significantly affect the academics' attitude score:

[table 3]

Variables tested that may affect attitudes

Table 3 indicates the different variables that significantly affected faculty attitudes. Respondents who were aged 45 years or above had more of a positive attitude for the mean score of scale 1 – attitudes towards interprofessional health care than those who were 44 years or below ($p = 0.039$). Over two thirds of the respondents (n=79), who indicated that they are likely to engage in or to continue to engage in IPE within the next three years, had significantly higher mean scores for the three scales 1, 2 and 3 than those who were not likely to engage in IPE ($p<0.001$). Additionally, the number of years of IPE experience for each pharmacy school in the Middle East was explored and the study results indicated a significant difference in the mean score of Scale 3 between the groups who had less than one year IPE experience and the group who had more than one year of experience ($p = 0.006$).

Experience of IPE and identifying the correct IPE definition

Respondents were given 4 statements and were asked to choose the statement that they felt was the best IPE definition. The respondents' answers were recoded as either correct or incorrect identification of the statement. There was a statistically significant difference in the mean score of scales 1, 2 and 3 between respondents who did and

those did not correctly identify the statement ($p = 0.018$; $p = 0.002$; $p = 0.006$ respectively). Other variables such as gender and academic discipline did not significantly affect the faculty attitudes.

Forty-seven out of 107 of respondents (44%) indicated that they have no IPE experience, and 43 out of 107 (40%) indicated that they have from 1 to 5 years' experience of IPE. The majority of respondents (75%) who indicated they have 6-10 years of experience did not correctly identify the IPE definition and none of the respondents who indicated they have 11-15 years of experience identified the correct definition of IPE.

The respondents were also asked to rank the importance of fifteen topics related to IPE with 1 being 'not at all important' to 5 'very important'. Patient safety was ranked the highest by 78.0% of the respondents (n=85) followed by 71.6% for communication skills (n=78), 68.8% for medication safety (n=75) and 67.0% for interprofessional team roles (n=73).

Respondents were further asked to rank IPE perceived benefits. More than three quarter of the respondents (78.0% of respondents, n=85) perceived 'respects the integrity and contribution of each profession' as the highest benefit of IPE followed by 'encouraging professionals to learn with, from and about each other' (73.4% of respondents, n=80), 'enhances practice within professions' (70.6% of respondents,

n=77) and ‘increases professional satisfaction (63.2%, n=67). The least perceived benefit (43.9%, n=47) was ‘focuses on the needs of service users and carers’.

Respondents selected the learning outcomes that they would like students to possess. The highly perceived outcomes were to be able to recognize and respect the roles, responsibilities and competence of other professions (87.2%, n=95) and to be able to work with other professions to effect change and resolve conflict in the provision of care and treatment (87.2%, n=95). Other perceived benefits identified in the open ended questions were ‘enhanced communication skills and teamwork’, ‘roles and responsibilities clarification’ and ‘working together to ensure shared decision making’. Respect was also considered important. Many academics believed that being involved in IPE is part of their self and professional development and that it increases students’ satisfaction.

The most popular method for incorporating IPE in pharmacy program in the next 5 years as envisaged by respondents was regular IPE events (51.4%, n=56), followed by IPE clinical rotations (49.5%, n=54) and new and innovative curriculum design for IPE (46.8%, n=51). Less popular methods were having an interprofessional education lead for the course (17.9%, n=19) but with only 5.5% (n=6) of the respondents indicating that IPE will not be taught in their institutions.

Perceived implementation barriers

Twenty possible barriers were listed and academics were asked to specify which would impede their implementation (table 5). Highly perceived barriers for implementing IPE included cultural challenges for each profession (54.1% of respondents, n=59), scheduling common courses and activities (53.2%, n=58) and limited resources (52.3%, n=57). Student resistance to IPE was perceived as a barrier by only 13.8% of respondents (n=15). Moreover, organizational barriers such as 'lack of recognition or support', or resources' and 'the significant time required to deliver is disproportionate from the 'contact times" were highlighted in the respondents' answers to the survey open ended questions. A negative perception of the role of pharmacist by other healthcare professionals was mentioned. Examples of respondent quotes from different countries are shown in table 6.

Discussion

This study provides an initial insight into pharmacy faculty perspectives towards IPE in the Arabic Middle Eastern countries. Overall, the majority of the responses reflect positive IPE attitudes and concur with previous studies reporting positive attitudes by faculty members towards IPE (Anderson, Thorpe, & Hammick, 2011; Bennett et al., 2011; Curran, Deacon, & Fleet, 2005; V. R. Curran et al., 2007; Hoffman & Redman-Bentley, 2012; Olenick & Allen, 2013; Rafter et al., 2006). It is encouraging to see these positive attitudes and that respondents are aware of the importance and benefits of IPE. Promisingly, many of the positive factors identified reflect the IPE shared competencies domains that were recently developed by a research team in Qatar and which include role clarification, interprofessional communication, patient and family centred care and

shared decision making (Johnson et al., 2015). Mutual respect, professional development and awareness of the pharmacist's evolving role were also identified as facilitators. The majority of the respondents, in this study, were from Jordan, Qatar, Lebanon and Saudi Arabia which shows that they are involved or plan to be involved in IPE. The countries that had little response may indicate that they have a limited understanding or IPE experience (Olenick & Allen, 2013). There was no response from either from Iraq and Yemen, which are both experiencing difficult political situations.

Age, likelihood to engage in IPE and years of IPE experience were the factors that were related to faculty members' attitudes towards IPE. Experienced academics seem to have more positive attitudes toward IPE. This could be attributed to the reward system in academia where junior faculty members are pressurised to focus on promotion and may consider that being involved in IPE research is time consuming and less valued (Kandiko & Blackmore, 2008). Additionally, Kandiko & Blackmore (2008) argue that the importance of being confident in one's own discipline comes before progression to IPE. Respondents who had experiences of IPE and were more likely to engage were more motivated and had positive attitudes to IPE. Perhaps this is to be expected since they had previously seen the benefits that can be yielded from such opportunities.

There are a number of issues that need to be considered as a result of this study. Despite the fact that the majority of respondents had positive attitudes towards IPE, many had difficulty defining and understanding IPE. This may indicate a lack of knowledge of what IPE entails (Curran, Sharpe, & Forristall, 2007; Curran et al., 2007)

or a different cultural context in which the education system is placed. Many struggle with understanding the core principles and how to effectively translate their own discipline's academic skills to interprofessional skills (Egan-Lee et al., 2011). Healthcare academics often have little experience of IPE or of collaborative practice or even lack it (Curran et al., 2005; Curran et al., 2007; Hall & Zierler, 2015). Nevertheless, for an effective IPE programme to be implemented and sustained it is critical for faculty members to gain the knowledge, acquire the skills and adopt a positive attitude towards IPE facilitation (Anderson, Cox, & Thorpe, 2009). This study highlighted that faculty members view the undertaking of IPE as an essential part of their professional development and not just as an additional responsibility (Buring et al., 2009). It is important to recognize that preparing faculty members is key in developing and implementing IPE (Ratka, 2013). Ratka adds three important elements which are needed to transition faculty members from being pharmacy academics to IPE champions. These are: IPE development programs, resources, and organizational support to ensure they have the needed competencies (Egan-Lee et al., 2011; Ratka, 2013).

In addition, the focus on faculty development should not be on the individuals only but on the organization (Steinert, 2005). Academics may be positive towards IPE however a sense of frustration can develop when workload increases and no incentive is apparent (Rafter 2006). The facilitation of IPE needs to be supported by providing resources, allocating time, rewarding initiatives and addressing issues (Steinert, 2005). Muller et al. (2001) discussed five key principles that are needed for integrating IPE into the

curricula: support from the dean's office and institution administration; involvement of other healthcare courses, offering protected time for faculty; sharing experiences and curricula between faculty members; sustaining the program; and addressing system issues and challenges (Bennett et al., 2011).

The perceived barriers highlighted in this study include scheduling; limited resources and time needed, are generic worldwide and can be challenging. Long term strategies should be implemented to overcome these at all levels. An important perceived barrier that was cited by almost half of the respondents was the cultural challenges for each profession. This is reflected in findings that medicine as a profession posed challenges in terms of IPE and collaborative practice and was resistant to the evolving role of the pharmacist (Barker, Bosco, & Oandasan, 2005; Bennett et al., 2011). Traditionally, physicians have been acknowledged as the decision makers in the clinical setting dominating the team and ultimately responsible for the patient (Hall, 2005; Olenick & Allen, 2013). Moreover, this power dynamic and inequity in salaries between professionals sustain a hierarchy that is potentially detrimental to collaborative practice (Gilbert, 2005; P. Hall, 2005; Paradis & Whitehead, 2015).

As identified by Mandy, Milton, & Mandy (2004, p154), "interprofessional rivalry, tribalism and stereotypes are known to exist within healthcare professions and detract from effective health delivery" and can translate to students undertaking IPE (Buring et al., 2009). However, many of the medical programs' accreditation bodies support IPE

and this is expediting the medical faculty's positive shift (Barker et al., 2005; Thistlethwaite, 2015).

Once the need to lessen the influence of hierarchies is realised then an environment can be created where respect and the recognition of other professions becomes the norm. (Frenk et al., 2010, p1951) propose the "promotion of interprofessional and transprofessional education that breaks down professional silos while enhancing collaborative and non-hierarchical relationships in effective teams". Integrating IPE pre licensure will enhance collaboration between the professions by encouraging positive stereotypes (Carpenter, 1995). Unfortunately, not having experienced IPE in the undergraduate curriculum can result in continuing negative perceptions on qualifying (Ateah et al., 2011). Healthcare academics leading these initiatives need to respect differences between professions and foster opportunities to explore these interprofessionally (Gilbert, 2005; Hall & Zierler, 2015). Gilbert (2005) adds that stereotyping needs to be addressed by innovative strategies. These barriers may be experienced globally; however overcoming them may involve different strategies depending on the context. Policy-makers should introduce policies and strategies that are appropriate for their local challenges and needs (WHO, 2010).

Another challenge is that pharmacy education in the Middle East is often traditionally taught with little emphasis on patient-centeredness. However, in recent years a doctoral program has been introduced replacing the traditional bachelor of pharmaceutical sciences (Kheir, Al Saad, & Al Naimi, 2013). Accreditation standards now call for

providing elements within the required curriculum with IPE experiences for students and faculty from other health profession programs (Barker et al., 2005; Olenick & Allen, 2013). With the move towards western accredited clinically oriented pharmacy programs, as in Qatar University College of Pharmacy who acquired the first full Canadian accreditation, it is hoped that IPE will be embedded and that the boundaries of pharmacists' practice will expand. Nevertheless, there is also a need to change the healthcare culture in the Middle East to support IPE and collaborative practice.

The strength of this study is that it sheds a light on a geographical region and the perspectives of pharmacy faculty and neither of these have been previously investigated. Pharmacists are integral members of the healthcare team and need to "learn *with, from and about other"* (CAIPE, 2002) students need to be equipped with the skills to practice. The need to incorporate IPE as part of all healthcare professional curricula is increasing (Barr, Helme, & D'Avray, 2014). Moreover, the findings of this study have had significant implications already for the development of IPE and have been very valuable in advancing IPE in Qatar and the region. The need for further research in the area was also highlighted. Faculty development has been identified in this study as an important process to move IPE forward. As such the College of Pharmacy at QU led the first interprofessional education symposium for academic healthcare faculty in Qatar, in February 2015, to equip over 50 academic faculty members with the knowledge to develop IPE content and skills to impart curricular change for IPE implementation. This was followed with the First Middle Eastern Conference on Interprofessional Education, in December 2015, which attracted more

than 300 participants from 13 countries. Creating a Middle Eastern IPE network that works collaboratively in the region would be advantageous and will be affiliated to the World Coordinating Committee for IPE. Pharmacy education can lead the way in creating opportunities for IPE initiatives in the region.

With regards to limitations, this study relied on voluntary participation and hence the study sample cannot be truly representative of pharmacy academics in the area. Those who participated may have been more positive about IPE than those who declined. The study sample included only faculty members who have publicly available email addresses. Another limitation is that survey questions may have been interpreted differently by respondents. This research is from the pharmacy perspective and it would be a recommendation that further research is needed to identify the perspectives of other healthcare academics in the region.

Concluding comments

This is the first study to explore the perceptions of pharmacy academics towards IPE from a Middle Eastern perspective. The positive responses by pharmacy academics in the Arabic Speaking Middle Eastern countries suggests a willingness to integrate IPE into curricula. Implementing IPE will create opportunities for pharmacy and healthcare schools to interact and collaborate to prepare their students for future roles. The infrastructure of any IPE program needs to be planned from an early stage and barriers need to be addressed to develop a program that is effective and sustainable. Moreover, addressing the needs of the academics, training them and getting the support from the

organization is vital for IPE success. Pharmacy academics are ready to pursue IPE and this is important in developing IPE in Middle Eastern countries. Further work is needed to identify the perspectives of the other healthcare academics.

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Tables and figures:

Table 1: Sociodemographic and Academic Characteristics of Respondents

Characteristics	Frequency (Percent)
Gender (n=106)	
Male	56 (51.4%)
Female	50 (45.9%)
Missing data	3 (2.8%)
Age group (years) (n=108)	
18-24	1 (0.9%)
25-33	36 (33.0%)
34-44	43 (39.4%)
45-54	19 (17.4%)
54-65	9 (8.3%)
Missing data	1 (0.9%)
Country of respondents (n=107)	
Qatar	21 (19.3%)
Bahrain	1 (0.9%)
Egypt	7 (6.4%)
Jordan	24 (22.0%)
KSA	13 (11.9%)
Kuwait	5 (4.6%)
Lebanon	20 (18.3%)
Oman	1 (0.9%)
Palestine	4 (3.7%)
Sudan	1 (0.9%)
Syria	3 (2.8%)
UAE	7 (6.4%)
Iraq	0
Yemen	0
Missing data	2 (1.8%)
Academic discipline? (n=107)	
Clinical Pharmacy and Practice	66 (60.6%)
Pharmaceutical Science	41 (37.6%)
Missing data	2 (1.8%)
Primary academic role? (n=107)	
Lecturer	16 (14.7%)
Assistant professor	50 (45.9%)
Associate Professor	17 (15.6%)
Full Professor	19 (17.4%)
Other (inc 2 Qatar teaching assistants)	5 (4.6%)
Missing data	2 (1.8%)
Number of years working in higher education/ academic sector? (n=107)	
< 1	5 (4.6%)
1-5	33 (30.3%)
6-10	29 (26.6%)
11-15	12 (11.0%)
>15	28 (25.7%)
Missing data	2 (1.8%)

Table 2: Summary of mean scores on the three IPE attitudinal scales

	Mean ± SD	Range
Scale 1: Attitudes toward Interprofessional Health Care Teams	52.87 ± 6.448	(17-65)
Scale 2: Attitudes towards interprofessional education	64.53 ± 7.92	(21-75)
Scale 3: Attitudes towards interprofessional learning in the academic setting	48.91 ± 6.169	(24-63)

Table 3: The variables The variables that significantly affected the faculty attitudes:

	Age		**Intent to engage**		**Years of IPE Experience***		**IPE definition***	
	44 years or below (SD) [n=80]	45 years or above (SD) [n=28]	Not likely, unlikely / not sure (SD) [n=30]	Likely or very likely (SD) [n=79]	None or less than 1 (SD) [n=46]	1 to over 15 years (SD) [n=32]	Correctly identified IPE definition (SD) [n=55]	Did not correctly identify IPE definition (SD) [n=32]
Scale 1 – Attitudes towards inter-professional health care teams	52.1 (6.82)	55.2 (4.74)	48.4 (7.74)	54.5 (5.06)	51.6 (6.91)	53.7 (5.62)	53.9 (5.28)	50.2 (8.05)
Scale 2 – Attitudes towards inter-professional education	64.2 (8.84)	65.7 (4.84)	60.0 (10.47)	66.1 (6.17)	63.0 (8.91)	66.4 (7.24)	66.7 (6.18)	60.8 (9.94)
Scale 3 – Attitudes towards inter-professional learning in academic setting	48.6 (6.46)	49.8 (5.45)	43.9 (5.90)	50.6 (5.33)	47.0 (6.12)	51.0 (5.80)	50.6 (5.95)	46.4 (6.45)

*Middle East only excluding Qatar.

Table 4: The IPE related learning outcomes that respondents would like students to possess (n=107)

Learning Outcome	Frequency (percent)
Able to recognize and respect the roles, responsibilities and competence of other professions in relation to one's own	95 (87.2%)
Able to work with other professions to effect change and resolve conflict in the provision of care and treatment	95 (87.2%)
Able to work with others to assess, plan, provide and review care for individual patients	88 (80.7%)
Able to describe one's roles and responsibilities clearly to other professions	87 (79.8%)
Able to tolerate differences, misunderstandings and shortcomings in other professions	85 (78.0%)
Able to recognize and observe the constraints of one's role, responsibilities and competence, yet perceive needs in a wider framework	78 (71.6%)
Able to facilitate interprofessional case conferences, team meetings, etc	70 (64.2%)
Able to enter into interdependent relations with other professions	69 (63.3%)

Table 5: Barriers encountered or maybe encountered while trying to implement interprofessional education

Barrier	Frequency (percent)
Cultural challenges for each profession	59 (54.1%)
Scheduling common courses and activities	58 (53.2%)
Limited resources	58 (53.2%)
Time and resources needed	58 (53.2%)
Lack of conceptual support	56 (51.4%)
Communication issues	53 (48.6%)
Logistics	44 (40.4%)
Time commitment	42 (38.5%)
Lack of infrastructure to reward faculty members for engaging in	40 (36.7%)
Leadership and administrative support	40 (36.7%)
Faculty resistance to interprofessional education	36 (33.0%)
Unique pedagogical approaches among each profession	34 (31.2%)
Faculty development	32 (29.4%)
Insufficient classroom space	31 (28.4%)
insufficient interdisciplinary faculty	32 (29.4%)
Lack of consistency with which students are prepared to enter	28 (25.7%)
Geographic separation of the different health care profession	26 (23.9%)
Corresponding baseline knowledge and abilities	25 (22.9%)
Subsequent course and content ownership	22 (20.2%)
Student resistance to interprofessional education	16 (14.7%)

Table 6: Examples of respondent's quotes about barriers perceived to implementing IPE:

Kuwait	Applicants to the Healthcare programs used to be accepted based on their GPA. This reinforced the attitude of "hierarchy" where medical students felt "higher" than the rest.
Sudan	The medical community in my country work as uniprofessional teams where each profession does their work with little or no interaction with other professions. The introduction of clinical pharmacy is quite recent and hence a lot of pharmacists are faced with rejection that may sometimes lead to conflict.
Lebanon	'Conceptual barriers about what IPE is truly about'.
Bahrain	'It is easier said than done, as we all know how important IPE is but in practice is another story. It might be hard to set up at first, but even harder to sustain it in a long run. Sustainability is a matter of great concern'.
Qatar	'IPE not embraced by all the programs educating healthcare provider'.
Egypt	'Lack of sincere efforts to develop interprofessional education'