

THE CHOICE OF PHARMACY PROFESSION AS A CAREER: UAE EXPERIENCE

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ABSTRACT

Objective: Students decision to choose pharmacy as a future career is one of many difficult choices, they have to make as they enter the university, and it is a big decision as they have to live with the consequences the rest of their lives.

Aim: The purposes of this study were to evaluate the student's reasons for selecting to study pharmacy major and gauge the student's perception and attitude regarding pharmacy education, pharmacists, and pharmacy profession.

Methods: A cross-sectional survey-based study.

Results: Family encouragement (213; 84.5%), personal interest (179; 71.0%), and to get a medical professional degree (199; 79.0%) were reported by the majority of the students under investigation as a personal reason to join pharmacy as a career. Interestingly, when participants were asked to show their opinion about the relationship between what they had studied and reality of the practice, almost half 25 (47.2%) reported "no."

Conclusion: Despite the positive attitude of students to work as a member of health-care team, pharmacy curriculum in the colleges of pharmacy and pharmacy practice at the community level have to be revised and improved to meet students' expectation after graduation, to change student opinion regarding advising a family member or a friend to study pharmacy, and to help students to find a good relationship between the study and the reality of pharmacy practice.

Keywords: Pharmacy students, Pharmacy education, Career preferences, United Arab Emirates, Educational and Practice Research.

INTRODUCTION

Pharmacists are indispensable elements within the health-care unit, they play a critical role linking between all the health care providers by forming a coherent relationship between the patient and the medical teams, develop an evidence-based plan in the field of care, and they even follow-up with the health conditions of the patient to reach the optimal health outcomes. However, most people in the developing countries evolved a misconception regarding the pharmacist, as they visualize the pharmacist to be a salesman, drug dealer or money lover. Even though the delicacy of a pharmacist's job is much more than what most people might think. In fact, pharmacists are in high demand owing partly to their persistent shortage, which is supposed to aggravate by 2020 [1,2].

This circumstance concurs along with alterations in the profession in addition to demographics of Pharmacy College students. Within the recent three generations, female population in pharmacy colleges has enlarged together with the population of various ethnic and racial foundations. According to information gathered via 102 (99%) pharmacy schools throughout 2006/2007, from the entire applications posted to Pharmacy Colleges, (59.2%) have been from females; (38%) white American; (30.4%) Asian Americans; (9.2%) black, (4.6%) foreign/nonprominent, (4.0%) Hispanic, and 0.4% American Indian [3,4]. Student's decision to choose pharmacy as a future career is one of many difficult choices [5] they have to make as they enter the university, it's a big decision as they have to live with the consequences the rest of their lives. Taking into consideration today's vital pharmacist's role, it's of high importance for pharmacy programs to highlight the motivational factors that influence students' choice of pharmacy as their future career [6,7]. Furthermore, one of the earlier questionnaires conducted regarding this topic compared pharmacy students' feedback to those from other medical students such as dentistry, medicine, nursing, and

public health. This study involved 1569 medical students of which 422 were seniors and freshmen from Pharmacy College. The results came up showing that irrespective of their ages; pharmacy students chose the career considering realistic factors such as societal respect, career progression and development, economic stability, and possibility to meet monetary needs quickly [8]. Other studies reviewing the factors influencing career choice among healthcare students, concluded that there were intrinsic factors, including a desire to help others and a personal interest in health care; extrinsic factors, such as financial remuneration, job security, professional prestige, and job autonomy; socio-demographic factors such as gender and socioeconomic status; interpersonal factors, encompassing the influence of family; other professional individuals [9-16]. In addition, a New Zealand study was executed to find out students' purposes, motives and perceptions, any of which that guided them to pursue a pharmacy degree. About 351 pharmacy students have contributed to this study, of which (39%) European, (19%) Chinese, (9%) Korean, (7%) Taiwanese, (6%) Malay, (6%) Indian, and (5%) Middle Eastern. Results have shown that the four top reasons mentioned were being highly paid, showing interest in human biology, wanting to assist patients and communicating with people [17]. Based on the above and on the fact that information regarding what drives students to choose Pharmacy College is limited, in general, the rationale of this study was to explore the motivational factors to choose pharmacy as a career in the UAE. This study was conducted to evaluating the student's reasons for selecting to study pharmacy and to gauge the student's perception, opinion, and attitude regarding pharmacists and the pharmacy profession.

METHODS

Study design and study population

This cross-sectional survey-based study was carried out at university of Sharjah, UAE, among first to 5th year pharmacy undergraduate students.

During spring semester from January 1, 2015, to April 23, 2015. All the under graduated students of bachelor degree of pharmacy were the population of the study. According to the university registration office and the college record system, the total number of students registered in the college of pharmacy during the academic year 2014/2015 was 150 students (1st year), 120 students (2nd year), 320 students (3rd & 4th year), and 60 students (5th year). Based on the above database of student's registration, the minimum effective sample size was estimated to be 109 students (1st year), 92 students (2nd year), 175 students (3rd-4th year), and 53 students (5th year) using the online sample size calculator [18] with a confidence interval (CI) of 95%, 5% margin of error, and 50% for the expected response distribution.

A total of 420 questionnaires were distributed in the classrooms, cafeteria, tutorials, and labs while 5th year students have received their surveys in their training sites including hospitals, medical centers, and community pharmacies. The purpose of this study and the questions were explained by the researchers to the students. Moreover, the investigators were available to clarify any misinterpretation if needed by participants. The students were selected randomly and their identity was kept anonymous and confidentiality of their replies and personal data were guaranteed. Answering the survey took a maximum of 7-10 minutes from each student. 252 surveys were returned back with complete information out of 420 distributed questionnaires, giving a response rate of 60%. 167 surveys were rejected out of which (80 rejected to take part in this study because of their busy schedules and limited time), (around 54 took the survey without returning it back despite many reminders), (and 33 students took the survey and gave it back incomplete).

Questionnaire development

A questionnaire was developed from one of the 69 item questionnaires used in other similar studies [11,19,20] and was modified to suit the UAE pharmacy education and practice. The questionnaires consist of six sections including personal information (section 1), reason for selecting field of pharmacy (section 2), student's perception toward the status of pharmacy with other healthcare professions (section 3), attitude and commitment of student with profession of pharmacy (section 4), reason for selecting particular college of pharmacy (section 5), and perceptions and opinions regarding pharmacists and the pharmacy profession for 5th year pharmacy students only (section 6) (a copy of the questionnaire is available from the authors).

Respondents were asked to give details of their age, gender, current year of study, grade point average (GPA) on a scale of 4.0, nationality, and marital status. For questions or statements in section 2 and 5, the respondents were asked to rate their response using the options "most important," "important," "less important," and "may be/not sure." For section 3, the respondents were asked to use the options "higher status than pharmacy," "same status as pharmacy," "lower status than pharmacy," and "do not know" to rate their responses. For section 4, the participants were asked to rate their response using the options "strongly agree," "tends to agree," "tends to disagree," and "strongly disagree." The same scale used in section 3 was used with the first seven statements in section 6. For the first six statements of section 6, participants were asked to use the answer option of "never," "sometimes," "always," and "no response." "Yes" and "no" answer options were used to gauge the respondents responses on the last six statements of section 6. There were many examples in the literature to support the use of such choice scale [11,19-21]. There was a section inviting comments at the end of the questionnaire.

Validity and reliability

The validity of an instrument is the extent to which it actually measures what it is designed to measure [22]. Evidence of validity may be gained through observation, expert lay judgment, and empirical inquiry. To ensure the face validity of the modified validated survey used for this particular study, the questionnaire was submitted to two faculty members and one physician with an excellent experience in survey design study.

Furthermore, three students from College of Pharmacy, University of Sharjah, UAE, were also asked to read the survey and give their feedback, if/any. All of their views and comments were taken into consideration and then incorporated into the final version of the questionnaire. To assess test-retest reliability, the questionnaire was sent on two separate occasions to 10 students (not included in the final sample) randomly chosen in an area of study interest. The second response was elicited 2 weeks after the initial test. No problems were highlighted, and test-retest reliability was calculated using Spearman's correlation coefficient (r). The rho value was 0.68, which implies an acceptable level of test-retest reliability. The alpha coefficient was 0.98; indicating that most of the items included make a valid contribution to the overall score.

Data analysis

The participants' responses were encoded, and the data were analyzed using Statistical Package for the Social Sciences (SPSS, version 20, Chicago, IL, USA). Four categories of the relevant responses were used so that 95% CIs could be calculated. Descriptive analysis was used to calculate the proportion of each group of respondents who respond to each statement in the questionnaire. Chi-square test was used to identify any significant difference among the participants' responses regarding certain statements in the questionnaire with a significant level of $p < 0.05$.

RESULTS

A total of 420 questionnaires were distributed over the study period of 4 months. Only 252 surveys were returned completed and included in the study, giving a response rate of 60%. Among the 252 students participated in this study, the majority was females 232 (92.1%), single (216; 85.7%), and at age group of 18-20 years (175; 69.4%). Details about participant's personal information are presented in Table 1.

Reason for selecting the field of pharmacy

When analyzing the participants responses to the survey items exploring the personal, social, and academic reasons for selecting the

Table 1: Personal Information of the 252 participants included in the study

Variable	Frequency (%) (n=252)
Age (years)	
< 20	86 (34.1)
20-21	89 (35.3)
22-23	70 (27.8)
24-25	6 (2.4)
26-27	1 (0.4)
>27	0 (0.0)
Gender	
Male	20 (7.9)
Female	232 (92.1)
Year of study	
1 st year	43 (17.1)
2 nd year	55 (21.8)
3 rd year	49 (19.4)
4 th year	52 (20.6)
5 th year	53 (21.0)
GPA on a 4.0 scale	
Satisfactory	21 (8.3)
Good	76 (30.2)
Very good	89 (35.3)
Excellent	66 (26.2)
Nationality	
Gulf region	30 (11.9)
Iraq and the Levant	130 (51.6)
North Africa	63 (25.0)
Other	29 (11.5)
Marital status	
Single	216 (85.7)
Engaged	27 (10.7)
Married	7 (2.8)
Other	2 (0.8)

field of pharmacy, the four point scale was reduced to three categories: The most important/important, less important, and may be/not sure. This has enabled more reader comprehensible CIs for the relative proportions to be calculated (Table 2).

Family encouragement (213; 84.5%), personal interest (179; 71.0%), and to get medical professional degree (199; 79.0%) were reported by the majority of the students under investigation as a personal reason to join pharmacy as a career. Participants interest in science at school level and their willingness to do a science based course were reported by 220 (87.3%) and 215 (85.3%) of the respondents, respectively. Furthermore, more than three quarters (196; 76.5%) of the respondents has stated that they wanted to work with patients and reported that they wanted an opportunity to be a part of healthcare team (205; 81.3%). Interest to have a secure job (193; 76.6) and a job with good career (208; 82.5%) were also considered as important academic reasons for deciding pharmacy as a career. On the other hand, leaflet or booklet, influence of a friend or a pharmacist, parents as practice pharmacists, influence of a teacher at a college, visiting a university or a hospital were found least important factors. Less than half (110; 43.7%) of the participants selected pharmacy because of a visit to a hospital and thereby recognizing the role of the pharmacists in hospitals.

Considering the gender of the participants, there was no significant differences between the responses of male and female students on most of the items related to the reasons for deciding pharmacy as a career, except the item which is related to family encouragement, where 198 (78.6%) of female students and only 15 (5.9%) of male students reported that family encouragement was either most important or important ($p=0.03$).

Student's perception toward the status of pharmacy with other health care professions

Student's perception regarding the status of pharmacy in comparison with other healthcare providers is summarized in Table 3.

More than half of the respondents consider general physicians 148 (58.7%) as having higher status than pharmacists. Interestingly, students under investigation reported that nurses 144 (57.1%), occupational therapists 137 (54.4%), physiotherapists 127 (50.4%), and radiologists 123 (48.8%) have a lower status than pharmacists.

95 (37.7%) of the students included in the study have not indicated that dentists were superior in status than pharmacy profession.

Attitude and commitment of students with profession of pharmacy

Whilst surveying the student's attitude and commitment with the profession of pharmacy, variety of responses were obtained (Table 4). To be able to calculate the 95% CIs of the responses presented here, the four-point scale was reduced to two categories: Either strongly agree/tends to agree or tends to disagree/strongly disagree. The majority 218, 95% CI (82.3-90.7) have stated that they were strongly committed to the value and ideas of pharmacy profession and 216, 95% CI (81.4-90.0) stated that they were proud to inform others that they were studying pharmacy. More than three quarters 191, 95% CI (70.5-81.1) of the respondents believed that pharmacy was an ideal profession for the career of their life, and they would never regret that they entered pharmacy schools (92; 36.5%). The leading career choice of students under investigation was to work in hospital/clinical pharmacy 206, 95% CI (77.0-86.5) followed by working in research/academia 184, 95% CI (67.6-78.5), and then to own their private pharmacy 188, 95% CI (69.3-79.9). Interestingly, less than half 124 (49.2%) and 171 (67.8%) of the respondents reported that they were planning to work in the community pharmacies or in pharmaceutical industry after graduation.

The influence of the year of study on the responses of participants regarding the attitude and commitment of students toward pharmacy was significantly different with the survey statement "when you start pharmacy college, you desire to be a pharmacist" ($p=0.03$), "I like to work in pharmaceutical industry after graduation" ($p<0.001$), "I like to work in community pharmacy after graduation" ($p=0.02$), and "I like to own pharmacy after graduation" ($p=0.04$).

The influence of the scored GPA on the responses of participants regarding the attitude and commitment of students toward pharmacy profession was significantly different with the survey statement "I like to own pharmacy after graduation" ($p=0.04$), and "I like to work in academia/research after graduation" ($p=0.005$). However, the influence of participant's gender was statistically different ($p=0.02$) only with the statement "I like to work in hospital/clinical pharmacy after graduation." The majority 206 (81.8%) of female respondents have reported that they were either strongly agreed/tended to agree to work in hospital/clinical pharmacy after graduation compared with only 14 (5.5%) of male respondents.

Table 2: Personal, social, and academic reasons for selecting the field of pharmacy

Survey statement	Most important/ Important n (%)	Less Important n (%)	May be/ not sure n (%)	95% CI for single proportion for most important/important
Personal reason				
Family encouragement	213 (84.5)	24 (9.5)	15 (6.0)	80.1-88.9
Family member is a pharmacist	85 (33.8)	80 (31.7)	87 (34.5)	27.9-39.5
My friends influenced me	70 (27.8)	95 (37.7)	87 (34.5)	22.3-33.3
Pharmacist was my role model	89 (35.3)	93 (36.9)	70 (27.8)	29.5-41.2
Personal interest	179 (71.0)	48 (19.0)	25 (9.9)	65.5-76.6
To get medical professional degree	199 (79.0)	35 (13.9)	18 (7.1)	73.9-83.9
Social reason				
A visit to university	107 (42.5)	89 (35.3)	56 (22.2)	36.4-48.5
A visit to hospital	110 (43.7)	87 (34.5)	55 (21.8)	37.6-49.7
A visit to career fair/conference	108 (42.9)	85 (33.7)	59 (23.4)	36.8-48.9
Career leaflet or booklet	106 (42.1)	86 (34.1)	60 (23.8)	36.0-48.1
A subject teacher at the college	94 (37.3)	91 (36.1)	67 (26.6)	31.4-43.2
Academic reason				
I like/was good in science at school	220 (87.3)	24 (9.5)	8 (3.2)	83.2-91.4
I wanted to study medical related subject	208 (82.6)	27 (10.7)	17 (6.7)	77.8-87.2
I wanted to do a science based course	215 (85.3)	25 (9.9)	12 (4.8)	80.9-89.7
I wanted to work with patients	193 (76.5)	41 (16.3)	18 (7.2)	71.4-81.8
Opportunities to be a part of healthcare team	205 (81.3)	36 (14.3)	11 (4.4)	76.6-86.1
I wanted a job with good career opportunities	208 (82.5)	33 (13.1)	11 (4.4)	77.8-87.2
Having a secure job	193 (76.6)	41 (16.3)	18 (7.1)	71.4-81.8
I was attracted by financial reward	145 (57.5)	68 (27.0)	39 (15.5)	51.5-63.6

Reason for selecting particular college of pharmacy

Student's views regarding the selection of institute of pharmacy were variant and the students included in the study were not able to agree on one of the important factors listed in the survey. Only 66 (26.2%) and 56 (22.2%) of the participants reported that having friends at university or the college of pharmacy near to where they live was important for them, respectively. Personal interest (151; 59.9%), reputation of the university (144; 57.1%), nature of the courses (143; 56.7%), university facilities (131; 52.0%), parent influence (129; 51.2%), and matching the required entrance grades (127; 50.4%) were also considerable factors for selecting a particular college of pharmacy.

5th year student's perceptions and opinions regarding pharmacists and the pharmacy profession

Despite the fact that majority of 5th year students under investigation believe that pharmacists are knowledgeable about prescription medication (45; 84.9%), about over the counter products (49; 92.4%), and about herbal products (43; 81.1%), only around one-third of the participants reported that pharmacists were always accessible to their patients (17; 32.1%), counsel their patients on their medication (19; 35.8%), make drug therapy recommendation to their patient's physician (16; 30.2%), and can save lives by preventing medication problems (20; 37.7%). When participants were asked to show their opinion about the relationship between what they had studied and reality of the practice, almost half 25 (47.2%) reported "no." Furthermore, more than half

(30; 56.6%) indicated that they would never advise any of their family members or friends to study pharmacy. Despite the not encouraging perception of the students included in the study, 34 (64.2%) of the respondents selected the answer option "yes" when they were asked if they liked to continue their studies after being graduated. The 5th year 53 pharmacy student's perceptions and opinions regarding pharmacists and the pharmacy profession are summarized in Table 5.

DISCUSSION

Professional identity of pharmacist implies both a cognitive psychological and a sociological perspective that people may develop in interaction with other people. It is expressed in one's perceptions of "who they are" and "who they want to become" as a result of this interaction. Even though the professional identity is always taken for granted, but in fact there are many challenges to overcome before tomorrow's pharmacist could have a positive self-image, view of the profession, and dilute unsure opinion of the future pharmacists about their professional identity. This positive image can be further boosted by recognizing the fact that education in pharmacy needs to be more realistic and inspirational. It is not all about the chemicals and medicines, but it is about the interaction with patients and other healthcare providers. This is the more important considering the recent approach of pharmacy practice and the shifting of the practice from drug focus into patient-oriented practice. It is high time for the academics in the colleges of pharmacy to do their best to reduce the mismatch between what academics teach students and what students experience and learn during their placements.

Table 3: Student's perception toward the status of pharmacy with other health care providers

Profession	Higher status than pharmacy n (%)	Same status as pharmacy n (%)	Lower status than pharmacy n (%)	Don't know n (%)
General physicians	148 (58.7)	72 (28.6)	20 (7.9)	12 (4.8)
Dentists	96 (38.1)	95 (37.7)	38 (15.1)	23 (9.1)
Health service managers	35 (13.9)	83 (32.9)	100 (39.7)	34 (13.5)
Nursing	18 (7.1)	79 (31.3)	144 (57.1)	11 (4.4)
Occupational Therapists	16 (6.3)	69 (27.4)	137 (54.4)	30 (11.9)
Physiotherapists	24 (9.5)	82 (32.5)	127 (50.4)	19 (7.5)
Medical technologists	31 (12.3)	76 (30.2)	112 (44.4)	33 (13.1)
Radiologists	21 (8.3)	76 (30.2)	123 (48.8)	32 (12.7)

The new movement of pharmacy practice, the negative self-image, professional identity, realistic and inspirational pharmacy education, mismatching between the theory and practice in pharmacy education, personal factors, social factors, academic factors, variable perception, and attitude toward the status of pharmacy and profession, great shortage of pharmacists in the UAE [23] were all considered as important factors to conduct a study aiming to assess the motivations and factors that influence the undergraduate students to pursue a degree of pharmacy and to gauge their attitude and commitment toward the profession of pharmacy in Sharjah, UAE. One of the four basic spheres for any person who desires to be a part of the pharmacy profession is to master the pharmaceutical sciences by acquiring the needed knowledge, skills, and intellectual capabilities [24,25]. This can be gained through undergraduate pharmacy degree courses available at present in the UAE at 7 colleges: University of Sharjah, Ajman University of Science and Technology, Gulf Medical University, Al Ain

Table 4: Attitude and commitment of students with profession of pharmacy

Survey statement	Either strongly agree/tends to agree n (%)	Either tends to disagree/strongly disagree n (%)	95% CI for single proportion for strongly agree/tends to agree
When you first entered the college of pharmacy, you had the desire and the passion to study it	199 (79.0)	53 (21.0)	73.9-83.9
When you start pharmacy college, you desire to be a pharmacist	201 (79.8)	51 (20.2)	74.8-84.7
I am proud to tell others that I am studying pharmacy	216 (85.7)	36 (14.3)	81.4-90.0
I am strongly committed to the value and ideas of pharmacy profession	218 (86.5)	34 (13.5)	82.3-90.7
Being a pharmacist is an important part of who I want to be	213 (84.5)	39 (15.5)	80.1-88.9
If I could pick a different occupation which paid the same amount, I would probably change the degree	109 (43.3)	143 (56.7)	37.2-49.3
If I could do it all over again, I would choose the same profession	173 (68.6)	79 (31.4)	62.9-74.4
Pharmacy is an ideal profession for the career of my life	191 (75.8)	61 (24.2)	70.5-81.1
I regret that I entered pharmacy	92 (36.5)	160 (63.5)	30.6-42.4
I intend to undertake a second degree after completing pharmacy	184 (73.0)	68 (27.0)	67.6-78.5
I like to work in academia/Research after graduation	170 (67.5)	82 (32.5)	61.7-73.2
I like to work in pharmaceutical industry after graduation	171 (67.8)	81 (32.2)	62.1-73.6
I like to work in community pharmacy after graduation	124 (49.2)	128 (50.8)	43.1-55.4
I like to work in hospital/clinical pharmacy after graduation	206 (81.7)	46 (18.3)	77.0-86.5
I like to own pharmacy business after graduation	188 (74.6)	64 (25.4)	69.3-79.9

Table 5: Fifth year 53 student's perceptions and opinions regarding pharmacists and the pharmacy profession

Pharmacists	Either disagree/tend to disagree n (%)		Either tend to agree/agree n (%)	
Are knowledgeable about prescription medications	8 (15.1)		45 (84.9)	
Are knowledgeable about over the counter products	4 (7.6)		49 (92.4)	
Are knowledgeable about herbal products	10 (18.9)		43 (81.1)	
Are medication experts	3 (5.7)		50 (94.3)	
Improve patients' overall health	5 (9.4)		48 (90.6)	
Have many responsibilities when filling a prescription	4 (7.5)		49 (92.5)	
Career options expand beyond retail and hospital	7 (13.2)		46 (86.8)	
Pharmacists	Never n (%)	Sometimes n (%)	Always n (%)	No response n (%)
Are accessible to their patients	1 (1.9)	35 (66.0)	17 (32.1)	-
Counsel patients on their medications	-	33 (62.3)	19 (35.8)	1 (1.9)
Save lives by preventing medication problems	1 (1.9)	31 (58.5)	20 (37.7)	1 (1.9)
Make drug therapy recommendations to physicians	-	35 (66.0)	16 (30.2)	2 (3.8)
Act in an ethical manner	1 (1.9)	26 (49.1)	26 (49.1)	-
Are trustworthy	1 (1.9)	25 (47.2)	27 (50.9)	-
Survey statement			Yes n (%)	No n (%)
Are you satisfied with the work of pharmacists			33 (62.3)	20 (37.7)
Did you find what you expect after graduating/in training course? (as counseling, dispensing,...)			21 (39.6)	32 (60.4)
Did you find a relationship between what you studied and reality?			28 (52.8)	25 (47.2)
Did your perspective change about pharmacist when you joined college of pharmacy?			31 (58.5)	22 (41.5)
Would you like to continue your studies? If yes in which field			34 (64.2)	19 (35.8)
Would you advice any of your family member or friend to study pharmacy?			23 (43.4)	30 (56.6)

University of Science and Technology, Dubai Pharmacy College, Ras Al Khaimah Medical University, and Higher Colleges of Technology, Dubai Women College. Pharmacy education was first established in the UAE in the year 1992 by Dubai Pharmacy College which provided bachelor degree certificates to female students [26] and since then, many other colleges and universities started graduating a significant proportion of pharmacists per academic year needed to saturate the market domestically. However, there is still a clear shortage of pharmacists in UAE and it is expected to be even worse by the year 2020 [1,2]. This may be attributed to the fact that the majority of students enrolled in UAE College of pharmacy were nonnational residents, and a large number of graduates leave the country after graduation [10]. Furthermore, it has been demonstrated that the number of registered pharmacists in the UAE remains lower than the accepted worldwide number of pharmacists serving a population of 10,000 in a country. The proportion of pharmacists to 10,000 citizens in the UAE was about 4 in 2002 [27]. This proportion is about half the proportion in countries like the United Kingdom and United States of America [28]. According to the University of Sharjah registration office and the college of Pharmacy record system, the total number of the students registered in the college of pharmacy during the academic year 2014/2015 was 150 students (1st year), 120 students (2nd year), 320 students (3rd & 4th year), and 60 students (5th year). These students registered in the college 5 years study plan leading to the traditional Bachelor of Pharmacy degree. However, looking at the college curricula, it is obvious that the study plan represents moderation between traditional pharmacy and PharmD program. The study plan is based on general basic sciences at the entry level (1st year), followed by more emphasis on pharmaceutical and pharmacological sciences in the 2nd-3rd year of a student's study levels. Pharmacotherapeutics, pharmacy practice and clinical pharmacy courses load in the curricula gradually increases from the 1st year to dominate the other courses in the 4th-5th year of the study plan. In this study, the response rate was 60% and it could have been better if colleges and schools of pharmacy had engaged students early in the curriculum to participate in survey studies and illustrate the importance of the research outcomes to promote the evidence-based practice and to ensure the use of unbiased health and medicines related information to the public and other health-care professionals.

High female to male participants ratio presented in this study (Table 1) is a common trend in the most of colleges of pharmacy across the world [10-11,19,21] and because of such trends, it is obvious the rise in awareness and importance of education nowadays which increases the self-worth of females in the society.

Reason for selecting the field of pharmacy

Family encouragement, willingness to get medical professional degree, personal interest in science or ambition to do a science based course, desire to be a part of health-care team, and willingness to have a good career opportunity were among the most common influencing factors for career selection of the majority of the participants included in this study (Table 2). These findings were similar to the results presented elsewhere [11,15] where 31.44% of students wanted a career in industrial pharmacy, 31.22% desired hospital pharmacy, while 83.4% wanted to be a part of health care team, and 83.84% wanted to utilize their knowledge by choosing pharmacy practice. The desire to get a medical degree, interest in science at school, good career opportunities, and family encouragement were the considerable motivating factors for choosing pharmacy as career in other recent studies [19,29]. However, the influence of interest to work with patients and the financial reward cannot be eliminated as more than three quarters (76.5%) and more than a half (57.5%) of the pooled sample reported those influencing factors, respectively. This finding is in accordance with earlier results [30] which showed that a 24 hrs the presence of professionally qualified pharmacists in community pharmacies can boost the confidence of doctors in pharmacists and enhance generic substitution. Financial incentive was also a factor for choosing pharmacy career. Interestingly, career leaflet or booklet, a visit to a university or a hospital, visiting a career fair/conference was least important factors of pharmacy students for the selection of pharmacy as their career. These findings were in accordance with earlier results [19] which demonstrated that career leaflet or booklet was least important factor (33.8%) as it does not reveal the true picture of pharmacy profession. Parents of 66.2% of the students under investigation were nonpharmacists and the influence of parents on students to choose pharmacy as a major was evident in 33.8% of the sample pooled. This finding is in accordance with those reported by other studies [2,10] and in discrepancy with

those reported by another study [13] which stated the strong influence of family members on the student's selection of pharmacy as academic career. The influence of pharmacist as a role model was not impressive in the investigated students, therefore only 35.3% of participants reported that it is either important or very important, and they will not consider it as a motivational factor for selecting pharmacy as their future career.

Student's perception toward the status of pharmacy with other healthcare providers

In the study plan of the college of pharmacy at the University of Sharjah, students should undergo extensive training (Professional Experiential Placement) semester for 16 weeks in different medical fields such as community pharmacy, hospital pharmacy, clinical pharmacy, research and medical centers. This enables them to have a chance to practice their knowledge and gain some skills in different medical fields and acquire adequate experience from their training sites. They learn the right method of dealing and counseling the patient. One can contemplate that such professional experiential placement program of the college was associated with the positive attitude of participants while making a comparison of pharmacy with other health care professions. More than half of the students under investigation perceive that pharmacist has higher status than nurses (144; 57.1%), occupational therapists (137; 54.4%), and physiotherapists (127; 40.4%). However, 148 (58.7%) and 96 (38.1%) of the respondents believed that general physicians and dentists were superior and have higher status than pharmacist (Table 3). This finding is in consistence with a past study [11] which shown that 359 (78.4%) respondents considered general physicians as having higher status than pharmacy professionals, and the finding was different from the finding of another particular study [21] which shown that more than half 210 (53.3%) of students perceive that pharmacists have the same status as medical doctor.

Attitude and commitment of students with profession of pharmacy

Pharmacy practice has been dramatically changed over the last two decades and pharmaceutical care practice and the pharmacist's role have been significantly evolved. Such shift was aimed to achieve rational drug therapy and optimize drug utilization in patient care. When evaluating the attitude and commitment of students with the profession of pharmacy, the results have shown a combination of realistic and questionable expectations for their future career preferences (Table 4). A study conducted on pharmacy students showed that the majority of the students willing to work as pharmaceutical care providers after their graduation [29]. A similar trend was reported in the present study. The majority of the investigated students (206; 81.7%) have either strongly agreed or tended to agree with the statement "I like to work in hospital/clinical pharmacy after graduation." Therefore, it was concluded that students included in this study had a positive attitude to work as a member of health-care team and it seemed that previous exposure to professional experiential placement program of the college had a remarkable influence on the preference of career choice in future practice.

It has been demonstrated that the role of pharmacist in community pharmacy needed to be revised and their role in public health should be emphasized and further improved [31]. Interestingly, more than half (128; 50.8%) of the sample pooled have either tended to disagree or strongly disagreed with the statement related to work in community pharmacy after graduation. Therefore, it seems that students under investigation were not willing to join community pharmacy as a career comparing to work in pharmaceutical industry area (171; 67.8%), to work in hospital/clinical pharmacy area (206; 81.7%), or intend to undertake further postgraduate studies (184; 73.0%). Students' expectation to obtain a high-income package at an initial stage is also considered as almost three quarters 188 (74.6%) of the students were either strongly agreed or tended to agree with the idea to own pharmacy business after graduation.

It was observed that 216 (85.7%) and (218; 86.5%) of the respondents have either tended to agree or strongly agreed with the statement "I am

proud to tell others that I am studying pharmacy" and the statement "I am strongly committed to the value and ideas of pharmacy profession" respectively. Furthermore, being a pharmacist is an important part of what 213 (84.5%) students wanted to be in the future. More than a half 143 (56.7%) have either tended to disagree or strongly disagreed with the idea of picking a different occupation which paid the same amount. Despite the above results, still have a good proportion 92 (36.5%) of the students under investigation believed that their choice to select a pharmacy as a major for their future was wrong and regret that they entered pharmacy program.

5th year pharmacy student's perceptions and opinions regarding pharmacists and the pharmacy profession

In looking particularly at the 5th year 55 students, we strongly believe that the professional experiential placement program (students spent many hours at the pharmacy practice sites over a period of time) designed for the 5th year pharmacy students at the University of Sharjah provided students with a good opportunity to observe pharmacist skills, patient reactions, and further strengthened the perception and influenced their opinions regarding the pharmacists and the pharmacy profession (Table 5). Because these students became more aware of the nature and reality of pharmacy practice, they will be better able to make an evidence-based decision career choice. The majority of the 55 students in 5th year perceived attitude regarding pharmacists knowledge about prescription (45; 84.9%), and over the counter products (49; 92.4%). Furthermore, negligible portion of the sample pooled have either disagreed or tended to disagree with the statement "pharmacists have many responsibilities when filling a prescription" and the statement "pharmacists are medication experts." These findings were in compliance with the previous findings which shown that there were a large improvement in overall measures and clear positive changes of the investigated students attitudes after the compilation of Career Explorers Program [20]. There are nearly 2000 private pharmaceutical organizations among the UAE which are staffed by pharmacists and assistant pharmacists from over 20 countries [32]. It has been demonstrated that pharmacists were among the most trusted health-care professionals [33]. In this study, there was a significant reduction in 5th year student's perception and opinions regarding the pharmacists' accessibility to patients, patients' counseling, and ability to make any drug therapy recommendations to physician. More than 66% of the participants reported that pharmacists only "sometimes" see their patients, counsel patients on their medications or make a recommendation to a physician on the patient drug therapy. Furthermore, 50% of the sample has replied "always" when they were asked about the trustworthiness of pharmacists. This is because the field of community pharmacy is not yet developed in UAE and further improvement is needed. Furthermore, community pharmacists have poor or almost no access to additional patient information beyond therapy on which to base these counseling and recommendation. In fact, Ministry of Health, UAE licensing procedures which include a 2 years community pharmacy training requirement and examinations might not be quite enough to judge their real strengths and abilities.

When 5th year students were asked to assess their opinions concerning the frequency which pharmacists' positively impact patient care by preventing medication problems, more than half 31 (58.5%) reported "sometimes." Although pharmacists do positively impact patient care by preventing adverse medication events, this is routinely performed through prospective drug utilization review with assistance from the pharmacy computer system at hospital level. This is not true when it comes to practice at community level. It has been demonstrated in one particular study [34] that a good proportion of a medication prescription dispensed at the community pharmacies requires some type of intervention. As pharmacists and academicians, the authors would like to suggest that pharmacy curriculum in the colleges of pharmacy has to be revised and improved to improve students' expectation after graduation, to change opinion regarding students advice to their family or friends to study pharmacy, and to help students

to find a good relationship between the study in the college and the reality of pharmacy practice.

CONCLUSION

This study adds value and support to the existing research outcomes looking at the motivation and influencing factors for students to select pharmacy as a major. Eagerness to get medical professional degree, ambition to do a science based course, desire to be a part of health care team, and good career opportunity were among the most common influencing factors for pharmacy career selection. Despite the positive attitude of students to work as a member of health-care team, pharmacy curriculum in the colleges of pharmacy and pharmacy practice at the community level have to be revised and improved to meet students' expectation after graduation, to change student opinion regarding advising a family member or a friend to study pharmacy, and to help students to find a good relationship between the study and the reality of pharmacy practice.

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REFERENCES

- Kenreigh CA, Wagner LT. The pharmacist shortage: Where do we stand? *Medscape Pharm* 2006;7(1). Available from: <http://www.medscape.com/viewarticle/521115>. [Last accessed on 2016 Mar 06].
- Keshishian F, Brocovich JM, Boone RT, Pal S. Motivating factors influencing college students' choice of academic major. *Am J Pharm Educ* 2010;74(3):46.
- Rascati KL. Comparison of women pharmacy and nursing students. *Am Pharm* 1990;NS30(6):49-53.
- Danielle A, Taylor MP, Patton JM. The pharmacy student population: Applications received 2006–07, degrees conferred 2006–07, fall 2007 enrollments. *Am J Pharm Educ* 2008;72 Suppl: S06.
- Ferguson JA, Roller L, Wertheimer AI. Social factors motivating students toward a career in pharmacy. *RSAP* 1986;3:59-66.
- Aita V, McIlvain H, Backer E, McVea K, Crabtree B. Patient-centered care and communication in primary care practice: What is involved? *Patient Educ Couns* 2005;58(3):296-304.
- Berger BA. *Communication Skills for Pharmacists: Building Relationships, Improving Patient Care*. 2nd ed. Washington, DC: American Pharmacists Association; 2005.
- Pratt R. Analysis of a pilot study of factors that motivate individuals to elect the health sciences as a career, with special reference to pharmacy. *Am J Pharm Educ* 1965;20:175-90.
- Wu LT, Low MM, Tan KK, Lopez V, Liaw SY. Why not nursing? A systematic review of factors influencing career choice among healthcare students. *Int Nurs Rev* 2015;62(4):547-62.
- Sharif SI, Rubians SS. Choosing pharmacy as a major: Motivations and influences. *Pharm Educ* 20014;14(1):123-7.
- Shakeel S, Iffat W, Yasmin R, Ali H. Prospective career preferences of imminent pharmacist. *IOSR J Pharm* 2013;3(8):38-43.
- Willis SC, Shann P, Hassell K. Pharmacy career deciding: Making a choice a "good fit". *J Health Organ Manage* 2009;23(1):85-102.
- Anderson DC, Sheffield MC, Hill AM, Cobb HH. Influences on pharmacy students' decision to pursue a doctor of pharmacy degree. *Am J Pharm Educ* 2008;72(2):22.
- Lobb WB, Shah M, Kolassa EM. Factors influencing the selection of a major: A comparison of pharmacy and nonpharmacy undergraduate students. *J Pharm Teach* 2004;11(2):45-64.
- Rascati KL. Career choice, plans, and commitment of pharmacy students. *Am J Pharm Educ* 1989;53(3):228-34.
- Burlage HM. Motivating influences to the study of pharmacy. *Am J Pharm Educ* 1963;27:75-80.
- Capstick S, Green JA, Beresford R. Choosing a course of study and career in pharmacy - Student attitudes and intentions across three years at New Zealand School of pharmacy. *Pharm Educ* 2007;7(4):359-73.
- Raosoft. An Online Sample Size Calculator. Available from: <http://www.ezsurvey.com/sampleize>. [Last accessed on 2015 Dec 15].
- Shakel S, Iffat W, Yassmin R, Rahim N. First professional Pharm D students' inspiration to join pharmacy as a career. *AJPHS* 2013;3(4):842-7.
- Langridge SM, Stensland SL, Warholak TL, Mattingly L. Impact of the career explorers program on high school students' perceptions of the pharmacy profession. *Am J Pharm Educ* 2008;72(3):68.
- Hassali MA, Khan MT, Shafie AA. Motivational factors to choose pharmacy as a career; Findings of a preliminary survey conducted among pharmacy undergraduate students. *TTEM* 2009;4(1):21-5.
- Smith F. Survey research: (2) Survey instruments, reliability and validity. *Int J Pharm Pract* 1997;5:2016-26.
- Taylor KM, Bates I, Harding G. The implications of increasing student numbers for pharmacy education. *Pharm Educ* 2004;4(1):33-9.
- Wong S. Pharmacy practice in Malaysia. *Malaysian J Pharm* 2001;1:2-8.
- Bond C. A science-based profession? *Int J Pharm Pract* 2010;18:321-2.
- History of Dubai Pharmacy College. Available from: http://www.dpc.edu/index.php?navmenu=1&id=1208764629&subaction=showfull&archive=&start_from=&ucat=1. [Last accessed on 2016 Jan 21].
- Core Health Indicators – United Arab Emirates. Available from: http://www.who.int/whosis/database/core/core_select_process.cfm?country=are&indicators=healthpersonnel. [Last accessed on 2015 Dec 23].
- Kheir N, Zaidan M, Younes H, El Hajj M, Wilbur K, Jewesson PJ. Pharmacy education and practice in 13 Middle Eastern countries. *Am J Pharm Educ* 2008;72:133.
- Najia R, Shagufta U. Physicians' opinion about the role of pharmacist in the health care system of Pakistan. *Int J Pharm Teach Pract* 2012;3(2):257-60.
- Shazia QJ, Mohamed AH, Mohamed IM, Asrul AS, Zaheer B. Knowledge, perception and attitude of community pharmacists towards generic medicines in Karachi, Pakistan. *Trop J Pharm Res* 2010;9(4):409-15.
- Shakeel S, Iffat W, Yasmin R, Ali H, Ibrahim S. Pharmacy students' perception and attitude towards the course and scope of community pharmacy in Pakistan. *J Pharm Biomed Sci* 2013;32(32):1400-6.
- Rayas IK, Hassali MA, Abduelkarem AR. The role of pharmacists in developing countries: The current scenario in the United Arab Emirates. *SPJ* 2014;23(5):470-4.
- Oldfield E. Pharmacists are among the most trusted professionals. *Pharm Times* 2012. Available from: <http://www.pharmacytimes.com/news/pharmacists-rank-among-most-trusted-professionals>. [Last accessed on 2016 Mar 06].
- Rupp MT, DeYoung M, Schondelmeyer SW. Prescribing problems and pharmacist interventions in community practice. *Med Care* 1992;30(10):926-40.