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Research Article

Perspective of Pharma Graduates

# Pharmacy Alumni Views on Communication with their College after Graduation: A Cross-Sectional Survey

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**Abstract:** As the growing number of pharmacy students increases in Saudi Arabia, here in the western region Umm Al-Qura University, we found the need of investigating the views and preferences of pharmacy graduates towards their future careers and communication with their college. The main aim and objective of our research is to examine the perspectives of intern students, employers, and alumni regarding communication with their college. This is a cross-sectional study with a total of 201 graduates between 2009 and 2020 from the college of Pharmacy, Umm Al-Qura University, who completed the questionnaire from January 2019 to January 2021. The study showed that most of the applicants agreed with the convenience and meaningful effect of the internship and summer training on the occupied jobs. This agreement was in both Pharm-D and B-pharm programs and in both male and female.

**Key words:** Pharmacy, students, graduates, views, Umm Al-Qura universi

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## 1. INTRODUCTION

Pharmacy colleges at Umm Al-Qura University started annually to evaluate if their graduate students are learning essential skills to excel in their profession. Moreover, to communicate with them and follow their path upon the job markets. Therefore, it is essential to receive that feedback from all interested parties, thus a database collection was developed by the Alumni unit of the Pharmacy College. Intern students can express satisfaction with their internship and summer training for their job preparation. Employers can cooperate with the Alumni unit to speak about their achievements and their current jobs. The Alumni unit then collects all these data for promising evaluation. The ideal time to gather this information is preferably immediately after completing an internship and shortly after students begin employment. The feedback is useful to modify our current program. It has been known that any changes in the role of pharmacists have been observed to change pharmacy education in all aspects for undergraduates, not just practice and clinical practice. Special studies reveal changes in their pharmacy courses that provide students with the benefits of medical education combined with work outcomes[1-7]. Another study revealed the use of specific methods to communicate with pharmacy students to improve their future behavior towards the job market[2,8-10] Moreover, one educational institution improved the communication skills of students by combining their courses with speech technology[1,14-15]. Moreover, providing good communication can deal with many ethical issues especially in the pharmaceutical fields[10-13]**.** The purpose of our research is to examine the perspectives of intern students, employers, and alumni regarding communication with their college.

## 2. MATERIAL AND METHODS

### *2.1 Study Design*

This is a cross-sectional study with a total of 201 graduates between 2009 and 2020 from the college of Pharmacy, Umm Al-Qura University, who completed the questionnaire from January 2019 to January 2021. The survey was designed utilizing Microsoft Forms online. The first part is covered the demographic data such as age, sex, graduate program type, and graduation year. The second section asked the participants about the impact of summer and internship training on preparing them for the job market. The third part was about the employment state and job type of the respondents such as government or private sector. The sample size was calculated depending on the modeling equation which is 200 subjects.

### *2.2 Questionnaire Design and Validation*

A preliminary questionnaire was done and distributed to a number of pharmacy students with (No, yeas and I don't know) answers, the survey questions were in Arabic and then translated to English and reviewed by 4 academic professors from the college. The content validation form was created, defining the construct and asking experts to evaluate the relevance of each item regarding the construct, by means of an item level content validity index (I-CVI) using (No, Yes and I don't Know). An item was considered valid when it was rated 3 or more for Yes. Only items considered valid by all the experts (100% of agreement) were considered content valid and finally included in the questionnaire. Experts were also encouraged to incorporate sentences about specific aspects and to provide open feedback on the wording and drafting, to improve intelligibility such as face validity. When three or more experts were spontaneously in accordance about a remark, that remark was accepted. After content validation, a group of 20 professionals completed the survey. The data collected were processed to evaluate the reliability of the questionnaire. The internal consistency of a priori dimensions of the questionnaire was measured by the Cronbach's alpha coefficient with an alpha > 0.70, consistency was considered as satisfactory.

### *2.3 Study Administration and Data Collection*

The online survey was anonymous, prepared in Arabic-language format. Consent of participants was considered by their submission. To investigate alumni satisfaction, this was a cross-sectional survey over samples of curriculum graduates was conducted with a total of 201 graduates between 2009 and 2020 from the college of Pharmacy, Umm Al-Qura University, who completed the questionnaire from January 2019 to January 2021. The questionnaire was conducted as an online survey. Alumni were initially contacted either by phone or by e-mail by the survey taker. Data was anonymized by replacing names with random numbers and remained confidential

### *2.4 Ethical Consideration*

Since the study is not of biomedical in nature and doesn't involve animals or patients, it is not mandatory to have ethical approval as declared by the country law, however the study was approved by the institution and study was explained to the participants assuring strict confidentiality for their data's collected

## 3. STATISTICAL ANALYSIS

All the variables were analyzed using SPSS Var 23.0 software 2015. Descriptive analyses such as percentages and means were used to describe the findings of this study. Association between different relevant variables will be calculated using Chi-Square Test. Values of $p < 0.05$ will be considered statistically significant. The correlation between the internship & summer training and the pharmacy program & gender was analyzed using one- way ANOVA test. Values of $p < 0.05$ will be considered statistically significant.

## 4. RESULTS

The cross-sectional study was distributed at the College of Pharmacy, Umm Al-Qura University, Makkah, Saudi Arabia from January 2019 to January 2021 between the graduates' students using social media, and the convenience sampling methodology was used to collect the data. This was to help us reach our sample size of 201 participants. The collected data were analyzed in two main sections. The first section intended to obtain the first insight through demographic data.

| Table 1.Respondent demographics and variables (N=201) | |
|---|---|
| **Demographics and variables** | **Frequency (%)** |
| **Gender** | |
| Male | 83 (41.29) |
| Female | 118 (58.71) |
| **What is your Pharmacy program?** | |
| Pharm D | 99 (49.25) |
| B pharm | 102 (50.75) |
| **Are you currently employed?** | |
| Yes | 54 (26.87) |
| No | 147 (73.13) |
| **What is your job sector?** | |
| Government sector | 21 (38.98) |
| Privet sector | 33 (61.11) |
| **Did the internship training prepare you for the job market?** | |
| Yes | 113 (56.22) |
| No | 61 (30.35) |
| Not applicable | 27 (13.43) |
| **Did the summer training prepare you for the job market?** | |
| Yes | 147 (73.13) |
| No | 54 (26.86) |

The distribution of demographics and variables among the questionnaire sample is presented in Table 1. A total of 201 applicants contributed. The demographic data distribution of the applicants presented a high percentage of females, with about 58.71%, whereas the rest of the sample was male, with 41.29%. In the survey questions, we asked the graduates about the pharmacy program that they graduated from. Records of the respondents' answers regarding the pharmacy program they graduated from where Pharm-D or B-Pharm program was also analyzed. The data showed that, overall, the percentage of graduates in a Pharm-D program and B-Pharm program were 49.25 (n = 99), and 50.75% (n = 102), respectively. Figure 1 demonstrates Job titles of the graduates were also analyzed in the study. The word cloud revealed that pharmacist and representative job titles are the most common titles.


**Fig 1: The word cloud of the graduates' job title.**

Additionally, we asked the graduates who had jobs about their employer type. Generally, the data revealed that 54 out of 201 graduate students had jobs. The graduate students who worked in the government sector were about 38.89% graduate, while in the private sector 61.11% graduated. These results demonstrated the private sector had a higher employment rate compared to the government sectors. Job titles of the graduates were also analyzed in the study. The word cloud revealed that pharmacist and representative job titles are the most common titles as shown in figure 1). Figure 2 demonstrates the year of graduation of the graduates in the survey.

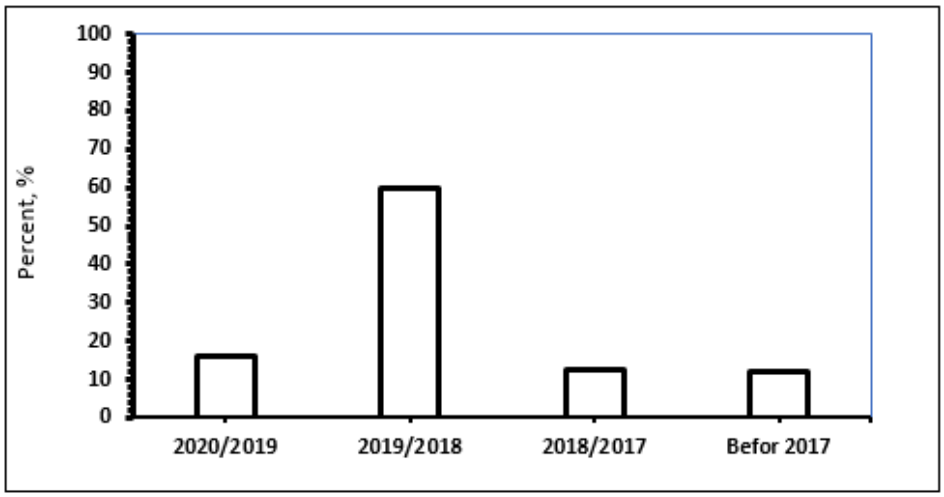


**Fig 2: The year of graduation of the graduates in the survey.**

We also questioned the graduates about their years of graduation as in Figure 2. The result was that approximately more than half of respondents, i.e., 59.701 (n = 120) were graduates in 2019/2018, whereas around 15.92 % (n = 32), and 12.44% (n = 25) of the graduate were at 2020/2019 and 2018/2017, respectively. Table 2 showed the graduates who found the internship training useful and prepared them for the job market. There were 84 graduates of Pharm-D and 29 graduates of the B-pharm program.

**Table 2: General questions about internship and summer training of the graduates.**

| Did the internship training prepare you for the job market? | | | |
|---|---|---|---|
| | **Yes** | **No** | **Didn't answer** |
| **Pharmacy Program** | | | |
| **Pharm-D** | 84 (41.79%) | 8 (3.98%) | 7 (33.48%) |
| **B-Pharm** | 29 (14.43%) | 53 (26.37%) | 20 (9.95%) |
| **Gender** | | | |
| **For Men** | 43 (21.39%) | 16 (7.96%) | 24 (11.94%) |
| **For Women** | 70 (34.83%) | 45 (22.39%) | 3 (1.49%) |
| **Did the summer training prepare you for the job market?** | | | |
| | **Yes** | **No** | **Didn't answer** |
| **Pharmacy Program** | | | |
| **Pharm-D** | 77 (38.31%) | 22 (10.95%) | 0 |
| **B-Pharm** | 70 (34.83%) | 32 (15.92%) | 0 |
| **Gender** | | | |
| **For Men** | 62 (30.85%) | 21 (10.45%) | 0 |
| **For Women** | 85 (42.29%) | 33 (16.42%) | 0 |

The second part of the survey questions appears in Tables 2 and 3. Lists of the graduate's answers regarding whether they found the internship training or summer training prepare them for the job market. The data of the internship training showed that, overall, the percentage of participants who admitted finding it useful was 113 respondents (56.23%), while only 61 (30.35%) were not. Only 27 of the survey respondents (13.43 %) did not answer this question. Among them, 43 were male (21.39%) and 70 were female 70 (34.83%) as shown in table 2). Among them, 43 were male and 70 were female as presented in table 2). Table 3 demonstrates the ANOVA analysis of the dependent variables.

**Table 3: ANOVA analysis**

| Dependent Variable | Independent Variable | $F_{(df)}$ | P-value |
|---|---|---|---|
| Did the internship training prepare you for the job market? | Graduate Program | 59.93054 $(_{2,198})$ | 4.86E-13 |
| Did the internship training prepare you for the job market? | Gender | 11.40841 $(_{1,199})$ | 0.000879 |
| Did the summer training prepare you for the job market? | Graduate Program | 2.142403 $(_{1,199})$ | 0.144855 |
| Did the summer training prepare you for the job market? | Gender | 0.174519 $(_{1,199})$ | 0.676577 |

***P values < 0.05 considered to be statistically significant, P values > 0.05 considered to be statistically non-significant***

A significant correlation between the internship training prepared the students for their job market and the pharmacy program ($F_{(df)}$ = 59.931 ($_{2.198}$), *P*-value 4.86E-13), that was found as shown in Table 3). Additionally, the data of the study analyzed the correlation between the internship training prepared the students for their job market and the gender ($F_{(df)}$ = 11.40841 ($_{1,199}$), *P*-value 0.000879) as presented in Table 3). The impact of summer training on graduates' job market was evaluated as shown in Table 2 and 3). The data revealed that 147 (73.13) of the graduates found the summer training was useful and prepared them for the job market, while only 54 (26.87) were not. This study found the correlation between the summer training prepared the students for the job market and the gender ($F_{(df)}$ = 0.175 ($_{1,199}$), P-value 0.68 as shown in Table 2). Additionally, it was found that ($F_{(df)}$ = 2.14 ($_{1,199}$), P-value 0.15. Among them, 77 (38.31%) and 70 (34.83%) % of the students graduated from Pharm-D and B-Pharm programs, respectively. Furthermore, there were 62 (30.85%) male and 85 (42.29%) female graduated students. X

## 5. DISCUSSION

A cross sectional study between the graduates' students was distributed and analyzed, the study was covering two arms which are demographic data (including gender, pharmacy program, employment, job sector and job title) as the first arm and the convenience of the internship and the summer training to the job market as the second arm. The survey was analyzed, and the results showed that about 58.71% of the applicants were female while 41.29% were male as shown in Table), it should be noticed that the study was carried out over a very small number of applicants (about 201 applicants in total). Also according to umm-alqura University portal system, the applicants for pharmacy specialty are usually higher in the female section in comparison with the male section. For example, the female pharmacy students for the year of 2021-2022 were 82 female students compared to 68 male students (umm alqura portal system). The analysis was also covering the percentage of the students in each pharmacy program (pharm D and B- pharm). The results showed that about 49.25% of the applicants were in the Pharm –D program and about 50.75% were in the B- Pharm program as shown in Table 1. In Saudi Arabia, there are at least nine private and governmental pharmacy schools [14,15]. Pharmacy school at umm-alqura University is one of them and it was providing (at the time the applicants were graduated) two different programs which are doctor of pharmacy (Pharm- D) and Bachelor of Pharmacy (B-Pharm). It is important to report that there is a big difference between both programs. Pharm-D is the specialty that is responsible for the patient's health and the selection of the best medication that will suit the patient case [16,17]. B- Pharm program is the specialty that deals with the drug composition and pharmaceutical industry [18,19]. Thus the differences in percentage between both programs might go back to the student's inclination. The data showed that only 54 out of 201 as presented in Table 1 graduates in the survey were employed. Again, this is a study with a very small number of participants which might not show the full image therefore it is considered one of the limitations of the study. In addition, some of them might be just graduated at the period of conducting the study (graduates of the year 2021) which means that they might been waiting for job offers. Out of these 54 graduates, the results showed that about 21 have chosen the governmental sector while 33 of them choses the private sector as presented in Table 1. The results indicate that graduates intended to apply for private jobs more than the governmental jobs with about 61.11% and 38.89% respectively. This might be because of the higher job opportunities in private sector (including community pharmacies) compared to that of the governmental one [20]. Comparing the numbers of the governmental jobs (hospitals, pharmacies, and universities) in Saudi Arabia with those private jobs (hospitals, community pharmacies, universities, and factories) we found that there are higher numbers of private hospitals and pharmacies compared to the governmental ones. Regarding the job title, Figure 1 showed that pharmacist and the representative job title such as sales agents of pharmaceutical manufacturers and producers are the most commonly occupied jobs between the graduates. Other job titles include oncology specialist, medical professional health, and inpatient practice. Jobs like pharmacist and representative pharmacist are jobs that can be occupied by freshly graduates from school of pharmacy. If we go back to the years of graduation that the study included, we found that the graduates are kind of freshly graduates (those who graduated in 2021) as shown in Figure 2 or graduates with only 3 years of experience (those who graduated in 2018) as presented in Figure 2. Outpatient and medical representatives do not need high experience, internship and summer training together with the certificate of pharmacist are the only requirements for job hiring. On the other hand, job titles such as inpatient pharmacies and oncology specialist are critical jobs that need more experience, extra training, and residency to be occupied. Our questionnaire included data about the convenience of the intern and summer training and whether if they were helpful and meaningful for graduates in their occupied jobs as shown in Table 2. The questionnaire about summer training showed that about 73.14% of graduates found it useful and only 26.87% of them found it not for both specialties (Pharm-D and B-pharm). The data showed that most of the applicants agreed that summer training was useful in both specialties (Pharm-D and B-pharm) and in all genders (male and female). The questionnaire about internship showed that about 56.23% of the graduates found that internships trained them well for their future jobs. On the other hand, about 30.35% of them found it not that much helpful for the job market. Also 13.43% of them did not respond to that question. The results showed that there are a high number of Pharm-D applicants in both male and female who found internship training useful and meaningful. This goes back to the fact that internship prepare the students for their future job market by incorporating training in different areas. Training usually includes outpatient areas which teach the students how to fulfill medication orders and refill prescriptions for new and returning patients, training on dispensing and patient counseling, offer consultation to medical professionals to better assist the patient and reviewing the patient's medical histories to prevent drug interaction or problematic symptoms. Training also includes rounds with the medical professionals in different specialties (oncology, cardiology, pediatric, etc.) which teach the students how to work directly with the physicians to ensure that patients are receiving the medications that contribute to the best possible health outcomes. A statistical analysis of the correlation between the convenience of internship and summer training on both pharmacy programs and gender was studied. One-way ANOVA test was used Table 3and the data showed that there was a significant correlation between the internship and pharmacy program (P= 4.86) and a significant correlation between the internship and gender (P= .000879) with a value of lower than 0.05. This significant correlation goes back to the differences between the numbers of applicants who found the training useful or not in both pharmacy programs and

gender. One-way ANOVA was performed also to study the correlation between the summer training and both pharmacy program and gender. The analysis showed that there was a non-significant effect between the summer training and either the pharmacy program (P= 0.144855) and the gender (p= 0.676577) with a p value greater than 0.05. This non-significant effect goes back to the agreement between the applicants on the convenience of summer training for job market on both pharmacy program and gender. Previous studies done in Saudi showed that graduates usually prefer hospital pharmacies than community ones, in addition pharmaceutical company's factories were found to be not a high rank for graduates [21,22]. As hospitals and factories are more competitive with higher salaries and more advanced in their fields. Moreover, another study found that pharmacy graduates were very fond of the academic career in universities [23]. This was unlike studies done outside Saudi where the graduate student preferred community pharmacy over hospitals and academics [24,25]. In our study the other limitation was that it was done at a specific time of point and many of the graduates might have changed at any time point of their life, therefore, another future assessment can be helpful to enlighten this view. For future recommendations, a suggestion for academic staff should encourage their students to have views on the academic and research career. Moreover, as the number of pharmacy students grows each year, the labor market is rational and evidence-based for local professions by opening more employment opportunities for pharmacists working in all other pharmacy areas, not just hospitals. We need to take an approach across the kingdom of Saudi Arabia. In addition, students will be able to use the employment market, including retail pharmacies, industry, and pharmaceutical companies, by successfully conducting pharmacy marketing campaigns and educational events at pharmacies across Saudi Arabia to meet growing demand in a global format. Every graduate needs to be aware of every opportunity into the labor market. This can be done with good communications between the graduates and their colleges.

## 6. CONCLUSION

The study was aimed to examine the opinions of intern students and graduates regarding communication with the college. The study showed that most of the applicants agreed with the convenience and meaningful effect of the internship and summer training on the occupied jobs. This agreement was in both Pharm-D and B-pharm programs and in both male and female. However, the study was conducted over a very small number of applicants and more applicants will be needed to show the full image.

## 7. AUTHOR CONTRIBUTION STATEMENT

Alaa Tulbah, Bayan Ainousah, Arwa Fairaq and Yosra Alhindi contributed to study conception, supervision, project administration, and revision. Alaa Tulbah, Bayan Ainousah, Arwa Fairaq and Yosra Alhindi contributed to literature review and writing/ manuscript preparation: writing the initial draft, data collection, formal analysis and data presentation, data collection.

## 8. CONFLICTS OF INTEREST

Conflict of interest declared none.

## 9. DATA AND MATERIALS AVAILABILITY

All data associated with this study are presented in the paper.

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