Career Choices and Preferences of Saudi Pharmacy Undergraduates: A Cross Sectional Study

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A B S T R A C T

Background: Despite the increasing number of pharmacy schools and their graduates, the healthcare workforce shortage has increased in Saudi Arabia’s pharmacy sector, especially with the opening of new retail pharmacies, industries and pharmaceutical companies, which means that more pharmacist positions have been created with expanded working hours. However, very limited data are available regarding the views and preferences of pharmacy students regarding their future job choices in Saudi Arabia, which may create concerns for licensing organizations, employers and institutions and also gaps between what students want and the vacancies for pharmacists. Therefore, this study aims to identify pharmacy students’ career choices and examine the factors that influence their choices across different pharmacy schools in Saudi via a cross-sectional survey.

Materials and methods: A cross-sectional survey was carried out of undergraduates at all education levels at different colleges of pharmacy across Saudi Arabia from October 2017 to March 2018. The questionnaire gathered students’ characteristics and covered the importance of general job considerations for students, their choices and the factors influencing their future career choices and finally the students’ opinions regarding different work settings. The data were analysed using the Statistical Package for the Social Sciences (SPSS).

Results: Hospital pharmacies were the preferred area of practice (n = 212: 51.6%), followed by academia and research centres (n = 102: 24.8%), while the pharmaceutical industry and community pharmacies were the least preferred, at 7% and 2%, respectively. Based on the respondents’ characteristics and preferred future career, a multivariate logistic regression revealed that the pharmD students were 4 times more likely to prefer hospital pharmacy posts (odds ratio (OR) = 4.554, p = 0.033) compared with the B-pharm students. Among the factors that influenced the students’ choices were personal interest, in addition to training experience and organizational reputation. The most important job considerations, according to the students, was moving up the job ladder (n = 346; 84.2%), and job openings in a certain field (n = 341; 83%). The Kruskal-Wallis test for nonparametric ordinal data declared detected several significant differences among different pharmacy settings for each item measuring the pharmD and B-pharm students’ attitudes and opinions.

Conclusion: By identifying these gaps and pharmacy students’ goals and needs, we aim to draw the government’s attention to these to ensure a future balance between supply and demand and effective pharmacy workforce planning, which is mandatory.

1. Introduction

The Kingdom of Saudi Arabia (KSA) is currently undergoing a strategic economic transformation, which poses unique challenges to the labour market on the one hand, and to the education system on the other. The field of pharmacy is not exempt from these changes (AlRuthia et al., 2018). Therefore, in the KSA, the number of pharmacy colleges has expanded significantly in the last few
years. The first college of pharmacy was established in 1959 in Riyadh, where King Saud University (KSU) is located. The second school was King Abdul Aziz University in Jeddah, where the first PharmD (Doctor of pharmacy) program was implemented (Almeman and Aljedai, 2016). By 2016, the number of pharmacy schools had increased to 28, the majority of which offer a PharmD degree which is a 6-year course, whereas a few provide a B-pharm degree, which is awarded following a five-year course of study (Almaghaslah, 2016). Unlike the B-pharm, the PharmD curriculum focuses mainly on pharmacy practice courses, such as therapeutics, whereas the B-pharm covers the basic pharmaceutical sciences (Al-jedai et al, 2016).

In 2018, the number of pharmacy students enrolled in governmental pharmacy programs was 14,004 (SCFHS, 2018) and the number of graduates reached 1157 (MOH, 2016), with an annual increase of 7–10% of graduates (Al-jedai et al, 2016). Despite the number of pharmacy graduates, there had been a growing healthcare workforce shortage locally. It was reported that the estimated number of pharmacists required to satisfy the needs of all health care and industrial sectors in Saudi Arabia as of 2015 was 100,000 (Bin Saleh et al, 2015). However, the most recent statistical yearbook of the Ministry of Health reported that there are only 22,829 pharmacists employed in different sectors of the Saudi Arabian economy (MOH, 2015). In addition, it is anticipated by the Saudi Manpower Council that, by 2026, at least 17,000 pharmacists will be needed to cover the increasing demand for pharmacists in different sectors of the KSA (Kheir et al., 2008). This situation results in a high national dependence on non-Saudi health care workers, and a shortage of Saudi pharmacists to occupy different areas of practice and because this issue is still not being completely solved by the Ministry of Health and the Saudi Manpower Council, it was decided to conduct this study. Therefore, the objectives of this study were to identify pharmacy students’ career choices and examine the factors that influence these choices. Based on the literature review and during the process of drafting the initial version of a structured questionnaire, the advisory group (i.e. two pharmacy academic staff) were invited to comment on the content and wording of the questions on the questionnaire. This was designed to ensure that the questionnaire fulfills the requirement of the quality assessment domain and is oriented towards the objectives of this study, as well as to gain insights into its appropriateness. Feedback were collated and the questionnaire was developed. The questionnaire was divided into two main parts; firstly, the students’ characteristics were gathered (e.g. age, gender, program, grades, region of university study, etc.), and then, secondly, the other section covered the importance of general job considerations for students, their choices and the factors influencing their future career choice, and finally the students’ opinions regarding different work settings. The questionnaire then was piloted on eight randomly chosen students in the college pharmacy for their views and feedback regarding the wording and ease of use, in addition to assessing the feasibility of the questionnaire and to act as a method of face validity. However, data gathered from the pilot study were not included in final analysis. A copy of the tool is available on request.

In terms of reliability, as identified by Scanlan (2002), the reliability of the study relies on the reproducibility of the findings and the assumption that if the data were collected using identical techniques or methods at the exactly the same point in time the same findings would be obtained, and if the data were analysed using the documented method of data analysis the same conclusion to the study would be drawn. To ensure this, a number of considerations were made when designing this study to reduce threats to the reliability, including: Firstly, the data collection process was clearly documented and research procedures were followed as per the data collection protocol during the research process. Secondly, the data were gathered on one occasion. To ease the capture of responses from participants, and to help to reduce any inadvertent bias in interpreting responses from open-ended questions, 2.2. Sample size

The sample size was calculated using an online sample calculator (Raosoft). Based on the data obtained from the Saudi Commission for Health Specialities, which stated that, in 2018, the number of pharmacy students enrolled on pharmacy programs was 14,004 students. Therefore, 374 students were needed to obtain a 95% confidence interval with a 5% margin of error.

2.3. Study instrument (quality assessment development)

A literature review was undertaken to develop a questionnaire to identify pharmacy students’ career choices and examine the factors that influence these choices. Based on the literature review and during the process of drafting the initial version of a structured questionnaire, the advisory group (i.e. two pharmacy academic staff) were invited to comment on the content and wording of the questions on the questionnaire. This was designed to ensure that the questionnaire fulfills the requirement of the quality assessment domain and is oriented towards the objectives of this study, as well as to gain insights into its appropriateness. Feedback were collated and the questionnaire was developed. The questionnaire was divided into two main parts; firstly, the students’ characteristics were gathered (e.g. age, gender, program, grades, region of university study, etc.), and then, secondly, the other section covered the importance of general job considerations for students, their choices and the factors influencing their future career choice, and finally the students’ opinions regarding different work settings. The questionnaire then was piloted on eight randomly chosen students in the college pharmacy for their views and feedback regarding the wording and ease of use, in addition to assessing the feasibility of the questionnaire and to act as a method of face validity. However, data gathered from the pilot study were not included in final analysis. A copy of the tool is available on request.

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closed-ended questions were deliberately chosen for this survey design.

2.4. Data processing and analysis

The completed survey was processed and analyzed using a quantitative procedure conducted using the statistical methods available in the Statistical Package for the Social Sciences (SPSS 24 software) and Excel program. The descriptive statistics were generated and possible relationships between different variables were assessed using a chi-square test. Based on the respondents' characteristics and preferred future career, a multivariate logistic regression was used. In addition, the Kruskal-Wallis test for nonparametric ordinal data declared detected several significant differences among different pharmacy settings for each item measuring the PharmD and B-pharm students' attitudes and opinions.

3. Results

Of the 708 pharmacy students who viewed and started filling out the online questionnaire, 411 completed the questionnaire, representing a 58.05% response rate, and representing different universities across the KSA.

3.1. Pharmacy students' characteristics

A total of 411 questionnaires were completed by pharmacy students in five regions of the KSA, all of whom were Arabs. Most of them were female (306 respondents, 74%), single (367 respondents, 89.3%) and enrolled on a PharmD program (337 respondents, 82%). The students' characteristics are shown in Table 1.

3.2. Pharmacy students' career choices

Hospital pharmacy was the most preferred (n = 212: 51.6%), followed by academia and research centres (n = 102: 24.8%), whilst the pharmaceutical industry and community pharmacies were marked as the least preferred by 7% and 2% of the respondents, respectively. Based on the respondents' characteristics and preferences for their future career, a multivariate logistic regression revealed that the PharmD students were four times more likely to prefer hospital pharmacy posts (odds ratio (OR) = 4.554, p = 0.033) compared with the B-pharm students (see Table 2). On the other hand, there was no significant difference between the students' career preferences and year of study (p = 0.833), gender (p = 0.870), or region of university study (p = 0.138).

Around half of the respondents (47.4%) expected to receive a salary of more than 3200 USD per month (SR = 12,000), 28.5% anticipated a salary ranging from 2667 to 3200 USD (SR = 10,000–12,000), and 9.5% predicted receiving less than 2667 USD (SR = 8000) as their monthly salary. The PharmD students had a better understanding of what the market is offering in terms of wages and salaries, when compared to the B-pharm students (p = 0.006).

Regarding the students' perceptions of the highest job in the hierarchy or most professional area, more than half of them selected academia and research centres (n = 230: 56%) as the most professional job, whilst community pharmacies were considered the lowest in the hierarchy or least professional area (n = 4: 0.9%). There was no strong association between the PharmD and B-pharm students regarding the highest job in the hierarchy (p = 0.113).

3.3. General job considerations for future career choices

The students were asked to state the importance of the following factors presented in Table 3, for their future career. The majority of the students (n = 346; 84.2%) declared that advancement as a professional pharmacist from one job position to another, with a higher salary range and better job title as well as more advanced responsibilities (e.g. job promotion or opportunities to move up a job ladder), was of great importance to them, followed by the job openings in a certain field (n = 341; 83%). For example, the students felt that the availability of job vacancies in a particular pharmacy sector is an essential factor. The salary factor was in third place, after job openings and promotions. The least important job consideration was travelling abroad for work or pleasure (n = 86: 20.9%), transportation to daily work (n = 78; 19%), and the on call schedule (n = 70; 17%).

When the PharmD and B-pharm students were asked which factors they considered most essential when making a job selection, more of the PharmD students selected work benefits (high important: 67.1% vs. 60.8%, neutral: 32% vs. 33.8%, low important: 0.9% vs. 5.4%, p = 0.022), and workload (high important: 58.2% vs. 58.1%, neutral: 38.6% vs. 32.4%, low important: 3.2% vs. 9.5%, p = 0.052), as the two most important factors, whilst more B-pharm students preferred the reputation of the organization (high important: 67.6% vs 66.2%, neutral: 18.9% vs. 29.7%, low important: 13.5% vs. 4.1%, p = 0.003) and advancement opportunities in pharmacy skills and knowledge (high important: 77% vs 76.6%, neutral: 16.2% vs. 22.2%, low important: 6.8% vs. 12.8%, p = 0.008), as the two most important factors in their job selection. See (Table 3) for more details.

3.4. Factors influencing the students' future career choice

In regard to the factors that influence students' career choices, personal interest was deemed the most essential influence on career choice, being selected by 85.6% of the participants. Training experience and organization's reputation occupied second and third place, at 75.4% and 65.5%, respectively, whilst the influence of friends and family was the least important factor, at 74% and 56%, respectively (see Fig. 1).

When asking the PharmD and B-pharm students about the factors that influence their career decisions, only one factor was found
to be statistically significantly different between the two groups. The personal interest of the PharmD students to choose a certain sector showed a significant statistical difference to the B-pharm students (83.8% vs 16.2%, p = 0.028), who selected experience and exposure, while all of the other factors had no statistically significant difference between the two groups (see Table 4).

### 3.5. Pharmacy students’ attitudes regarding different pharmacy settings

The students’ attitudes and opinions related to the different pharmacy sectors are summarized in Table 5. The Kruskal-Wallis test for nonparametric ordinal data declared some significant differences.
differences among different pharmacy settings for each item that measured the pharmD and B-pharm students' attitudes and opinions. The students considered hospital pharmacy as their preferred sector on 3 items that addressed the quality of the work itself, in terms of the following aspects: having opportunities for learning and development (n = 317, 77.1%), a fulfilling career (n = 293 71.3%) with good communication skills in this area of pharmacy (n = 350 85.2%). Additionally, the highest number of students agreed that hospital pharmacy was ranked highest with regard to a heavy work load and putting pressure on employees (n = 248, 60.3%), when compared to other area of pharmacy. Academia and research centres scored highest in regard to providing students with the optimal work schedule (n = 244, 59.4%), environment (n = 241, 58.6%) and offering a financially rewarding career (n = 276 67.2%).

In contrast, the students reported community pharmacy as the lowest when compared to other sectors in term of having a fulfilling (n = 186, 45.3%) and financially rewarding career (n = 147, 35.8%). Moreover, the students reported that working in a community pharmacy would not place them under a heavy workload and pressure, so it was ranked lowest in regard to providing an optimal work environment (n = 143, 34.8%) and schedule (n = 140, 34.1%), compared to other pharmacy sectors. Furthermore, the students believe that community pharmacy settings do not provide very good job prospects (n = 117, 28.5%) or opportunities for learning and developing their pharmacy skills (n = 124, 30.2%). Industry was ranked the lowest in regard to having good communication skills (n = 134, 32.6%). In addition, the students disagreed that the pharmaceutical industry could have a possible future oversupply of pharmacists (n = 110, 26.8%).

The results from the Kruskal-Wallis test analyses showed significant differences between the pharmD and B-pharm groups' opinions regarding the following: whether they see themselves having a fulfilling career with pharmaceutical companies (p = 0.000) and industries (p = 0.043) and whether the pharmaceutical industries (p = 0.001) and companies (p = 0.001) provide an optimal work

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Table 4
Factors influencing students career choices (n = 411).

| Factors                              | Program                  | P – value |
|--------------------------------------|--------------------------|-----------|
|                                      | Pharm-D                  |           |
|                                      | High importance N (%)    | Neutral N (%) | Low importance N (%) |
| Personal interest                    | 57 (16.2%)               | 5 (41.7%)  | 12 (25.5%)            | 295 (83.8%) | 7 (74.5%)  | 35 (74.5%) |
| Influence of family                 | 17 (22.4%)               | 12 (11.4%) | 45 (19.6%)            | 155 (82.1%) | 93 (88.6%) | 185 (80.4%) |
| Influence of friends                | 12 (17.9%)               | 26 (17.2%) | 36 (18.7%)            | 80 (84.2%)  | 14 (82.5%) | 116 (80%)  |
| Influence of faculty member         | 15 (15.8%)               | 30 (17.5%) | 29 (20%)              | 221 (82.2%) | 40 (74.1%) | 76 (86.4%) |
| Reputation of the organization      | 48 (17.8%)               | 14 (25.9%) | 12 (13.9%)            | 204 (85.7%) | 51 (76.1%) | 82 (77.4%) |
| Course content in your program      | 34 (13.4%)               | 16 (23.9%) | 24 (22.6%)            | 236 (82.9%) | 32 (76.2%) | 49 (83.1%) |
| Experience of working in either     | 54 (17.4%)               | 10 (23.8%) | 10 (16.5%)            | 35 (74.5%)  | 7 (74.5%)  | 35 (74.5%) |
| hospital, community, industries and so on | 57 (16.2%)               | 5 (41.7%)  | 12 (25.5%)            | 295 (83.8%) | 7 (74.5%)  | 35 (74.5%) |

*A statistical significant (p ≤ 0.05).
schedule, and whether pharmaceutical companies offer job prospects (p = 0.023) and provide opportunities for learning and development (p = 0.026). Regarding hospital and community pharmacies, the differences were in terms of whether hospital pharmacies offer a financially rewarding career (p = 0.004), provide good communication skills (p = 0.001) and offer job prospect (p = 0.004), and also whether retail or community pharmacies provide a heavy workload (p = 0.027).

4. Discussion

There is an increasing number of pharmacy students in the KSA, leading to a growing number of graduates and applicants within the pharmacy sector. However, pharmacy undergraduates’ future career choices and willingness to enter different areas of practice within pharmacy have not been addressed fully in the previous literature in KSA, which may result in the disproportionate distribution of pharmacist professionals across the practice areas. For example, two previous studies conducted in the KSA reported that hospital pharmacies are considered one of the best and most popular areas of practice for pharmacy graduates, rather than community pharmacies (Al-jedai et al., 2016) or the pharmaceutical industry (Bin Saleh et al., 2015), which continue to witness low employment patronage. Therefore, this study was carried out and is different from previous studies because different methodologies employed. For example, it examined pharmacy students’ future career choices and willingness to enter all available sectors in which pharmacy students may practise, including hospitals, community pharmacies, academic or research centres, pharmaceutical companies and the pharmaceutical industry. In addition, it provided information about which factors the students considered important or less important when selecting their future career. It provided information about which factors the students considered important or less important when selecting their future career. It

### Table 5

| Question | Pharmacy sectors | Agree N (%) | Neutral N (%) | Disagree N (%) | p   |
|----------|------------------|-------------|---------------|----------------|-----|
| I see myself having a fulfilling career in this area of pharmacy | Hospital Pharmacy | 293 (71.3%) | 88 (21.4%) | 30 (7.3%) | 0.269 |
| | Retail or Community Pharmacy | 67 (16.3%) | 158 (38.4%) | 186 (45.3%) | 0.117 |
| | Academic & research centers | 248 (60.3%) | 98 (23.8%) | 65 (15.8%) | 0.575 |
| | Pharmaceutical Companies | 191 (46.5%) | 159 (38.7%) | 61 (14.8%) | 0.999 |
| | Industries | 162 (39.4%) | 163 (39.7%) | 86 (20.9%) | 0.043 |
| I see myself having a financially rewarding career in this area of pharmacy | Hospital Pharmacy | 276 (67.2%) | 116 (28.2%) | 19 (4.6%) | 0.004 |
| | Retail or Community Pharmacy | 70 (17.0%) | 194 (47.2%) | 147 (35.8%) | 0.928 |
| | Academic & research centers | 279 (67.9%) | 107 (26.0%) | 25 (6.1%) | 0.811 |
| | Pharmaceutical Companies | 245 (59.6%) | 139 (33.8%) | 27 (6.6%) | 0.029 |
| | Industries | 195 (47.4%) | 174 (42.3%) | 42 (10.2%) | 0.249 |
| I see myself working under pressure and having a heavy workload in this area of pharmacy | Hospital Pharmacy | 248 (60.3%) | 129 (31.4%) | 34 (8.3%) | 0.475 |
| | Retail or Community Pharmacy | 138 (33.6%) | 159 (38.7%) | 114 (27.7%) | 0.027 |
| | Academic & research centers | 217 (52.8%) | 149 (36.3%) | 45 (10.9%) | 0.818 |
| | Pharmaceutical Companies | 169 (41.1%) | 201 (48.9%) | 41 (10.0%) | 0.255 |
| | Industries | 202 (49.1%) | 176 (42.8%) | 33 (8.0%) | 0.283 |
| I see myself having good communication skills in this field | Hospital pharmacy | 350 (85.2%) | 53 (12.9%) | 8 (1.9%) | 0.001 |
| | Retail or Community Pharmacy | 295 (71.8%) | 74 (18%) | 42 (10.2%) | 0.141 |
| | Academic & research centers | 237 (57.7%) | 126 (30.7%) | 48 (11.7%) | 0.240 |
| | Pharmaceutical Companies | 168 (40.9%) | 174 (42.3%) | 69 (16.8%) | 0.041 |
| | Industries | 102 (24.8%) | 175 (42.6%) | 134 (32.6%) | 0.200 |
| I see myself having opportunities for learning and development in this field | Hospital Pharmacy | 317 (77.1%) | 73 (17.8%) | 21 (5.1%) | 0.856 |
| | Retail or Community Pharmacy | 160 (38.9%) | 127 (30.9%) | 124 (30.2%) | 0.618 |
| | Academic & research centers | 310 (75.4%) | 75 (18.2%) | 26 (6.3%) | 0.091 |
| | Pharmaceutical Companies | 184 (44.8%) | 159 (37.7%) | 72 (17.5%) | 0.028 |
| | Industries | 197 (47.9%) | 148 (36%) | 66 (16.1%) | 0.058 |
| A career in this area of pharmacy will provide me with the optimal work schedule | Hospital Pharmacy | 194 (47.2%) | 156 (38.7%) | 58 (14.1%) | 0.725 |
| | Retail or Community Pharmacy | 93 (22.6%) | 173 (42.1%) | 140 (34.1%) | 0.525 |
| | Academic & research centers | 244 (59.4%) | 126 (30.7%) | 38 (9.2%) | 0.612 |
| | Pharmaceutical Companies | 154 (37.5%) | 190 (46.2%) | 61 (14.8%) | 0.001 |
| | Industries | 132 (32.1%) | 208 (50.6%) | 64 (15.6%) | 0.001 |
| A career in this area of pharmacy will provide the optimal work environment | Hospital Pharmacy | 217 (52.8%) | 155 (37.7%) | 39 (9.5%) | 0.106 |
| | Retail or Community Pharmacy | 69 (16.8%) | 199 (48.4%) | 143 (34.8%) | 0.514 |
| | Academic & research centers | 241 (56.6%) | 136 (33.1%) | 34 (8.3%) | 0.777 |
| | Pharmaceutical Companies | 162 (39.4%) | 194 (47.2%) | 55 (13.4%) | 0.725 |
| | Industries | 129 (31.4%) | 199 (48.4%) | 83 (20.2%) | 0.868 |
| A career in this area of pharmacy has a job prospect | Hospital Pharmacy | 291 (70.8%) | 93 (22.6%) | 27 (6.6%) | 0.004 |
| | Retail or Community Pharmacy | 112 (27.3%) | 182 (44.3%) | 117 (28.5%) | 0.506 |
| | Academic & research centers | 261 (63.5%) | 114 (27.7%) | 36 (8.8%) | 0.125 |
| | Pharmaceutical Companies | 215 (52.3%) | 161 (39.2%) | 35 (8.5%) | 0.023 |
| | Industries | 175 (42.6%) | 179 (43.6%) | 57 (13.9%) | 0.109 |
| A career in this area of pharmacy may have a possible future oversupply of pharmacists | Hospital Pharmacy | 316 (76.9%) | 68 (16.3%) | 27 (6.8%) | 0.251 |
| | Retail or Community Pharmacy | 214 (52.1%) | 117 (29.5%) | 80 (20.0%) | 0.069 |
| | Academic & research centers | 125 (31.2%) | 183 (45.6%) | 93 (23.2%) | 0.087 |
| | Pharmaceutical Companies | 129 (31.4%) | 188 (45.7%) | 94 (22.9%) | 0.068 |
| | Industries | 118 (28.7%) | 183 (45.4%) | 110 (26.8%) | 0.343 |

*p Value using Kruskal Wallis test which is used to calculate Chi-square values.
study that was conducted based at a single university in Riyadh city among final year students, and this focused mainly on the pharmaceutical industry as a future career (Bin Saleh et al., 2015). The data from this study aimed to help to improve pharmacy workforce planning and education by focusing on what pharmacy students need and what they look for when deciding on their future career to ensure a balance between supply and demand.

When students prioritized their work choices, their preferences were inequitably distributed across different career paths. The data revealed that the most coveted areas of practice among the students were firstly hospital pharmacy, followed by academia and research centres, whilst the least desired work areas were the pharmaceutical industry, followed by community pharmacies. These results are in line with two previous studies of pharmacy students’ preferences regarding their future career, which found that hospital pharmacy and academia were the two most preferred areas of practice when compared with community pharmacies and the pharmaceutical industry (Al-Wazaify et al., 2006; Bin Saleh et al., 2015), whereas other studies conducted outside of the KSA found that community pharmacies were the most preferred area of practice among the students (AACP, 2012; Ubaka et al., 2013).

As the majority of pharmacy colleges in the KSA offer a pharmD program, where students are clinically-oriented and their course content/curriculum is clinically-focused toward hospital pharmacy administration, this may have influenced students to select a clinical-based career in hospitals. Therefore, it is expected that more students will pursue careers in hospital pharmacies. If the pharmacy colleges in Saudi Arabia focused more on the basic sciences, with more lab-based pharmaceutical science on their curriculum, the students’ choices might be different. However, further studies are required to validate this hypothesis. Other areas that colleges need to explore include business management, policy decision-making and public health education. This would provide undergraduates with alternative perspectives to pharmacy, away from patient-facing roles.

A high number of pharmacy students in the Southern and Northern provinces chose hospital pharmacies as their preferred area of practice, while rejecting a career in pharmaceutical companies, industry or community pharmacies. This could be due to the fact that these regions are the least developed and industrialized in the pharmacy field, when compared to the Middle, Western and Eastern regions, where the majority of the pharmaceutical companies, industry and community pharmacies are located. This may have influenced the choices of the pharmacy students in these regions.

When the students were asked which factors they consider most important with regard to their job selection, the data showed that salary, job promotion and openings were the major factors that were considered important in regard to job selection. These factors were consistent with a previously published study. Al-Wazaify’s study (2006) found that the majority of Saudi pharmacy graduates worked in hospitals because both clinical and hospital pharmacies are more advanced and offer a more competitive remuneration compared to other sectors. In a report by Al-jedai et al. (2016) on the pharmacy practice and Health Care System in the KSA, most Saudi pharmacists end up practising in hospital settings, rather than community pharmacies, because of the higher wages and better job satisfaction. In relation to the problems encountered linked to the poor pay rates offered by the community pharmacies in the KSA, this study agrees with the findings of Al-Zahrani et al. (2017), which showed that 41.7% of community pharmacists received a salary of less than 5000 SR, and that there existed a high degree of dissatisfaction about this payment, compared to pharmacists working in a pharmaceutical company, who receive SR15,000 as their monthly salary (Saudi Gazette, 2018). This could be a factor that led the students to prefer to work in any other sector than in a community pharmacy.

Personal interest and experience of working in a hospital, community pharmacy, etc., were the two most important factors that influenced the students’ future career selection. A similar study conducted in Pakistan among pharmacy students reported that the major factor that influenced the students’ choice was personal interest (Saad et al., 2012). Another study conducted in the KSA reported that previous training in a hospital, community pharmacy, etc., was a key factor which had an impact on students selecting hospital pharmacies over all other sectors for their future career (Bin Saleh et al., 2015), as they deemed that they had received sufficient training to work in a hospital pharmacy. Again, the pharmacy curriculum could be adjusted to introduce students to different areas of practice. Colleges are required to help students to develop transferable skills based on their personal interests. Moreover, the concept of having a portfolio career, that combines a mixture of different settings, needs to be introduced to the students. This will enable the students to expand their horizon rather than focus simply on only one particular setting.

5. Limitations

One of the main limitation is related to nonresponse bias, which could be problematic because non-respondents might have significantly different views than the respondents. Another limitation is that despite the large sample size of 411 students which consisted of people from different age groups, genders and marital status, not equal proportion of B-pharm and PharmD students were gathered, which would make the sample representative not generalisable to the general B-pharm population. A further limitation is that this study examined the “intended” career choices of students, this assessment was done at a particular point of time (when the study was conducted). Students’ choices may undergo changes over time based on further experiences of their own or others’ prior experiences with pharmacy jobs. As a result, repeated assessment may enable the assessment of the consistency of students’ career choices over time.

6. Recommendations

- The second most preferred area of practise was academia or research centers. The students wished to work as academics or researchers. Therefore, they should be encouraged to consider a new career path and not only consider hospital pharmacy, to offer a labor market with more variety to pharmacists. Academics and teaching staff should take responsibility for encouraging their students to consider an academic career by emphasizing how this path may provide them with autonomy and flexibility.

- Pharmacy is an interdisciplinary field of science, comprising almost every aspect of drug discovery, synthesis, manufacture, and distribution, as well as patient care. Therefore, pharmacy colleges and their curricula should not downplay the significance of all of the other aspects of pharmacy and focus mainly on clinical pharmacy subjects. As a result, knowledge of the basic pharmaceutical sciences is highly important not only for the education at pharmacy colleges but also for pharmaceutical research, which constitutes an integral aspect of biomedical sciences. Thus, pharmacy colleges should acknowledge the need to strengthen and upgrade the pharmacy curriculum to produce a competent pharmacist workforce which is able to meet the growing demands of the industry, hospitals, and community.

- As the number of pharmacy students is increasing each year, the labor market should adopt a rational and evidence-based approach for the profession in the region by opening more job opportunities for pharmacists to work not only in hospitals but also in all other sectors of pharmacy across the five regions.
of the KSA. In addition, students should be aware of all of the available opportunities in the labor market, including retail pharmacies, industry and pharmaceutical companies, by implementing a successful pharmacy marketing campaign and educational sessions in pharmacy schools around Saudi Arabia, in order to meet the growing requirements of the global format of the labor market.

7. Conclusion

This study revealed that there are many influencing factors which play a role in pharmacy students’ future career preferences and also their willingness to enter different pharmacy sectors. This may create a gap between what the students want and the vacancies available for pharmacists. To ensure a future balance between what the students want and the available job vacancies in different sectors, efforts should be made by the schools of pharmacy and other pharmacy settings to handle this issue appropriately and encourage pharmacy students to enter different sectors by providing them with a sufficient information on the role of professionals in different settings and providing training programs in all pharmacy sectors to build the knowledge and skills required to work in these different sectors efficiently and productively.

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