

## Factors Influencing Choice of a Pharmacy Degree and Career Preferences of Final Year Pharmacy Students in Northern Nigeria: A Multi-Institutional Study

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A – research concept and design; B – collection and/or assembly of data; C – data analysis and interpretation; D – writing the article; E – critical revision of the article; F – final approval of article.

### Abstract

**Background:** Over the years, the scope of practice for the pharmacy profession has considerably broadened and several practice areas can now be chosen by young pharmacy graduates. However, not much is known about the career preferences of Nigerian pharmacy students.

**Objectives:** To explore factors influencing the choice of a pharmacy degree, career preferences and perceptions of pharmacy practice areas in final year pharmacy students at selected universities in Northern Nigeria.

**Methods:** A cross sectional study using a structured paper-based questionnaire to collect data from consenting students of six Northern Nigerian universities, was conducted from May to August 2021. Descriptive statistics were used to report the results obtained.

**Results:** A total of 226 questionnaires were retrieved. Many of the respondents were male (57.5%) and studying for the Bachelor of Pharmacy degree (88%). Pharmacy was the first-choice course of study for almost 70% of the respondents, and the most common factors influencing their choice were personal interest (59.7%) and good job prospects (50.4%). Majority of respondents perceived that community pharmacy practice would provide them with the most financially rewarding career (32.7%), best work environment (33%) and best job opportunities (20%). Most of them also perceived themselves as having a heavy workload if they worked in hospital pharmacy (47.8%) and the best work schedule if they worked in academia (28.9%). Respondents' top four career choices were community pharmacy, hospital pharmacy, public health pharmacy and industrial pharmacy.

**Conclusion:** This study identified factors influencing the choice of a pharmacy degree and career preferences of respondents. Structured career counselling for young pharmacists is recommended.

**Keyword:** Career choice, Practice areas, Pharmacy students, Nigeria

### INTRODUCTION

Over the years, the scope of practice for the pharmacy profession has considerably broadened (Toklu and Hussain, 2013). Initially, the profession was primarily focused on medicines production, either through small scale compounding or larger scale manufacture. More recently however, there has been a gradual expansion

of pharmacist roles into a wide variety of areas, and pharmacists are now recognized as indispensable in healthcare teams, as well as in achieving larger scale public health and international developmental goals- especially in developing countries (Steeb and Ramaswamy, 2019; Udoh *et al.*, 2020). Consequently,

after studying for a pharmacy degree, one of several practice areas can now be chosen by young pharmacy graduates. These options could include careers in hospital pharmacy, community pharmacy, industrial pharmacy, veterinary pharmacy and so on.

Several studies have been carried out in many countries to assess career options and the factors affecting these choices among pharmacy students (Hasan *et al.*, 2010; Ubaka *et al.*, 2013; Shakeel *et al.*, 2013; Salman *et al.*, 2013; Loo *et al.*, 2017; James *et al.*, 2018; Alhomoud *et al.*, 2019; Al-Qudah *et al.*, 2019; Jarab *et al.*, 2021). As would be expected, most of these studies have reported varying results (both for career choices and the factors influencing these choices). Results from some of these studies have shown that pharmacy career choices maybe influenced by the year of study of respondents, with career preferences changing as students move up the academic ladder (Al-Qudah *et al.*, 2019). This is not surprising as many of the factors known to influence career choices and perceptions are not 'static', and interact with each other, in addition to also evolving with the passage of time (Shen *et al.*, 2014). Despite this, only a few studies have specifically investigated final year pharmacy students' career choices (Shen *et al.*, 2014; Bannan *et al.*, 2021). This is interesting because it can be argued that they are a particularly important study population since they are more likely to be better aware of their career options, have formed more stable career opinions due to their longer years

## **METHODOLOGY**

### **Study design and sites**

The study was cross sectional and used a structured questionnaire to collect data from final year pharmacy students of six Northern Nigerian universities from May to August 2021. Two universities were randomly sampled from each of the three geo-political zones making up Northern Nigeria. Selected universities included: Ahmadu Bello University and Bayero University from the Northwestern region, University of Jos and University of Ilorin from the North-central region, and University of Maiduguri and Gombe State University from the Northeastern region.

### **Study participants**

Data was collected from final year pharmacy students studying for a five-year Bachelor of Pharmacy (BPharm) degree in all but one of the universities and penultimate year students studying for a six-year Doctor of Pharmacy (PharmD) degree at the last university. This was because the PharmD program at

of education (and practical work experience in many cases) in addition to other considerations.

Although the number of pharmacy graduates in Nigeria is increasing, the country like several other developing countries still has a deficit of pharmacists (FIP, 2015). Furthermore, majority of the available pharmacists within the country are clustered in specific geographic areas and practice specialties, with up to 40% of the pharmacists in the country not involved in active pharmacy practice (Ekpenyong *et al.*, 2018). This suggests that there is a need for a targeted pharmacy workforce development strategy within the country, and a starting point for the development of this strategy should involve identifying and understanding the reasons behind the career choices of young pharmacists.

Not much is also known is about the career preferences of Nigerian pharmacy students. Available studies by Ubaka *et al.*, (2013) and Isah *et al.*, (2021) were all conducted in southeastern Nigeria and reported that majority of their respondents preferred to practice in either hospital or community pharmacy settings at the time their surveys were carried out. These studies respondents also cut across several study years i.e., they were not only final year students. Consequently, the aim of this study was to explore factors influencing the choice of a pharmacy degree, career preferences and perceptions of the pharmacy profession of final year pharmacy students at selected universities in Northern Nigeria.

that institution was new, and they had (as at the time of data collection) no students in their sixth year. All students of these institutions were eligible to participate in the study if they fulfilled all the following inclusion criteria:

- Were final-year BPharm or a penultimate-year PharmD students.
- Were enrolled in one of the selected universities
- Agreed to participate
- Could read and write in English language

Any student who did not fulfil all four criteria listed above was excluded from the study

### **Study instrument**

The study instrument was a self-administered structured questionnaire. Items for this questionnaire were adapted from instruments used in similar studies in other countries (Hasan *et al.*, 2010; Salman *et al.*,

2013; Shakeel *et al.*, 2013; Loo *et al.*, 2017; James *et al.*, 2018; Alhomoud *et al.*, 2019; AlQudah *et al.*, 2019). After the instrument was designed, it was assessed for face and content validity by two clinical pharmacy lecturers and found to be adequate. The final draft was then pilot tested on 10 randomly selected final year Pharmacy students of Ahmadu Bello University (who were excluded from the final study), minor modifications were then carried out based on their suggestions.

The final questionnaire was divided into five sections labelled A-E. Items in the first part of the questionnaire collected information about the demographic data of respondents including their gender, age, university of study etc. Section B contained 12 factors reported in the literature as influencing the choice of a pharmacy degree, and respondents were asked to select all that influenced their own choice of a pharmacy degree. In section C, students' attitudes and perceptions towards the pharmacy profession and specific pharmacy practice areas were assessed. This section was subdivided into two. The first part contained five statements which were rated using a 5-point Likert scale, while the second part contained eight open ended statements to be filled by respondents by selecting from nine predefined pharmacy practice areas.

Section D evaluated students' preferences for pharmacy practice areas with 11 options to choose from based on their preference to work in these areas after graduation. Students were allowed to choose up to three pharmacy practice areas as their 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup>

## RESULTS

A total of 226 questionnaires were eventually retrieved of the 420 distributed, producing a 53.8% response rate.

### Demographic characteristics of respondents

Demographic characteristics of study respondents is reported in Table 1. Many of them were male (57.5%) and studying for the Bachelor of Pharmacy degree (88%). Their ages ranged from 17-35 years with the

career options after graduation. Amongst these options was "non-pharmacy related area" for students who weren't interested in practicing pharmacy, so that their reason for that choice could also be captured. The final section evaluated factors affecting students career preferences based on their 1<sup>st</sup> choice in section D. It contained 15 factors to be rated using a three-point rating scale of important, neutral or not important based on the extent to which they influenced the respondent's choice of practice area.

### Data collection

Questionnaires were distributed to all eligible participants by the class representatives of the final year pharmacy students during class hours. Respondents were allowed between 24 - 48 hours to fill and return them to their class representatives, who then collated them and sent to the researchers.

### Data analysis

Data collected was coded and entered into a Microsoft Excel (2016) sheet and analyzed. Descriptive statistics (frequencies and percentages) were used to report the results obtained. For the statements in section C, respondents who 'agreed' and those who 'strongly agreed' were grouped together and reported as 'agreed', while those who 'strongly disagreed' and 'disagreed' were grouped together and reported as 'disagreed'.

average age being 24.2 years. The most common first choice courses of study selected by them were pharmacy (66.8%) and Medicine and Surgery (29.7%). All of them had undergone the Student Industrial Work Experience Scheme (SIWES) attachment at least once, with most of them completing their attachments either in hospital or community pharmacies. Many of them (77.4%) also reported having participated in some sort of career guidance program which included orientation programs organized by student groups etc.

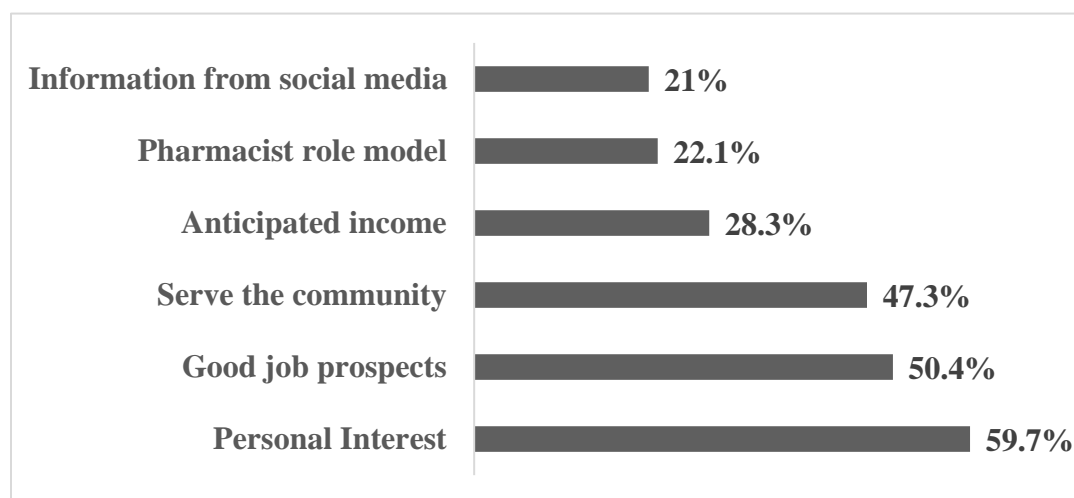
**Table 1: Demographic Characteristics of Study Participants (n = 226)**

Variables	n (%)
<b>Gender</b>	
Male	130 (57.5)
Female	96 (42.5)
<b>Age</b>	
20 and younger	8 (3.5)
21 – 25 years	165 (73)
26 – 30 years	51 (22.6)
Above 30 years	2 (0.9)
<b>Degree Program</b>	
Bachelor of Pharmacy (BPharm)	197 (88)
Doctor of Pharmacy (PharmD)	27 (12)
<b>University</b>	
Bayero University Kano	27 (12)
Gombe State University	35 (15.5)
Ahmadu Bello University, Zaria	60 (26.6)
University of Jos	50 (22)
University of Ilorin	29 (12.8)
University of Maiduguri	25 (11.1)
<b>Mode of entry into university</b>	
Unified Tertiary Matriculation Examination (UTME)	209 (92.5)
Direct entry	17 (7.5)

**Factors influencing choice of Pharmacy degree by respondents**

Some of the factors identified by respondents as influencing their choice of a pharmacy degree are illustrated in Figure 1. The most common factor influencing the choice of pharmacy degree by respondents was personal interest (59.7%), followed

by good job prospects (50.4%) and wanting to serve the community (47.3%). Other less popular factors included anticipated income (28.3%), having a pharmacist role model (22.1%) and information from social media (21%).



**Figure 1: Factors Influencing the Choice of a Pharmacy Degree by Respondents**

**Respondents’ attitudes and perceptions of the pharmacy profession and pharmacy practice areas.**

Generally, the respondents’ attitudes and perceptions of the pharmacy profession were positive as over half

of them agreed that they wanted a career in pharmacy, were proud to tell others that they were studying

pharmacy and were strongly committed to the values and ideals of the profession (Table 2).

**Table 2: Respondents Attitudes and Perceptions of the Pharmacy Profession**

Statement	Agreed	Neutral	Disagreed
I want a career in pharmacy	206 (91.2%)	19 (8.4%)	1 (0.4%)
I am proud to tell others that I am studying pharmacy	211 (93.4%)	14 (6.2%)	1 (0.4%)
Being a pharmacist is an important part of who I want to be	190 (84.1%)	31 (13.7%)	5 (2.2%)
If I could do it all again, I would choose to study pharmacy for the second time	137 (60.6%)	44 (19.5%)	45 (19.9%)
I am strongly committed to the values and ideals of the pharmacy profession	195 (86.4%)	26 (11.5%)	5 (2.1%)

Respondents' perceptions of various pharmacy practice areas are reported below in Table 3. Many of them perceived themselves having a fulfilling pharmacy career if they practiced within the community pharmacy setting (Table 3). Other practice areas selected frequently included public health (14.2%), hospital pharmacy (13.7%) and academia (12.0%). Community pharmacy was also the practice area that had the highest percentage of respondents

perceiving themselves as having a financially rewarding career (Table 3). Public health pharmacy and sales and marketing were also popular practice options. Almost half of respondents perceived themselves as working under pressure and having a heavy workload if they worked within the hospital pharmacy setting (Table 3). However, less than 10% of them had the same perceptions about community pharmacy practice.

**Table 3: Respondents Perceptions of Specific Pharmacy Practice Areas**

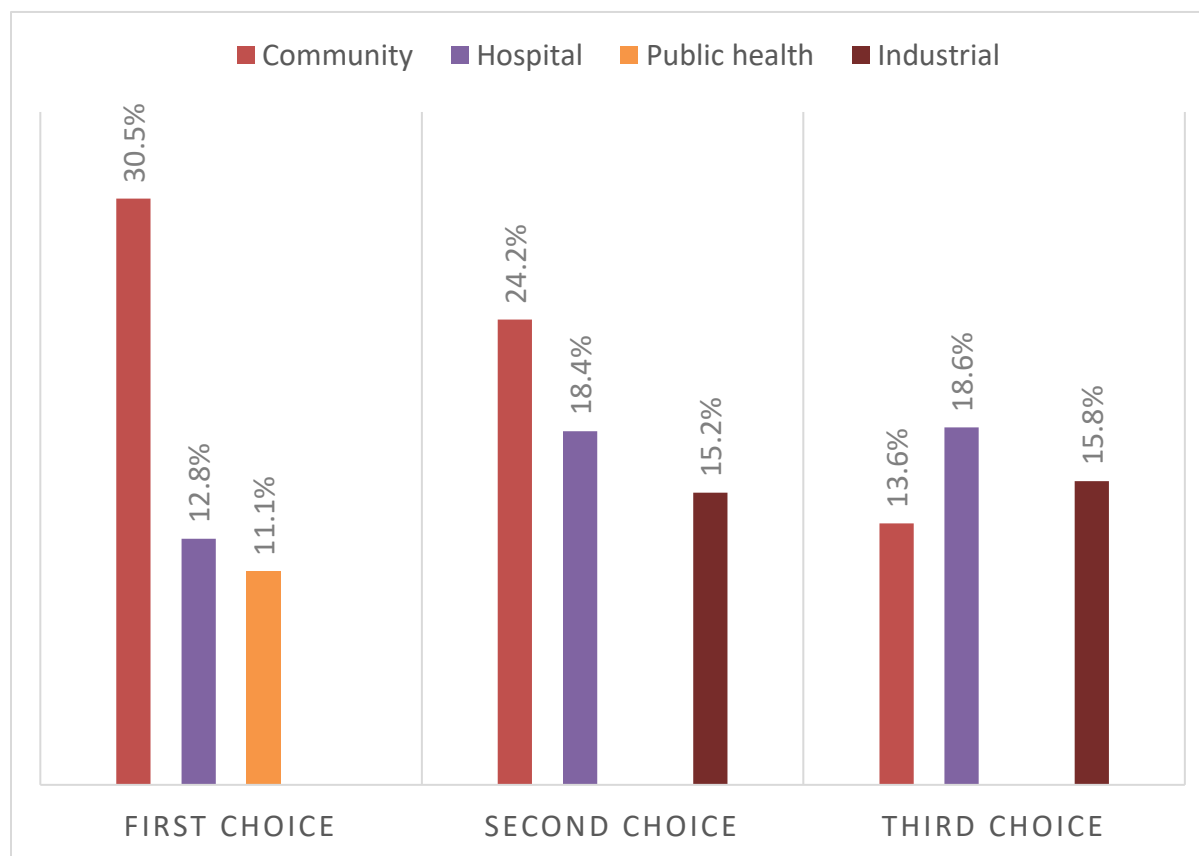
Statement	S&M (%)	CP (%)	HP (%)	Ac (%)	PHP (%)	RAP (%)	IP (%)	Res (%)
I see myself having a fulfilling pharmacy career if I work in .....		30.5	13.7	12	14.2	8.9		
I see myself having a financially rewarding career if I work in .....	12	32.7			12.8	8	21.2	
I see myself working under pressure and having a heavy workload if I work in .....	10.2	7.1	47.8	10.6			13.3	
I will have better opportunities for learning and development during my pharmacy career if I work in .....		17.3	7.1	41.6	8			15.5
A career in ..... will provide me with the best work schedule		28	9.3	28.9	11.1	8.4		
A career in ..... will provide me with the best work environment		33	10.7	12.5	11.6		11.6	
A career in ..... has the best job opportunities	11.6	20	13.3		18.2		9.3	
In the future, a career in ..... could have too many pharmacists	5.8	34.2	42.7	5.3			4	4

*S&M= Sales and Marketing, CP= Community pharmacy, HP= Hospital pharmacy, Ac= Academia, PHP= Public Health Pharmacy, RAP= Regulatory or Administrative pharmacy, IP= Industrial pharmacy and Res= Research. Please also note that only the top 5 practice areas with the highest responses were reported for each statement to enhance the readability of the table*

**Respondents’ preferences for specific pharmacy practice areas**

Generally, most of the respondents had some idea of the practice area(s) they would like to work in after graduation with only around 2.2% of them selecting “I don’t know” as their first-choice option. The top four popular career choices were community pharmacy, hospital pharmacy, public health pharmacy and industrial pharmacy (Figure 2).

Thirty-nine respondents also selected ‘non-pharmacy related area’ as one of their top three options. Their reasons for this are shown in Table 4. Majority of these respondents wanted to explore other areas (35.3%) and/ follow their other interests (30.9%).



**Figure 2: Respondents Top Three Choices of Pharmacy Practice Areas**

**Table 4: Reasons for choice of a non-pharmacy related career path by some respondents**

Reason	n (%)
I think that Pharmacy is a stressful profession	7 (10.3)
I want to earn a higher income	9 (13.2)
I want to follow my other interests	21 (30.9)
I want to explore other areas	24 (35.3)
I am just not interested in practicing pharmacy	4 (5.9)

**Factors affecting the students’ first choice career preferences**

Table 5 reports some of the factors perceived as important by respondents with respect to their first-choice career options. Majority of respondents that selected community pharmacy as their first choice highly rated factors including interaction with other

pharmacists working within the area (88.6%), opportunities for learning (87.1%), job security (84.2%) and their experiences during SIWES (82.8%).

For those that selected hospital pharmacy, factors like their experiences during SIWES and interaction with other pharmacists working in the area were very highly rated (Table 5), The highest rated factor influencing the choice of an industrial pharmacy

career by respondents was attractive salary (90%), while for respondents selecting a career in public health pharmacy it was career advancement opportunities (96%).

**Table 5: Factors Affecting Respondents’ Preferences for Their Selected Pharmacy Career Options**

Factor	Community Pharmacy (n = 70)	Hospital Pharmacy (n = 29)	Industrial Pharmacy (n = 20)	Public health pharmacy (n = 25)
University course content /course work relating to the practice area is interesting	44 (62.9%)	16 (55.2%)	16 (80%)	20 (80%)
Experiences during SIWES	58 (82.8%)	24 (82.8%)	13 (65%)	21 (84%)
Interactions with other pharmacists working within the area	62 (88.6%)	24 (82.8%)	14 (70%)	22 (88%)
Personal interest	52 (74.3%)	23 (79.3%)	16 (80%)	18 (72%)
Flexible work schedule	48 (68.6%)	20 (69%)	10 (50%)	17 (68%)
Attractive salary	54 (77.1%)	22 (75.9%)	18 (90%)	18 (72%)
Career advancement opportunities	53 (75.7%)	17 (58.7%)	16 (80%)	24 (96%)
Opportunities for learning	61 (87.1%)	22 (75.9%)	13 (65%)	22 (88%)
Job security	59 (84.2%)	23 (79.3%)	17 (85%)	18 (72%)
Having direct patient contact	54 (77.1%)	23 (79.3%)	8 (40%)	14 (56%)
Workload/ number of hours needed to work and other related issues	40 (58%)	18 (62.1%)	12 (60%)	13 (52%)

**DISCUSSION**

The objectives of this study were to identify pharmacy career preferences, assess overall perceptions of the pharmacy profession and specific practice areas as well as investigate factors influencing the career preferences of final year pharmacy students at selected universities in northern Nigeria. Results showed that the most common factors influencing respondents’ choice of a pharmacy degree were personal interest and good job prospects. Majority of them perceived that community pharmacy practice would provide them with the most financially rewarding career, best work environment and best job opportunities. Respondents’ top four career choices were community pharmacy, hospital pharmacy, public health pharmacy and industrial pharmacy. Majority of respondents that selected community pharmacy as their first choice highly rated factors like interaction with other pharmacists working within the area and job security as important in influencing their choice. Studying pharmacy was the first choice for almost 70% of this study’s’ respondents. Lower first choice

of pharmacy study rates have been reported in the literature, ranging from 15 – 50 % in studies conducted in Malaysia, Saudi Arabia, Pakistan, Sierra Leone and Ethiopia (Beedemariam *et al.*, 2014; Loo *et al.*, 2017; James *et al.*, 2018; Alshehri *et al.*, 2021; Sajjad *et al.*, 2021). Interestingly however, another study conducted in Nigeria by Isah *et al.* (2021) equally reported that pharmacy was the first-choice course for over 70% of their respondents, suggesting that there is good awareness of pharmacy as a choice for university study within our setting, and that it in fact a popular choice.

Factors influencing students to study pharmacy have been categorized in various ways according to the literature (Loo *et al.*, 2017; James *et al.*, 2018). James and colleagues (2018) divided these factors into three. The first category encompasses career/work related issues like prestige, salary and future job opportunities etc., while the second one centers around personal/ intrinsic issues like personal interest, a desire to serve the community etc. The final category covers

education related factors including good science background, role models etc. One or more factors from these categories have been reported as influencing choice of pharmacy by students all over the world (Hasan *et al.*, 2010; Shen *et al.*, 2014; Beedemariam *et al.*, 2014; James *et al.*, 2018; Al-Qudah *et al.*, 2019; Alshehri *et al.*, 2021; Isah *et al.*, 2021; Sajjad *et al.*, 2021). The most highly rated factors by respondents in this study largely fell within the first two groups (career/work related and intrinsic factors). Factors within these groups have equally been reported as some of the most highly ranked factors influencing the choice of a pharmacy degree in Malaysian students (Loo *et al.*, 2017).

Attitudes and perceptions of pharmacy students towards the profession have generally been reported to be positive. Just as in this study, several other studies (Beedemariam *et al.*, 2014; James *et al.*, 2018; Isah *et al.*, 2021; Sajjad *et al.*, 2021) all reported that majority of their respondents wanted a career in pharmacy, were proud to tell others that they were pharmacy students and were committed to the values of the profession. Similarly, although only one study (that we are aware of) has specifically assessed pharmacy students' satisfaction with their decision to study pharmacy (Shen *et al.*, 2014), the investigators also reported that most of their respondents were satisfied. Despite their positive attitudes however, findings from our study and others (Beedemariam *et al.*, 2014; James *et al.*, 2018; Isah *et al.*, 2021; Sajjad *et al.*, 2021) have also highlighted that many pharmacy students would not be willing to study pharmacy a second time.

As earlier mentioned, career options for pharmacists are now plentiful. Despite this, many pharmacy students all over the world still seem to retain preferences for more traditional pharmacist careers in the community, hospital or industry (Hasan *et al.*, 2010; El-Hammadi, 2013; Ubaka *et al.*, 2013; Shen *et al.*, 2014; Isah *et al.*, 2021). This trend can be seen in this work and has also been reported in several other studies. Notably our findings (i.e., that community and hospital pharmacy were the most popular career options) were almost identical to those from other studies conducted within the country (Ubaka *et al.*, 2013; Isah *et al.*, 2021), except for the fact that 'public

## CONCLUSION

In conclusion, study respondents highlighted personal interest, good job prospects and serving the community as the major motivating factors behind their choice of pharmacy as a course. Most of them also generally had positive overall perceptions of the profession and perceived that community pharmacy practice would provide them with the most fulfilling & financially rewarding career and best work environment & job opportunities. Their top four

health pharmacy' was also a somewhat popular choice in our study. This is particularly interesting considering that many of them thought that they would have a heavy workload as hospital pharmacists, and that both hospital and community pharmacy could have an oversupply of pharmacists in future.

Other than this study, a few studies conducted in the Middle East have also looked at pharmacy students' perceptions of specific practice areas (Alhomoud *et al.*, 2019; Jarab *et al.*, 2021). Majority of their respondents thought they would have fulfilling careers, opportunities for learning & growth and be well rewarded financially if they practiced either in hospital pharmacy settings and/ or academia. On the downside, they also believed that these areas would cause them to work under pressure and have a heavy workload. This clearly differed from results in this study, where most respondents perceived that they would find the most fulfillment and financial reward in community pharmacy practice, while opportunities for learning would mainly lie in academia. However, just like their colleagues, many of our respondents also agreed that hospital pharmacy would put them under pressure and give them a heavy workload.

Strengths of this study include the number of students surveyed, the fact that they were from more than one institution and their final or penultimate year status. Study limitations include our inability to rule out social desirability bias (a tendency for survey respondents to answer questions in a way that makes them look good) and the questionnaire retrieval rate (although it was over 50%). Overall, this study has provided additional data on several aspects relating to undergraduate pharmacy education and future pharmacy workforce patterns in the country. This information can be used by several stakeholders and help in identifying trends, workforce planning etc. However, further research still needs to be carried out to understand why many of our respondents were lukewarm about studying pharmacy a second time and why despite their misgivings about a future oversupply of pharmacists in both community and hospital practice, those career options were still very highly rated.

preferred pharmacy practice areas were community pharmacy, hospital pharmacy, industrial pharmacy and public health pharmacy with a wide range of factors influencing their choices of these areas. Structured career counselling to be conducted by trained counsellors or practice specific professionals' bodies is recommended for undergraduate students in faculties of pharmacy across the country.



## ETHICAL CONSIDERATIONS

Ethical approval was obtained from the Human Research Ethics Committee of Ahmadu Bello university; ABUCUHSR/2020/UG/007. No

information that could be used to identify respondents was collected, and all information collected was securely handled and used only for study purposes.

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Conflict of Interest: None declared

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