

Assessment of the Quality of Education Received by Undergraduate Pharmacy Students in Selected Universities in Nigeria

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ABSTRACT

Background: To assess the self-reported quality of education received by undergraduate pharmacy students and to explore factors influencing career choice. **Materials and Methods:** A pretested questionnaire was administered to a convenient sample of 2090 pharmacy students in their professional years from selected universities in Nigeria. Respondent's characteristics and responses were reported as simple proportions and percentages. **Results:** The response rate was 71%. Only 1028 (69.3%) originally intended to study pharmacy. The desire to provide health care services, 531 (51.7%) and parental pressure 178 (39.0%) were the major motivation for studying pharmacy. More than half, 827 (55.7%) strongly agreed or agreed that the pharmacy training adequately prepared them to practice effectively. However nearly half 740 (49.9%) felt that the pharmacy curriculum was overloaded. Community pharmacy was the most preferred practice area 372 (26.5%) followed by hospital pharmacy practice. **Conclusion:** Majority of the students considered the quality of undergraduate pharmacy education to be adequate although unnecessarily overloaded. The desire to provide health care services and parental influence were the greatest motivational factors for studying pharmacy. The most preferred area of practice was community pharmacy.

Keywords: Undergraduate students, Pharmacy education, Career choices, Nigeria.

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INTRODUCTION

Pharmacy education has traditionally focused on core knowledge of the pharmaceutical sciences with emphasis on practice based skills.¹ However, significant changes in education and training have taken place in recent years reflecting the evolution of pharmacy from a drug centered to a patient centered profession.² Graduates of pharmacy schools are thus equipped to provide patient centered care that ensures optimal medication therapy outcomes and develop a skill set that equips them to support the contemporary role of the pharmacist.

Whether or not the pharmacy workforce is able to continuously meet the needs and expectation of the society depends to a large extent on quality and timeliness of the pharmacy curriculum. Since curriculum development is a dynamic process, educational institutions should undertake a review of the pharmacy curriculum from time to time in order to meet current trends

in pharmacy practice. This exercise should be based on feedback from students, identified gaps in the training, and expert opinion so as to evolve educational outcomes that can meet the continually changing and evolving medicine-related needs of the society.

Several studies have been done on the development of pharmacy education and pharmacy practice in some parts of the world including Malaysia,^{3,4} Pakistan,⁵ Jordan⁶ and Sudan.⁷ As with most countries where pharmaceutical care is in its early stage of development, a common deficiency noted in the pharmacy curriculum of the aforementioned countries is a lack of clinical training.⁸ The situation in Nigeria is not so clear as there is a dearth of studies on this subject matter. Generally, curriculum development and review has always taken a one-sided approach driven by experts without consideration for the needs and opinions of the primary recipients. The consequence has been production of graduates with little or no interest in practicing disciplines for which they were trained, a sizable number of such graduates opting for careers outside their primary area of training. One study found that the proportion of graduates that currently take up jobs in their field of study was just 46%.⁹

Recently the National University Commission (NUC) Nigeria, undertook curricular adjustments aimed at adding 30% local



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content based on peculiarities of the university environment to the 70%.¹⁰

Although this is intended to enrich students learning experience, the purpose might be defeated if students feel that the curriculum is unnecessarily overloaded. It is therefore important to get the opinion of students regarding the quality, appropriateness and adequacy of the curriculum content and the motivation for choosing particular disciplines. Getting the opinion of students themselves could help curriculum developers adopt strategies that would ensure that the majority of graduates practice professions for which they were trained after graduation.

The objective of the study was to assess the self-reported quality of education received by undergraduate pharmacy students and explore factors influencing career initiation.

MATERIALS AND METHODS

Study design

This was a descriptive cross-sectional survey of pharmacy students in their professional years (200 level to final year).

Study setting

This study was undertaken at the Faculties of Pharmacy in selected institutions in Nigeria. Seven institutions were randomly selected from different geopolitical zones in the country. The selected institutions were: University of Lagos (UNILAG), University of Benin (UNIBEN), University of Port Harcourt (UNIPORT), Niger Delta University (NDU), University of Jos (UNIJOS), Nnamdi Azikiwe University (NAU) and Delta State University (DELSU).

Study Population

The study population comprised of undergraduate pharmacy students who were in their professional years (i.e., 2nd to 5th for a bachelor of pharmacy degree and 2nd to 6th year for a doctor of pharmacy degree).

Sample size determination / sampling technique

The total number of pharmacy students in the professional years was obtained for each faculty. The total population of students in each school was as follows: NAU (352), UNIPORT (342), NDU (235), DELSU (219), UNILAG (337), UNIBEN (304) and UNIJOS (301) giving a total population of 2090 students. A census of all 2090 students was carried out because of the small number of students per faculty.

Data collection

A convenient sampling method was used for this study. A structured pre-tested questionnaire was administered to all 2090 students over a period of four months. Questionnaires

were administered during break periods in between lectures. In order to ensure maximum participation, class representatives and representatives of the student's body were used to distribute the questionnaire. Repeated contacts were made with the focal persons until a reasonable number of questionnaires were retrieved. The questionnaire consisted of three sections. Section A comprised of students' socio demographic data. Section B explored student's opinion of quality of pharmacy education while section C addressed post-graduation practice preferences. Self-reported adequacy of education received by undergraduate was expressed on a 5-item scale ranging from 1 (strongly disagree) to 5 (strongly agree) with a midpoint of 3.

Data analysis

Data was entered into Microsoft excel and imported into SPSS version 21. Responses were expressed as frequency and percentages. Responses on a Likert scale were scored as strongly agree (5), Agree (4), Neutral (3), Disagree (2), strongly disagree (1).

Ethical approval

Institutional approval was obtained from Deans of the various faculties of pharmacy. A written informed consent was obtained from each student participating in the study after the purpose of the study was explained to them. Participation in the study was voluntary and the identity of each student was anonymous.

RESULTS

Of the 2090 questionnaires administered 1484 were retrieved giving a response rate of 71%. The modal age group was 21-25 years. There were more females than males 784 (52.8%). The majority were single 1452 (97.8%) (Table 1).

Only 1028 (69.3%) had pharmacy as their dream course. The major motivation for studying pharmacy was the desire to provide health care services, 531 (51.7%). More than half, 827 (55.7%) strongly agreed or agreed that the pharmacy training adequately prepared them to practice effectively post-graduation (Table 2).

Of the 456 (30.7%) who did not set out to study pharmacy, parental pressure was the most common reason for taking up the course 178 (39.0%), Figure 1. Almost half 740 (49.9%) felt that the pharmacy curriculum was overloaded while 552 (37.2%) considered the curriculum to be just adequate (Figure 2).

One hundred (6.7%) did not intend to practice pharmacy after graduation while 684 (46%) indicated a preference for practicing abroad. Community pharmacy was the preferred practice area, 372 (26.5%) followed by Industrial pharmacy 267 (19%) and then hospital practice 261 (18.6%). Only 82 (5.8%) were willing to be involved in public health after graduation, (Table 3).

DISCUSSION

There have been strident calls by various pharmacy stakeholders for colleges of pharmacy to make curricular changes that will equip pharmacy graduates with skills needed to deliver safe and effective medicines and support the pharmaceutical care model which is the major tool by which the pharmacy profession aspires to meet expectations of the society today.^{8,11,12}

Pharmacy education in Nigeria is currently facing a number of challenges such as inadequate number of training facilities,

shortage of qualified academic manpower, inter professional rivalry, slow implementation of the Doctor of Pharmacy (Pharm.D) programme, and disparities within the pharmacy profession among others.¹³ In order to advance pharmacy education in developing countries, these challenges must be addressed. The present study is an attempt to explore gaps in pharmacy curriculum from the perspective of undergraduate students of Nigerian universities and to identify correlates that could affect the choice of pharmacy as a career by prospective students.

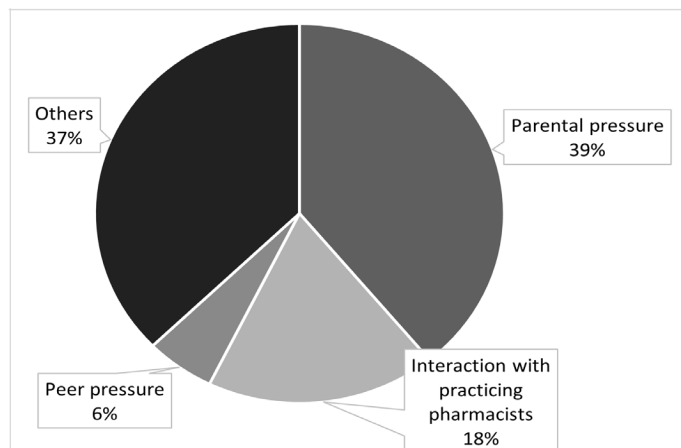


Figure 1: Motivation for studying pharmacy.

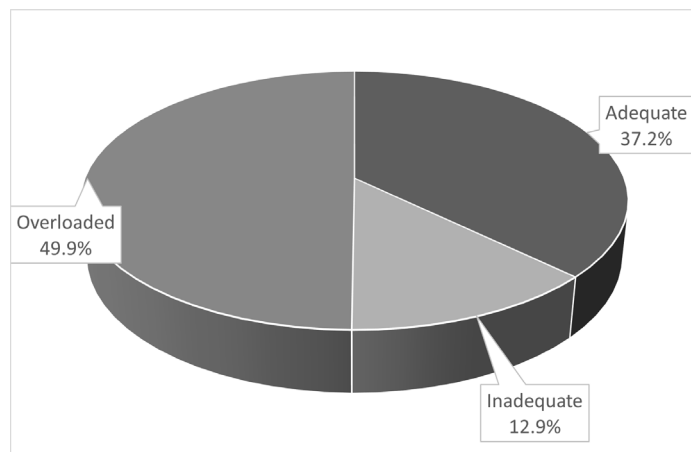


Figure 2: Perception of students about the pharmacy curriculum.

Table 1: Socio-demographics of Respondents n=1484.

Characteristics	Institutions N (%)							TOTAL
	NAU	UNIPORT	NDU	DELSU	UNILAG	UNIBEN	UNIJOS	
Age (yrs.)								
16-20	49(28.7)	33(13.6)	18(14.4)	33(16.6)	88(39.6)	66(25.0)	22(8.4)	309(20.8)
21-25	106(62.0)	171(70.7)	79(63.2)	139(69.8)	123(55.4)	174(65.9)	149(57.1)	941(63.4)
26-30	9(5.3)	33(13.6)	21(16.8)	26(13.1)	9(4.1)	20(7.6)	81(31.0)	199(13.4)
31-35	6(3.5)	1(0.4)	7(5.6)	1(0.5)	2(0.9)	4(1.5)	7(2.7)	28(1.9)
35 and above	1(0.6)	4(1.7)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	2(0.8)	7(0.5)
Sex								
Male	72(42.1)	107(44.2)	76(60.8)	74(37.2)	65(29.3)	145(54.9)	161(61.7)	700(47.2)
Female	99(57.9)	135(55.8)	49(39.2)	125(62.8)	157(70.7)	119(45.1)	100(38.3)	784(52.8)
Marital Status								
Married	5(2.9)	2(0.8)	3(2.4)	4(2.0)	4(1.8)	6(2.3)	8(3.1)	32(2.2)
Single	166(97.1)	240(99.2)	122(97.6)	195(98.0)	218(98.2)	258(97.7)	253(96.9)	1452(97.8)
Level of Study								
200 level	99(57.9)	14(5.8)	25(20.0)	44(22.5)	46(20.7)	73(27.7)	17(6.5)	318(21.4)
300 level	36(21.1)	55(22.7)	51(40.8)	54(27.3)	39(17.6)	48(18.2)	41(15.7)	324(21.8)
400 level	10(5.8)	119(49.2)	17(13.6)	49(24.7)	73(32.9)	111(42.0)	93(35.6)	472(31.8)
500 level	26(15.2)	54(22.3)	32(25.6)	51(25.8)	64(28.8)	4(1.5)	109(41.8)	340(22.9)
600 level	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	28(10.6)	1(0.4)	29(2.0)

UNILAG: University of Lagos; NDU: Niger Delta University; DELSU: Delta State University; UNIBEN: University of Benin; UNIPORT: University of Port Harcourt; NAU: Nnamdi Azikiwe University; UNIJOS: University of Jos.

Table 2: Respondents' opinion on quality of education received. n=1484.

Item	f (%)
Is Pharmacy your dream course?	
No	456 (30.7)
Yes	1028(69.3)
Total	1484(100)
Motivation to study pharmacy (if dream course)	
Good employment prospects	219 (21.3)
Desire to provide health care services	531(51.7)
Desire to develop new medicine	243(23.6)
Reputation of the profession	34(3.3)
Others	1(0.1)
Total	1028
Whether the curriculum is encouraging to prospective students	
Yes	516(34.8)
No	526(35.4)
Not sure	277(18.7)
No idea	165(11.1)
Total	1484(100)
Education received by undergraduate is enough for effective practice	
Strongly agree	247(16.6)
Agree	580(39.1)
Neutral	299(20.1)
Disagree	304(20.5)
Strongly disagree	54(3.6)
Total	1484(100)
Overall perception of the undergraduate pharmacy education	
Very good	266(17.9)
Good	740(49.9)
Fair	455(30.6)
No idea	23(1.5)

The 21-25 years age predominance and the skew towards female gender in the population of pharmacy students observed in this study is a common feature in colleges of pharmacy.⁵

The major factors motivating students to study pharmacy were the desire to provide health care services and to develop new medicines. This agrees with the finding in a study conducted in Saudi Arabia which showed that the desire to work in healthcare field, career opportunities, and job security were the major factors that influenced students' decision to study pharmacy.⁵

Table 3: Post-graduation practice preferences n=1484.

Item	f (%)
Would you like to practice Pharmacy after graduation?	
Yes	1384(93.3)
No	100(6.7)
Total	1484(100)
Choice of practice location	
Nigeria	800(54.0)
Abroad	684(46.0)
Total	1484 (100)
If not practicing, what other plans do you have after graduation	
Post graduate in Nigeria	10(10.0)
Postgraduate abroad	50(50.0)
Non-Pharmacy job in Nigeria	27(27.0)
Others	13(13.0)
Total	100(100)
Do you think practicing pharmacists are fulfilled?	
Yes	1116(75.2)
No	368(24.8)
Most preferred area of practice in Pharmacy	
Hospital Pharmacy	261(18.6)
Community Pharmacy	372(26.5)
Administrative Pharmacy	122(8.7)
Academic Pharmacy	135(9.6)
Industrial Pharmacy	267(19.0)
Public Health	82(5.8)
Research and development	156(11.1)
Pharmacy Journalism	11(0.8)
Total	1406(100)
In your opinion, which is the most lucrative area of pharmacy practice?	
Hospital Pharmacy	90(6.1)
Community Pharmacy	704(47.4)
Administrative Pharmacy	54(3.6)
Academic Pharmacy	46(3.1)
Industrial Pharmacy	407(27.4)
Public Health	44(3.0)
Research and development	139(9.4)
Total	1484(100)

More than a quarter of respondents did not originally intend to study pharmacy. This may negatively affect their desire to practice after graduation and may indicate a need for professional

pharmacy bodies to actively enlighten young persons about the potentials and prospects of pharmacy profession.

Parental influence was the biggest motivating factor for respondents who did not see pharmacy as their dream course. Other factors include peer influence and interaction with a practicing pharmacist. This finding agrees with several previous studies. A study in Jordan reports 79% of students were encouraged by their families to study pharmacy.¹⁴ Another study reports that 66% of respondents were encouraged by their families to enter for the Pharm D programme.⁵ It has been shown that family members, friends, teachers or relatives can exert a significant influence on career initiation in developing countries.¹⁵ This is in contrast to a UK study that showed that self-interest was the major motivation for studying pharmacy.¹⁶ To this end, it may be vital for practicing pharmacists in developing countries to reach out to young persons in order to navigate them towards choosing pharmacy as a career.

Although majority of the respondents indicated that they would like to practice pharmacy after graduation, a quarter of the respondents indicated otherwise. This negative attitude towards practicing pharmacy may cause such persons to seek non-pharmacy jobs after graduation. A study conducted in Malaysia revealed that some pharmacy graduates choose more financially rewarding non-pharmacy careers.³ These careers include telecommunication, financial consultancy, politics etc. This observation is corroborated by a study carried out in Pakistan which showed that more than half of the pharmacy graduates preferred non-pharmacy jobs.⁴

In this study, nearly half of the respondents indicated interest to practice outside Nigeria. This is not surprising given the exodus of professionals, including pharmacists, from their native countries that have been witnessed in recent years. Emigration is usually driven by unfavorable conditions in many developing countries such as poor salaries, unstable governments, impoverished health facilities and few job opportunities, low level of development and frustration of practice environment.^{17,18} A study conducted among South African nurses also showed that factors such as poor remuneration, poor working conditions, and defective organizational climate were the main contributing factors to job dissatisfaction and migration to other countries.¹⁹

The opinion of pharmacy students regarding adequacy of pharmacy education was mixed with an equal proportion of respondents having differing opinions. Even though opinion regarding adequacy differed, almost three quarters of pharmacy students felt that the pharmacy education received was good enough to motivate pharmacy students to practice pharmacy after graduation.

More than half of the respondents did not see the curriculum content as encouraging to new entrants and nearly half of the respondents felt the curriculum was overloaded. A similar study

which assessed the adequacy of curriculum content among academic pharmacists in Pakistan concluded that the curriculum was not comprehensive enough hence the authors suggested that practical applied knowledge be included in curriculum.²⁰ These observations emphasize the need for regular curriculum review since the pharmacy profession is dynamic and ever evolving.

The overwhelming desire of pharmacy students to provide health care services is reflected in the fact that community pharmacy was the most preferred area of practice by pharmacy students followed by hospital practice. This preference is reflected in the demographics of practicing pharmacists in Nigeria and other countries.^{21,22} Other studies have similarly shown a preference for community pharmacy practice. For example, in a study conducted in Ireland, community pharmacy was the most preferred area of pharmacy practice (99.8%) while hospital pharmacy practice accounted for only 23.4% and less than 6% worked in the industry.²³ In another study carried out in Pakistan, clinical pharmacy was preferred by only 24.6% and hospital pharmacy 15%.⁴ Contrary to our findings however, a study in Jordan found that the order of practice preference was hospital pharmacy (82.8%), academic pharmacy (37.5%) and research pharmacy (37%) while only 18.7% preferred to practice as community pharmacists.¹⁴ This may reflect a difference in market demand between the two countries.

The low level of preference for pharmacy journalism might be due to the fact that this aspect of pharmacy practice is new and may require further training in order for pharmacists to develop appropriate skills in the practice of journalism.

Only a small proportion of the respondents indicated interest in Academic pharmacy. A low desire to pursue a career in the academia is corroborated by a study conducted in Malaysia which reported a value range of 2-5.6% for practitioners in public and private universities.³

The willingness of pharmacy students to practice the profession was overwhelming as more than 90% of respondents indicated interest to practice after graduation.

The novelty of this work lies in the fact that unlike the conventional approach where curricular adjustments are made by a panel of experts, curriculum adequacy is explored from the point of view of the students themselves.

The study reveals a need for pharmacy curriculum planners to streamline the content by eliminating courses that may not be contributing to skill set required for contemporary pharmacy practice.

The industry was the second most preferred work setting. Therefore, emphasis on development of clinical skills for pharmaceutical care should not totally eclipse the teaching of core pharmacy courses that prepare students to function effectively in the production and industrial setting. This is especially important

for developing countries that rely on imports for Active Pharmaceutical Ingredients (APIs) and other raw materials.

Parental influence is a strong motivating factor for career choice. Pharmacy regulatory bodies may need to interface with parents and children in high school to ensure that students who study pharmacy are properly motivated. This would help avoid future potential workforce shortages and crises that could arise from preference of graduates of pharmacy for careers outside the profession.

CONCLUSION

More than half of respondents considered the pharmacy curriculum adequate although nearly half were of the opinion that the curriculum was overloaded. This perception has serious implications for student enrollment and pharmacy workforce in the future as it could discourage prospective students from choosing to study pharmacy. This also emphasizes the need for regular curriculum review by institutions so as to reduce unnecessary workload and streamline the courses in line with skill sets required in contemporary pharmacy practice.

More than one quarter of the respondents would not have studied pharmacy but for parental pressure. Practicing pharmacists and national pharmacy organizations should actively enlighten high school students and young persons about the potentials and prospects of pharmacy profession so they can be motivated to take up a career in pharmacy.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

UNILAG: University of Lagos; **UNIBEN:** University of Benin; **UNIPORT:** University of Port Harcourt; **NDU:** Niger Delta University; **UNI JOS:** University of Jos; **NAU:** Nnamdi Azikiwe University; **DELSU:** Delta State University; **PharmD:** Doctor of Pharmacy.

SUMMARY

Parental influence was a major motivation for studying pharmacy in this setting. Nearly 10% of respondents did not intend to practice pharmacy after graduation. This, coupled with the observation that the pharmacy curriculum is unnecessarily overloaded emphasizes the need for regular curriculum review. It also has serious implications for student enrollment and pharmacy

workforce in the future. Community pharmacy practice was most preferred area of practice. Other areas of pharmacy practice need to be made more attractive in order to have a balanced practice mix among future pharmacy workforce.

RECOMMENDATIONS

There should be regular curriculum review to reduce unnecessary workload and streamline the courses in line with skill sets required in contemporary pharmacy practice. National pharmacy bodies and organizations should showcase the potential and prospects of the profession to high school students so they can be motivated to take up a career in pharmacy.

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