



Financing undergraduate pharmacy training

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Abstract

Introduction: Out-of-pocket costs of education have increased for individual households with increased educational cost. The study determined how undergraduate pharmacy students finance their education, identified the proportion of students on scholarship and evaluated the socioeconomic characteristics of sponsors and the students.

Methods: The study was a cross-sectional survey of pharmacy students in nineteen accredited schools in Nigeria. The sample size was obtained by stratified random sampling method. Pretested questionnaires were used to collect data which were summarized with appropriate statistics tested at $p < 0.05$.

Results: The results show that most students both public ($n = 1040$, 88.1%) and private ($n = 180$, 88.2%) universities were sponsored by their parents. The combined income of parents of respondents in private universities was significantly higher ($\chi^2 (16, N = 1385) = 70.141, p < .001$) than respondents from public universities. Few students were on scholarship in both the public ($n = 12$, 1.0%) and private ($n = 5$, 2.5%) universities.

Conclusion: With limited sponsoring opportunities, undergraduate pharmacy training is majorly financed by parents across public and private universities.

Keywords: education, financing, pharmacy, sponsorship, training

Introduction

First-class health services, modern technology, increase in employments, and enhanced educational institutions, as seen in industrialized countries, are all benefits of a good education system and its stakeholders [1]. It is no news that these advancements have changed the game. Jobs that were high paying- for example, working in coal mines or a local factory- a few decades ago are no longer available or have been replaced with innovative technology making having a degree beyond high school a necessity to be able to keep up with the pace of advancements [2]. This has made a vast majority of parents keen on sending their children to college. As a result, the costs of education have increased with demand and financing it a major problem with poor families which find it difficult to keep up with the rise in education cost as federal and state budgets for education have not increased correspondingly [3, 4]. Cost required for education affects the decision to enroll into higher educational institutions to obtain a bachelor degree particularly for low and middle-class households [5].

A study by Inegbedion reported average cost of education to be N263,534.25 (\$725) [6]. Using figures from minimum wage obtainable and expenditure of individual households, the living wage for individuals in Nigeria is about ₦41,800 - ₦43,200 (\$115 - \$119) and minimum wage for families to be between ₦135,300 - ₦137,600 (\$372 - \$379) per month (Dollar exchange rate being \$363.5 to 1 Naira) [7]. If the cost of education of their wards, is deducted from their wages, low-income earners might have a problem covering other costs in their families. As a result, out-of-pocket costs for education have increased.

Cain *et al.* deduced that the increase in cost of education is a multifaceted problem and has caused concerns among stakeholders including the students and their sponsors [8]. Mattingly identified that the rate of increase of student costs in most pharmacy schools is rapid and might lead to a decrease in demand for pharmacy education if nothing is done [9]. Mattingly and Ulbrich also identified tuition and accommodation costs as costs if reduced, would reduce the overall cost of education [10].

Costs to earn a university degree include both out-of-pocket costs and institutional costs. However, the focus of this study is sponsorship of the private cost of education. The rising costs of pharmacy training in recent times has become a source of concern. For instance, there has been notable rise in tuition fees in many countries. In the United States of America, students' costs have steadily increased in majority of the schools of pharmacy at a rate faster than inflation, since 2004 [11]. For a lot of students, there is the need to pay for their tuition and living costs

which can be obtained from student loans, parents/guardians, scholarship among others ^[12]. Costs incurred in education comes from allowances provided by parents and from part-time or full-time jobs taken by students, as well as gifted money on occasions such as birthdays and festive celebrations ^[13]. How students manage money could be affected by how much money they receive. Even though funds from loans obtained by students are expected to be sufficient, students have indicated that they have difficulty in managing the funds available due to increased cost of living as well as unplanned spending ^[12].

The cost burden weighs heavily on students who are mostly reliant on loans, leading to a substantial increase in the interest on students' loans ^[8]. The Federal Reserve System in the US reported that the student loan debt had more than tripled between 2006 and 2019 ^[14]. Emmons and Ricketts reported the damaging effect of accumulated loan to standards of living of households ^[15]. Murphy and Wyness, in their study, evaluated the various means by which education could be financed with a special focus on Britain's higher education system ^[16]. The study identified two main components such as fees and student loans which were used in Great Britain to cover the expenses peculiar to getting advanced education. The major sources of finance for higher education in India according to Tilak include the funds received from self-government agencies, government grants, scholarships, tuition fees, educational fees and donations etc ^[17]. Student loans and scholarship opportunities are not readily available in Nigeria, therefore, the burden for education becomes a private responsibility of the students and their sponsors.

If nothing is done about the rising tuition fees in the country, it could lead to a shortfall in enrollment of students in pharmacy institutions and this could have a deleterious effect on meeting the pharmaceutical needs of the population ^[18]. To institute funding opportunities for prospective students, funding bodies may be interested in having sponsorship information about the student. This will contribute to the growth in the academic system, lead to a reduction of the health burden on the country and also reduce the pharmacy to population ratio within the country ^[19].

No study has explored financing of undergraduate pharmacy education, sponsorship of pharmacy students and the combined income of sponsors of students in private and public universities in Nigeria and in the African sub-region. This study provides baseline information that would be useful for subsequent studies on these issues. Therefore, the study sought to determine how undergraduate pharmacy students in Nigeria, finance their education, identify the proportion of students on scholarship and evaluate the socioeconomic characteristics of sponsors and the students.

Methods

Study Design and Study Setting

The study was a cross-sectional survey of pharmacy students in Nigeria. The study covered the six geopolitical zones in Nigeria which are North Central, North East, North West, South East, South South and South West. The study was carried out in nineteen of the twenty accredited schools of pharmacy as of the time the study was conducted. Two of the schools were private schools while the remaining seventeen were public schools.

Population and Sampling

The population of this study comprised 11,847 pharmacy undergraduate students of 100-500 levels in 19 accredited schools of pharmacy in Nigeria. Both primary and secondary sources of data were employed for the study.

The numbers of pharmacy students were obtained from official records of the respective administrative offices in the universities. Confidentiality was maintained and students who were recruited in the study gave informed consent prior to participation. Stratified random sampling method was employed based on the levels of students and their schools. The Krejcie and Morgan formula for determining sample size from known population was used in the calculations ^[20]. At 95% confidence interval, the sample size calculated was 1360.

Questionnaire Design

A set of pre-tested semi-structured questionnaire was employed for this study. Content and face validity of the questionnaire was ascertained by the professional judgment of the relevant senior faculty members. The internal consistency of the questionnaire gave a Cronbach alpha value of 0.84. The structured questionnaire was designed using both open and close ended questions based on the research questions raised in the study. It comprised two sections with the first section designed to elicit information on the demographic characteristics of the respondents. The second section was designed with 10 items and elicited information on who was responsible for financing the undergraduate students' studies and the socioeconomic information of respondents and their sponsors. A pilot study was conducted with 100 students from the pharmacy schools in Southwest Nigeria to evaluate the feasibility of some crucial component(s) and key steps of the full-scale study. The resources available were assessed, also the possible problems associated with data management were corrected. The sample used for these were excluded from the main study.

Data Collection

The instrument was administered online across the different schools using google forms. The data were self-reported by the respondents. The data collection lasted about seven months and the total number of survey forms filled was 1385.

Data Analysis

Data were analyzed using descriptive statistics such as frequencies and percentages. Mann-Whitney U statistic was employed to determine if there was a significant difference in the combined income of parents between the respondents from private and public schools. Chi square was also employed to determine the significant difference in the level of association of the socioeconomic variables between the private and public schools.

Ethical Approval

This research protocol was approved by the Institute of Public Health, Osun State with number IPH/OAU/12/1214.

Results

Table 1 presents the results of the socio-demographic distribution characteristics of undergraduates. Across public and private universities respectively, the highest percentage of students were aged 20-25 years ($n= 737$; 62.4% (Public), $n= 116$; 56.9% (Private)) and most of the respondents were females ($n= 609$; 51.6%, $n= 125$; 61.3%). Also, most of the respondents stayed on campus.

Table 2 presents data on who sponsored the pharmacy undergraduate respondents' during their stay in pharmacy school. The results show that the highest percentage of students were sponsored by their parents across the public ($n= 1040$; 88.1%) and private ($n= 180$; 88.2%) universities. This is followed by sponsorship from other relations while sponsorship through scholarships had the least percentage ($n= 12$; 1.0%, $n= 5$; 2.5%). The Chi square test shows that there was no association in sponsorship across the two schools ($p= 0.364$). The table also shows that majority of the respondents' parents from private universities (56.8%) had their monthly combined income fall between ₦400,000 - ₦990,000 (\$1,375- \$2,734). However, most of the parents of respondents from the public universities (55.0%) had combined income earning not than ₦300,000 (\$825) as compared to their public university counterparts.

There was a significant association between the combined income of respondents' parents per annum in both school types. Respondents' sponsors from private schools had more combined income than their public-school counterparts ($\chi^2 (16, N = 1385) = 70.141, p < .001$). The Mann-Whitney U test (Table 4) was used to check if the difference between the two groups was significant and the results confirmed the significance ($p < .001$) of the higher combined income of parents of respondents in private universities (Mean Rank= 822.63) as compared to public universities (Mean Rank= 670.61).

Table 3 shows the family socioeconomic characteristics for undergraduate students. The results show that a higher percentage of the respondents' parents were graduates (62.9%, 68.6%) and were mostly business owners (26.9%, 30.9%) and civil servants (23.5%, 21.1%) across the public and private universities respectively.

The results of the χ^2 test of association between university type (private or public) and family socioeconomic characteristics revealed a significant association between university type and the level of qualification of respondents' sponsors ($\chi^2 (8, N = 1385) = 38.313, p < .001$) with more graduates from sponsors of respondents from private schools. The χ^2 test of association also showed significant association between occupation of sponsors in both school types ($\chi^2 (26, N = 1385) = 66.604, p < .001$) with more sponsors of respondents from private schools working higher paying jobs.

The socioeconomic characteristics of the students reveals that majority of the students do not have other sources of income for both public ($n= 887$; 75.1%) and private ($n= 163$; 79.9%) universities. For those that have other sources of income, most of them owned personal businesses, $n= 145$; 12.3%, $n= 27$, 13.2% for public and private universities respectively.

Table 1: Demographic Characteristics of Respondents across the Types of Schools (N = 1385)

Variables		Public		Private		Chi Square test
		N	%	N	%	
Age (Years)	Less than 20	335	28.4	70	34.3	0.017*
	20-25	737	62.4	116	56.9	
	26-30	95	8.0	13	6.4	
	Above 30	14	1.2	5	2.5	
		1181	100	204	100	
Gender	Female	609	51.6	125	61.3	0.034*
	Male	572	48.4	79	38.7	
		1181	100	204	100	
Religion	Christianity	910	77.1	192	94.1	$p < .001^{**}$
	Islam	270	22.9	11	5.4	
	Traditionalist	1	0.1	1	0.5	
		1181	100	204	100	
Level of Study	100	280	23.7	46	22.5	0.362*
	200	264	22.4	44	21.6	
	300	229	19.4	46	22.5	

	400	192	16.3	34	16.7	
	500	192	16.3	34	16.7	
	600	24	2.0	0	0	
		1181	100	204	100	
Place of Residence	Campus	615	52.1	204	100.0	$p < .001^{**}$
	Off campus	566	47.9	0	0	
		1181	100	204	100	

Table 2: Respondents' Sponsorship Characteristics across the Types of Schools (N = 1385)

Variables		Public		Private		Chi Square
		N	%	N	%	
Who is responsible for your sponsorship?	Guardian	47	4.0	6	2.9	0.364
	Parent	1040	88.1	180	88.2	
	Relations	54	4.6	11	5.4	
	Scholarship	12	1.0	5	2.5	
	Self	27	2.3	2	1.0	
	No response	1	.1	0	.0	
		1181	100	201	100	
Combined income of respondents' parents per month	Below ₦100,000	228	19.3	15	7.4	$p < .001^{**}$
	₦100,000 - ₦199,000	195	16.5	18	8.8	
	₦200,000 - ₦299,000	119	10.1	10	4.9	
	₦300,000 - ₦399,000	108	9.1	23	11.3	
	₦400,000 - ₦499,000	94	8.0	26	12.7	
	₦500,000 - ₦990,000	354	30.0	90	44.1	
	₦1,000,000 - ₦2,000,000	4	0.3	4	2.0	
	Above ₦2,000,000	5	0.4	1	0.5	
No response	73	6.2	17	8.3		
		1181	100	204	100	

Table 3: Respondents' Parent Characteristics across the Types of Schools (N = 1385)

Variables		University Type				
		Public		Private		
		Freq	%	Freq	%	
Level of education of Parents	Not literate	33	2.8	1	0.5	$p < .001^{**}$
	Graduate	743	62.9	140	68.6	
	Primary school leaving certificate	68	5.8	11	5.4	
	West African Examination Council Certificate	188	15.9	14	6.9	
	No Response	149	12.6	38	18.6	
		1181	100	204	100	
Occupation of Parents	Administration	8	0.7	2	1.0	$p < .001^{**}$
	Armed forces	7	0.6	1	0.5	
	Business/Artisan	318	26.9	63	30.9	
	Civil Defense	3	0.3	1	0.5	
	Civil Servant	277	23.5	43	21.1	
	Clergy	11	0.9	1	0.5	
	Health Services	90	7.6	18	8.8	
	Lecturing/Teaching	125	10.6	5	2.5	
	Politician	3	0.3	1	0.5	
	Private Sector	120	10.2	28	13.7	
	Retired	20	1.7	2	1.0	
	Student	6	0.5	3	1.5	
	Unemployed	3	0.3	0	0	
No Response	189	16.0	36	17.6		
		1181	100	204	100	

Significant at *P < 0.05, **P < 0.001

Table 4: Mann-Whitney U Test for Combined Income of Parents of Undergraduate Students across Public and Private Schools

	University Type	N	Mean Rank	Sum of Ranks
Combined Income of Respondents Parents per Month	Public	1181	670.61	791989.50
	Private	204	822.63	167815.50
	Total	1385		
Mann-Whitney U	94018.500			
Wilcoxon W	791989.500			
Z	-5.128			
Asymp. Sig. (2-tailed)	< 0.001**			

Significant at **P < 0.001

Discussion

The study sought to determine how undergraduate pharmacy students finance their studies and differences in socioeconomic characteristics of respondents and found that there were significant associations among the variables.

The fact that the highest percentage of students are sponsored by their parents across both public and private universities may be due to the limited scholarship opportunities available. Also, parents are keen in sending their children to the university because of the advantage it gives in securing a good job on graduation^[1]. The Sallie Mae report shows that parents have been a primary source of financial support for their wards' tertiary education^[21]. The Global Education Monitoring Report also showed that in most countries (particularly the low-income ones), parents are responsible for a larger percentage of educational costs of their children as they have no other choice in securing the future of their wards^[22].

Parents have long been a primary source of financial support for their children's post-secondary education with some estimates suggesting that parents cover over 35% of college costs. Based on a survey of college students and their parents in 2019, parents covered 40% of the cost of their child's college costs, second only to costs covered by scholarships and grants (35%)^[23]. Another explanation for the results obtained could be because culturally in Nigeria, parents take responsibility for their wards beyond 18 years until the child has a good job or is married, particularly for the females^[24].

Sponsorship by relatives, observed to be the next highest after sponsorship by parents, was supported by Sabri and Masud who asserted that most students get sponsorship from other sources either regularly or occasionally besides their parents and these include, siblings, relatives, and loans^[12]. Scholarships are not as popular in Nigeria as they are in some other countries as the result of this study suggests. There have been instances when the funds provided by the scholarships available have not been substantial enough to meet the student's basic need. It is suggested that further studies should be carried out to know what scholarship schemes are available, the amount attached and how many students benefit from them^[25].

The fact that there was a significant association in the level of qualification of the respondents' parents across the different schools follows the logic that earning power increases with increase in qualification^[26]. Sponsors working in the public and private sectors with 'graduate' qualifications are expected to earn more than other categories of qualifications, making them more capable than other categories in supporting their wards. This is illustrated in the result obtained in which the highest percentage of respondents surveyed across public and private universities who were sponsored by 'graduate parents' were from private universities (where the cost of education is highest). It is therefore not surprising that the highest percentage of respondents whose sponsors were not literate and those whose sponsors possessed only the West African Examination Council (WAEC) certificate were from public universities (since most public universities pay subsidized fees). It is clear that the level of qualification of the sponsor has an effect on the type of university attended by the student which is corroborated by previous report from Centre on Education and Workforce in Georgetown University which showed that earning power is directly tied to educational qualification^[27].

Again, the sponsor's occupation was found to be very significant across the schools. This explains why sponsors whose occupations were less lucrative such as sponsors who are civil servants had their wards mostly at the public universities than private universities. Businesses/artisans who probably earned more, could afford private university education for their wards. Sponsors who work in the private sector or with health-related disciplines also known to earn relatively more than those in public sector had their wards more at the private universities than public universities. The proportions of respondents across public and private universities whose sponsors were politicians are particularly low, despite the high income associated with political offices in Nigeria. This could be attributed to the fact that a good number of politicians in developing countries have a higher preference for foreign education than other categories of sponsors as was reported by the British Council Report with the influx of Nigerian students studying in Britain^[28].

Even though more respondents from public universities when compared with their counterparts from private universities, had other sources of income, the variation was not very wide. The reason most respondents from private universities might not have other sources of income could be because their sponsors provide all they needed or the private university system may not be business-friendly. The respondents that claimed to have other sources of income besides their primary source, owned businesses which they operated alongside their education. This is done to pay bills and support themselves through school and in some cases even their family members^[13]. Although this is very commendable, the work-load in pharmacy school is heavy and as such students find it

difficult to add a part-time job to it. Private universities may have had the highest proportion of students without a part-time job because students of private universities are mostly from wealthy homes.

Conclusion

The study concluded that undergraduate pharmacy training is majorly financed by parents across both private and public universities. Also, only a small proportion of the respondents across both private and public universities were on scholarship. The socioeconomic characteristics of respondents and sponsors varied across both types of school with parents of students from private universities earning more than parents of students in public universities. However, it may be more prudent for prospective pharmacy undergraduate students from low-income parents to aim for public universities.

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