

ASSESSMENT OF PHARMACY STUDENTS' WILLINGNESS TO PRACTICE AFTER GRADUATION

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ABSTRACT

Background: Emigration of pharmacists is a problem in many parts of sub-Saharan Africa.

Objectives: To identify if the tendency to emigrate (internal and external) is already determined during the undergraduate training.

Methods: A cross-sectional survey was conducted in the four faculties of pharmacy in Southwestern Nigeria. A sample of 200 to 400 Level students in the Faculty in Lagos was also surveyed. Pretested questionnaires with mainly Likert-type questions were administered to the target population.

Results: It was found that an average 70% of final year students surveyed expressed a willingness to practice after graduation (74%, 54%, 75% and 76% in Unilag, UI, OAU and OOU respectively) while 55.3% of the Junior Undergrads expressed a willingness to practice the profession, post graduation. The results also revealed that the final year respondents believe that pharmacists in practice are not fulfilled (79%, 55%, 73% and 71% in Unilag, UI, OAU and OOU respectively). 23.3% of the Junior Undergraduates also have this belief

Conclusion: It can be concluded from this study that pharmacy students are willing to practice the profession after graduation either within or outside the country. The study recommends motivation of pharmacists and review of the academic curriculum.

Keywords: Brain drain, Pharmacy Education, Pharmacy Practice, Human Capital Flight, Health care personnel

INTRODUCTION

Healthcare delivery is enhanced when there are sufficient numbers of skilled health professionals.¹ Without access to, and appropriate use of quality medicines, health systems lose their ability to meet health care needs. The pharmacy workforce crisis threatens the ability of many countries to deliver effective health care services.² Pharmacy is the health profession that links the health sciences with the chemical sciences and it is charged with ensuring the safe and effective use of pharmaceuticals.³

Pharmacy and Medicine share similar origins and developed together through the ages from a few millennia before Christ, up to a few centuries after his birth.⁴ Pharmacy is also defined as the profession of the art and science of preparing from natural and synthetic sources, suitable and convenient materials for distribution and use in the treatment and prevention of diseases in both man and animal.^{5,6} The scope of pharmacy practice includes more traditional roles such as compounding and

dispensing medications, and it also includes more modern services related to health care, including clinical services, reviewing medications for safety and efficacy, and providing drug information.^{7,8}

Pharmacists, therefore, are the experts on drug therapy and are the primary health professionals who optimize medication use to provide patients with positive health outcomes.⁹ With increasing demands by patients, especially in the face of complex range of chronic diseases and the attendant number of medicines and poor adherence to prescribed medicines resulted in pharmacists taking a more patient-centered approach.¹⁰ The introduction of pharmaceutical care by Hepler and Strand spearheaded this paradigm of practice.¹¹ Though, many pharmacy organizations and training programs around the world are promoting pharmaceutical care as a philosophy and standard of provision of care for patients, entrenchment of this standard has not been fully integrated into professional pharmacy practice in

Nigeria.^{12,13} The pharmaceutical care concept has transformed the profession to be more accountable in patient care, especially to ensure that a patient achieves positive outcomes from drug therapy.¹⁴ Besides their pivotal role in public health,¹⁵ pharmacists can also act as advisors to physicians and nurses and contribute to policy decisions.^{16,17}

The minimum standard set by the World Health Organization (WHO) to ensure delivery of basic healthcare services is 20 physicians and 100 nurses per 100,000 people.¹⁸ Due to the increasing demand for pharmacists in public health, WHO recommends a ratio of one pharmacist per 2000 population (50 pharmacists per 100,000 people) in order for optimal health care to be delivered.¹⁷ According to the 2010 WHO Health Statistics Report, Nigeria has 4 physicians, 16 nurses, less than 0.5 dentists and 1 pharmacist per 10,000 of the population¹⁹ thus only 10 pharmacists are available for 100,000 people which is well below the set minimum standard. This is partly due to the current high level of brain drain and emigration of pharmacists both within (to other fields outside of pharmacy e.g. telecommunication, banking) and outside the country (to developed countries).

Brain drain is defined as the loss of skilled intellectual and technical labor through the movement of such labor to more favorable geographic, economic, or professional environments²⁰ or the emigration of scientists, technologists, academics for better pay, equipment, or conditions.²¹ Brain drain, which is also referred to as human capital flight, is an emigration of trained and talented individuals to other nations or jurisdictions, due to conflict or lack of opportunity or health hazards where they are living.²²

The factors affecting movement of health personnel have been sub-divided into push and pull factors. Pull factors are factors in the recipient level of the health system or country that attract and facilitate the movement of health workers towards that level or country. Push factors are those that encourage health workers to leave their country or location of work. Push and pull factors interact with and relate to each other. A 1981 WHO study, for example, commented that 'no matter how strong the pull factors are of the recipient countries, migration only seems to result if there are also strong push factors from the donor country'.²³ Push and pull factors have also been sub-divided into those that are exogenous (outside the health system) and those that are endogenous (directly related to the

health system).²⁴ A second set of factors are 'stick' and 'stay' factors. 'Stick' factors consist of reasons that keep people where they are in spite of compelling push and pull factors to move or migrate.²⁴ 'Stay' factors are those that prevent a person from returning to their country or place of origin after they have migrated or moved away.²⁵

There is a variety of push and pull factors that impact on the movement of healthcare workers, arising both within and beyond the health system. Factors endogenous to the health care system are low remuneration levels, work associated risks including of diseases like HIV/AIDS and TB, inadequate human resource planning with consequent unrealistic workloads, poor infrastructure and sub-optimal conditions of work. Exogenous push factors are also noted, including political insecurity, crime, taxation levels, repressive political environments and falling service standards. Movement is also influenced by pull factors, including aggressive recruitment by recipient countries, improved quality of life, study and specialisation opportunities and improved pay.

These push and pull factors are mitigated by 'stick' factors in source countries, which lead to greater personnel retention, including family ties, psychological links with home, migration costs, language and other social and cultural factors. 'Stay' factors influence decisions to remain in recipient countries and influence rates of return of personnel. These include reluctance to disrupt family life and schooling, lack of employment opportunities in host country and a higher standard of living in the recipient country.²⁵

Emigration of healthcare professionals whatever the cause, particularly pharmacists (because of the small numbers of registered Pharmacists available) is a problem in many parts of sub-Saharan Africa and other developing countries. For example, in 2001, more pharmacists emigrated from South Africa (600) and Zimbabwe (60) than graduated (500 and 40).²⁶ Many pharmacy outlets have closed because of a scarcity of trained pharmacists and pharmacy technicians.²⁷ It is expected that after the completion of all requirements of undergraduate pharmacy education, mandatory internship and the compulsory National Youth Service, the graduate would proceed to practice in one of the practice areas in the profession, but this has not been the case in recent years. A combination of push and pull

factors is probably involved but it is also possible that the impact of workload, academic curriculum and the undergraduate training experience may also be implicated.

The purpose of this study was to identify if the tendency to emigrate (internal and external) is already determined during the undergraduate training years, through assessing respondents' views on willingness to practice the Pharmacy profession after graduation from the University.

METHODS

The Faculties of Pharmacy in the Southwest were chosen for this work because of the closeness of the four faculties to themselves to enable a capture of sufficient numbers of final year students. The target populations were final year students in the four faculties of pharmacy in Universities in South-West Nigeria (University of Lagos - UNILAG, University of Ibadan - UI, Obafemi Awolowo University - OAU and the Olabisi Onabanjo University - OOU). A sample of 200 to 400

level students in UNILAG was also surveyed. This survey is to serve as template for comparison over a time period. A cross-sectional survey was conducted in each faculty. Pretested questionnaires were administered to the target population. The questionnaire was divided into 4 sections namely demographic data (Section I), Perception of Undergraduate Training Received (Section II), After Graduation Opinion of Respondents (Section III), and Factors for Motivation (Section IV). The questionnaire used mainly Likert-scale type questions with a few close- and open- ended questions. The data obtained were analyzed using Microsoft Excel software for frequencies, percentages and Chi-square. Results were deemed to be significant at the 0.05 level.

RESULTS

227 final year students and 103 junior undergraduates (200 to 400 Levels) completed the questionnaires. Mean age range was 20-25 years and most of the respondents were female. For the Junior Undergraduate results, about 38 % were 400 level students, 68 % were of the 20 to 25 age range while 58 % are female, (Table 1).

Table 1: Demographics (Final Year Students)

FACULTY/ITEM	UNILAG % (N=43)	UI % (N=22)	OOU, SAGAMU % (N=103)	OAU, IFE % (N=60)	JUNIOR UNDERGRADUATES
LEVEL					
500	43	22	103	60	0
400	0	0	0	0	40
300	0	0	0	0	34
200	0	0	0	0	29
AGE (YEARS)					
<19	0	5	0	0	19
20-25	86	73	69	57	68
26-29	14	17	26	33	11
>30	0	5	5	10	2
GENDER					
MALE	23	36	49	38	42
FEMALE	77	64	51	62	58
MODE OF ENTRY					
JAMB EXAM	77	100	67	95	44
DIPLOMA	18	0	0	5	56
A LEVELS	5	0	0	0	0
PRE-DEGREE	0	0	33	0	0

In each school, about 60 % of them had plans to practice after school, whether within or outside the country and about 30 % were interested in postgraduate education, again within or outside the country, (Table 2). However, the difference in the proportions is not statistically significant. Over 50 % of final year students expressed a willingness to practice the profession after graduation

(74 %, 54 %, 75 % and 76 % in UNILAG, UI, OAU and OOU respectively). The difference in proportion on the results on willingness to practice after graduation was not significant at the 95% confidence interval. Most of the final year respondents opted for either industrial or community practice, and this difference is statistically significant, (Table 2).

Table 2: After-School Plans and Willingness of Final Year Students to Practice Pharmacy

FACULTY/ITEM	UNILAG % (N=43)	UI % (N=22)	OOU, SAGAMU % (N=103)	OAU, IFE % (N=60)	χ^2
After-school plans					
Practice after school	25	30	36	29	0.58
Practice outside Nigeria	23	27	22	30	
Post graduate abroad	34	33	26	29	
Post graduate in Nigeria	9	8	10	9	
Non pharmacy job in Nigeria	9	2	6	3	
Willingness to practice					
Yes	77	54	76	75	0.44
No	5	5	5	5	
Later on	18	41	19	20	
Proposed area of practice					
Hospital pharmacy	17	26	17	18	0.0006
Administrative pharmacy	9	14	10	10	
Community pharmacy	22	45	9	35	
Academic pharmacy	10	14	26	7	
Industrial pharmacy	40	9	35	30	
Public health	2	5	3	0	
Research and development	0	5	0	0	

The response above is against a background of their belief that the pharmacists currently practicing are not fulfilled, (Table 3). They also believed that community pharmacy is the most financially and professionally fulfilling practice area and this response is not statistically significant, (Table 3).

Table 3: Final Year Students Perceived Opinion of Pharmacy Practice

FACULTY/ITEM	UNILAG % (N=43)	UI % (N=22)	OOU, SAGAMU % (N=103)	OAU, IFE % (N=60)	χ^2
Pharmacists are fulfilled					
Yes	5	14	7	8	0.61
No	79	55	73	71	
I don't know	16	31	20	21	
Most financially lucrative area					
Hospital pharmacy	2	5	11	3	0.18
Administrative pharmacy	12	9	6	10	
Community pharmacy	47	50	62	67	
Academic pharmacy	2	5	3	3	
Industrial pharmacy	37	31	18	17	
Most professionally fulfilling area					
Hospital pharmacy	23	23	14	15	0.39
Administrative pharmacy	2	4	6	7	
Community pharmacy	58	27	54	52	
Academic pharmacy	5	23	15	12	
Industrial pharmacy	12	23	11	14	

Table 4 shows final year students responses on the results were statistically significant except in one undergraduate training received. The differences in the instance.

Table 4: Final Year Students Perceived Opinion of Undergraduate training

FACULTY/ITEM	UNILAG % (N=43)	UI % (N=22)	OOU, SAGAMU % (N=103)	OAU, IFE % (N=60)	X ²
Under graduate education received					
Overload	33	50	37	48	0.05
Sufficient	23	18	14	25	
Inadequate	14	14	16	17	
Just okay	30	18	33	10	
It is encouraging to university entrants					
Yes	21	27	13	14	0.035
No	49	41	41	40	
I don't think so	21	5	36	33	
No idea	4	27	10	13	
It is enough for effective practice					
Strongly Agree	9	14	8	8	0.24
Agree	47	23	25	32	
Neutral	16	14	25	22	
Disagree	18	26	34	30	
Strongly Disagree	10	23	8	8	
Overall under graduate pharmacy Education					
Very good	7	9	3	5	0.013
Good	42	41	38	43	
Fair	5	45	55	50	
No idea	0	5	4	2	

For the Junior Undergraduate responses, about 63 % expressed their plans as to practice pharmacy within or outside the country while another 28 % indicate postgraduate education in their plans, (Table 6). 55 % of

them expressed a willingness to practice post graduation with industrial pharmacy practice being the most favored area like the final year students, (Table 5).

Table 5: Junior Undergraduates After-School Plans and Willingness to Practice Pharmacy

ITEM	FREQUENCY	PERCENT % (N=146)	
After-School Plans			
Practice after school	60	41.1	
Practice outside Nigeria	32	21.9	
Post graduate abroad	25	17.1	
Post graduate in Nigeria	16	10.9	
Non pharmacy job in Nigeria	13	8.9	
ITEM (n=103)	YES	NO	LATER ON
Willingness to practice	55.3	19.4	25.2
Proposed area of practice	FREQUENCY	PERCENT % (N=93)	
Hospital pharmacy	16	17.2	
Administrative pharmacy	10	10.6	
Community pharmacy	18	19.4	
Academic pharmacy	10	10.6	
Industrial pharmacy	39	41.9	
Public health	0	0.0	
Research and development	0	0.0	

Almost 50 % of Junior Undergraduates believed that pharmacists in practice were not fulfilled, (Table 6). Like the final year students, community practice was chosen as the most financially and professionally fulfilling practice area, with academic pharmacy being chosen as

the number two most professionally fulfilling practice area unlike the final year students, (Table 6).

Table 7 gives the junior undergraduates' perception of the education they receive.

Table 6: Junior Undergraduates Perceived Opinion of Pharmacy Practice

ITEM (n=103)	YES (%)	NO (%)	DONT KNOW (%)
Pharmacists are fulfilled	23.3	45.6	31.1
Most financially lucrative area	FREQUENCY	PERCENT % (N=103)	
Hospital pharmacy	11	10.7	
Administrative pharmacy	18	17.5	
Community pharmacy	33	32.0	
Academic pharmacy	10	9.8	
Industrial pharmacy	31	30.1	
Most professionally fulfilling area	FREQUENCY	PERCENT % (N=103)	
Hospital pharmacy	25	24.3	
Administrative pharmacy	10	9.8	
Community pharmacy	26	25.2	
Academic pharmacy	23	22.3	
Industrial pharmacy	19	18.4	

Table 7: Junior Undergraduates Perceived Opinion of Undergraduate Training

ITEMS	PERCENT % (N=103)
Under graduate education received	
Overload	52.4
Sufficient	30.1
Inadequate	5.8
Just okay	11.7
It is encouraging to university entrants	
Strongly Agree	8.7
Agree	38.8
Neutral	33.9
Disagree	11.7
Strongly Disagree	6.8
It is enough for effective practice	
Yes	27.2
No	43.7
I dont think so	25.2
No idea	3.9
Overall under graduate pharmacy education	
Very good	14.6
Good	44.7
Fair	34.9
No idea	1.9

DISCUSSION

Human capital flight or brain drain of health professionals like physicians, pharmacists, dentists, from developing to more developed countries, is widely recognized as a serious barrier to the delivery of effective health care.^{2,28} In Ghana, for example, more than 60 % of a cohort of doctors graduating between 1986 and 1995 had left the country within 10 years of graduation.²⁹ This survey indicates that there is no correlation between internal brain drain (i.e. a move from pharmacy to other fields outside of pharmacy within the country e.g. telecommunication, banking) and the undergraduate training experience as most of the respondents (both the final year students and the Junior Undergraduates) expressed their willingness to practice or pursue postgraduate pharmacy education after graduation. Though they acknowledged that there are problems within the curriculum and practice, and that practitioners need to be motivated using various means such as improved remuneration, upgrading of the curriculum, managerial and other economic incentives, more than half of them are still willing to practice the profession they trained for.

In another survey carried out in Ghana,³¹ the final year pharmacy students respondents expressed a commitment to apply clinical knowledge and to education after their first degree as in this study where respondents wish to practice the profession and/or pursue a postgraduate education. At least 25 % of the final year students and the Junior Undergraduates in this study indicated a desire to either practice or study abroad just like their Ghanaian counterparts indicated a desire to travel preferably early in their career with expressed desire to return home later.

The results revealed that a small percent of the respondents (both final year and Junior undergraduates) indicated that they are unwilling to practice the profession or would be involved in a non-Pharmacy career after graduation. It is likely that this group of students were not interested in studying pharmacy as their choice of course from the beginning but because of either parental pressure or inability to obtain admission to study chosen discipline, they ended up with pharmacy. Thus the importance of interest cannot be ignored and could be contributory to internal emigration to other fields after graduation.

Community pharmacy practice is the most visible of the practice areas in Nigeria as in other parts of the world and enjoyed highest frequency as the most professionally and financially fulfilling area in the

profession.^{30,2} However, personal communication with Nigerian community pharmacists does not support this statement because of poor enforcement of regulation and problems in drug distribution system leading to influx of quacks and unregulated practice environment.

It is observed from this study that the desire to move abroad to practice or study is already expressed by both the final year students and the Junior Undergraduates, but is not directly caused by the undergraduate training. This desire to travel abroad for study or practice is probably more a reflection of the environment as perceived by the students rather than a direct effect of the training received. The degree of brain drain currently witnessed in the profession seems to be more of a reflection of the practice environment as observed by the students after graduation coupled with the various factors that affect movement of health workers.

Limitations of the Study

There are some limitations associated with this study include, firstly the study is a descriptive work carried out on students to document their current perceptions. Furthermore, the findings are from universities in a section of the country, that is the southwest zone and may not truly represent the perceptions of all Nigerian pharmacy undergraduates.

CONCLUSION

It can be concluded from this study that pharmacy students are willing to practice the profession after graduation either within or outside the country. Though they are desirous of changes in various aspects of the curriculum and practice, most of them expressed a willingness to practice.

This study recommends a system of motivation for pharmacists in practice to enable them be fulfilled with the service they render. It also recommends a review of the academic curriculum being currently used to train the students.

REFERENCES

1. Anderson S: The state of the world's pharmacy: a portrait of the pharmacy profession. *Journal of Interprofessional Care* 2002,16:391-404.
2. Human Resources.
[Http://www.fip.org/menu_sitemap?page=hrfh_introduction](http://www.fip.org/menu_sitemap?page=hrfh_introduction). 2009 FIP Global Pharmacy Workforce and Migration report
3. Pharmacy.
<http://en.wikipedia.org/wiki/Pharmacy>.

4. Olurinola P.F. "The origin of Pharmacy". The Pharmacy profession: a focus on Nigeria: 3, 79, 91
5. Pharmacy Profession. Available at: http://www.acu.edu.eg/acu_acadm_phar_main.htm. Accessed on: 3rd February 2011
6. Introduction to retail pharmacy. <http://www.scribd.com/doc/47661895/intro-RP>. Accessed on: 3rd February 2011
7. NHS Choices: What services do pharmacies provide? [Http://www.nhs.uk/chq/Pages/1081.aspx?CategoryID=68&SubCategoryID=153](http://www.nhs.uk/chq/Pages/1081.aspx?CategoryID=68&SubCategoryID=153). Accessed on: 3rd February 2011
8. Worley MM, Schommer JC, Brown LM, Hadsall RS, Ranelli PL, Stratton TP, Uden DL: Pharmacists' and patients' roles in the pharmacist-patient relationship: Are pharmacists and patients reading from the same relationship script? Research in Social and Administrative Pharmacy 2007, 3:47-69.
9. Azhar, S., Hassali, M. A., Ibrahim, M, I., Ahmad, M., Masood, I., Shafie, A. A. The role of pharmacists in developing countries: the current scenario in Pakistan. Human Resources for Health 2009, 7:54doi:10.1186/1478-4491-7-54
10. New tool to enhance role of pharmacists in health care [<http://www.who.int/mediacentre/news/new/2006/nw05/en/index.html>] website
11. Hepler C, Strand L: Opportunities and responsibilities in pharmaceutical care. J Hosp Pharm. 1990, 47(3):533-543.
12. Farris KB, Llimos FF, Benrimoj S: Pharmaceutical Care in Community Pharmacies: Practice and Research from Around the World. Ann Pharmacother. 2005, 39(9):1539-1541.
13. Erah PO, Nwazuke JC. Identification of Standards for Pharmaceutical Care in Benin City. Tropical Journal of Pharmaceutical Research. 2002;1(2):55-66.
14. Rovers JP, Currie JD, Hagel HP, McDonough RP, Sobotka JL: A practical guide to pharmaceutical care. Washington, DC: American Pharmaceutical Association; 2003.
15. Jesson J, Bissell P: Public health and pharmacy: A critical review. Critical Public Health 2006, 16:159-169.
16. Smith F: Community pharmacy in Ghana: enhancing the contribution to primary health care. Health Policy Plan 2004, 19:234-241.
17. Pharmacy Education and Healthcare [http://www.gcu.edu.pk/Library/NI_Feb07.htm]. Accessed on: 2nd February 2011
18. Brain Drain in Africa: Facts and Figures Available at: www.images.derstandard.at/20080615/factsandfigures.pdf. Accessed 7th February 2011.
19. World Health Statistics 2010.pdf http://www.who.int-whosis-whostat-EN_WHS10_Full. Accessed on: 2nd February 2011
20. Brain drain definition from American Heritage Dictionary. Available at: <http://www.answers.com/topic/brain-drain>. accessed online 3rd February 2011
21. Brain drain definition from Collins English Dictionary Complete and Unabridged © HarperCollins Publishers 1991, 1994, 1998, 2000, 2003. Available at: <http://www.thefreedictionary.com/brain+drain>. Accessed online 3rd February 2011
22. Brain drain definition from Wordiq.com. Available: http://www.wordiq.com/definition/Brain_drain.
23. Mejia, A (1978). 'Migration of Physicians and Nurses: A Worldwide Picture'. International Journal of Epidemiology 7(3): 207-215.
24. Briggs, J (2000). The International Migration of Health Staff, International Health Division School of Tropical Medicine. Liverpool
25. Padarath, A., Chamberlain, C., McCoy, D., Ntuli, A., Rowson, M., Loewenson, R. Health Personnel in Southern Africa: Confronting maldistribution and brain drain. EQUINET Discussion Paper Number 3. eds. R Loewenson, C Thompson.
26. Katerere DR, Matowe L. Effect of pharmacist emigration on pharmaceutical services in Southern Africa. Am J Health Syst Pharm 2003; 60: 1169-70.
27. World Health Organization. The role of the pharmacist in the health care system. <http://www.who.int/medicinedocs/index.fcgi?&a=d&d=Jh2995e.1#Jh2995e.1> (accessed Feb 13, 2008).
28. Mercer, H, M Dal Poz, et al. (2002) Human Resources for Health: Developing Policy Options for Change. Geneva, World Health Organization
29. Dovlo D. The brain drain and retention of health professionals in Africa [case study]. www.worldbank.org/afr/teia/conf_0903/dela_d

[ovlo.pdf](#)

30. Health Workforce: Pharmacists. Health at a Glance 2009: OECD Indicators. Available at: http://www.oecd-ilibrary.org/content/book/health_glance-2009-en. Accessed 2nd February 2011
31. Owusu-Daaku, F., Smith, F., Shah, Rita. Addressing the workforce crisis: the professional aspirations of pharmacy students in Ghana. *Pharmacy World and Science*. 2008;5(30):577-583