

# Assessment of Knowledge and Perception of Medical Students of Undergraduate Pharmacy Training at a Nigerian University

Muslim Olakunle Jamiu<sup>1,\*</sup>, Abdulganiyu Giwa<sup>1</sup>, Roland Nnaemeka Okoro<sup>2</sup>

<sup>1</sup>Department of Clinical Pharmacy and Pharmacy Practice, University of Ilorin, Ilorin, Nigeria

<sup>2</sup>Department of Clinical Pharmacy and Pharmacy Administration, University of Maiduguri, Maiduguri, Nigeria

## Authors' Contributions

1 Conception & Study Design, Data Collection, Drafting.

2 Data Analysis, Critical Review.

3 Data Collection, Data Analysis.

## Article info.

Received: June 15, 2019

Accepted: July 24, 2019

Funding Source: Nil

Conflict of Interest: Nil

**Cite this article:** Jamiu MO, Giwa A, Okoro RN. Assessment of Knowledge and Perception of Medical Students of Undergraduate Pharmacy Training at a Nigerian University. *RADS J. Pharm. Pharm. Sci.* 2019; 7(2): 90-96.

\*Address of Correspondence Author:  
jamolakunle@gmail.com

## ABSTRACT

**Background:** Pharmacy training involves basic and applied sciences. The clinical aspect of the training in Nigeria is an emerging one in the past few decades. Inter-professional collaboration among pharmacists and physicians could be enhanced with physicians' knowledge of pharmacist's background in clinical training.

**Objectives:** This study was conducted to assess medical student of the University of Ilorin knowledge and perception of training of undergraduate pharmacy students.

**Methods:** The study was a descriptive, cross-sectional study conducted among medical students of 200 to 600 level of the University of Ilorin, Nigeria in February 2017. A total of 302 students were selected by purposive sampling. The questionnaires were self-administered; retrieved, sorted and analyzed using SPSS version 17. Data were presented in text and tables, and chi-square test was used to determine the significant association between categorical variables. A p-value of less than 0.05 was considered significant.

**Results:** The most occurring age group among the students was 21-25 years and the percentage of male students was 53.0%. Majority of the students were admitted through UTME (75.0%). About 63% of the respondents were aware of the similarity in the admission requirement of pharmacy to medicine. Only 53.6% were aware of clinical training for pharmacy students. Up to 66.2% had the knowledge of degree obtained in pharmacy as B. Pharm and up to 72.2% agreed that pharmacists were important members of the health care team. Mode of entry and gender influenced knowledge of pharmacy undergraduate training, p-value 0.007 and 0.000 respectively.

**Conclusion:** There was a high level of knowledge among medical students of clinical training in pharmacy education and the majority of them agreed that pharmacists could be important members of the health care team. Hence, there is a high expectation that there could be a better inter-professional relationship among this generation of health care professionals.

**Keywords:** Pharmacy, clinical, knowledge, perception, healthcare.

## INTRODUCTION

Among the healthcare professionals, pharmacists are considered to be third-largest after medical and nursing professionals [1] while the supply of pharmacists is increasingly exceeding demands in

many countries. This has necessitated pharmacists associations in these countries focusing on advocacy programs that focus on more visible activities that attract applicants to the school of pharmacy [2].

The plan to replace B. Pharm with Pharm.D in the United States began in 1992 in order to provide a

training with emphasis in aspects of managing therapy, patient communication and public health with management systems for drug dispensing [3, 4]. Pharmacy training in Canada study is a five-year Bachelor of Pharmacy (B.Sc.Pharm) program for entry-level professionals that includes one year of pre-pharmacy coursework, four years of pharmacy study, and clinical training during study or as a post-graduation internship or residency [5].

The Inter-professional collaboration involves sharing of complementary competencies and skills to optimize resources for the benefit of the patient [6]. Inter-professional communication and collaboration in health care is essential in different disease management [7, 8].

It also improves patient outcomes by reducing preventable adverse drug reactions and decreasing morbidity and mortality rates which is achieved through collaborative training because of the initial understanding of the role and functions of the collaborating profession which would minimize conflict among the practitioners [8, 9].

The clinical training required by a pharmacist is increasing due to required participation in health-related functions like communicable diseases, public health and drug use management outside the traditional dispensing practice, particularly in the primary care setting [10]. The International Pharmaceutical Federation in collaboration with The United Nations Educational, Scientific and Cultural Organization (UNESCO) and the World Health Organization established a Global Pharmacy Education Task Force with an Action Plan for promoting comprehensive education development and achievement of competencies in global pharmacy practice which include acquisition of clinical training and specialized skills in the training of pharmacy [11].

There is a public misconception about the practice of pharmacy as most people see it as a money-making profession [12].

In Nigeria, The Pharmacists Council of Nigeria (PCN) is a statutory organ of the Federal Government of Nigeria set up for the purpose of regulation and control of training and practice of Pharmacy, determining professional standards in Pharmacy and securing the establishment and maintenance of registers of Pharmacists with about [13]. At the moment, it is only the University of Benin that is offering Pharm.D in the country. The University of Benin has begun to offer Doctor of Pharmacy degree

program alongside the B. Pharm degree for close to a decade now. Several schools of pharmacy in the country are at various stages of implementing the PharmD program especially with the recent approval of the National University Commission (NUC) of the program. With this approval, all the 17 universities in Nigeria offering Pharmacy and others currently awaiting accreditation for the course are now expected to phase out the B. Pharm program and replace it with the more patient-centred Pharm.D [14-16].

There have been curriculum reviews of schools of pharmacy in Nigeria to meet the required competency to reflect the paradigm shift in service focus and the development of the public and health system demand for clinical skills that will enable pharmacists to cope with increasingly complex medication needs of patients [15, 17].

Clinical clerkship program as an integral part of pharmacy training is essentially a health training program in clinical settings where pharmacy graduates acquire clinical training, skills needed for rational drug utilization with particular importance on recognition of actual and potential drug therapy problems, after case analysis and then to recommend appropriate management of patient medication needs in collaborative practice with other health care professionals [18].

The pharmacists' role as an expert on medication matters and a critical member of the health care team would make a substantial contribution in clinical ward round in medication decision making, development and review of hospital formulary, adverse drug reaction monitoring and clinical drug interaction and poison information services [19].

The students of pharmacy and medical students of the University of Ilorin usually interface only when they were in basic science preliminary level (100 Level), during University academic/ sports competitions and clerkship/ ward round training of pharmacy students at the teaching hospital. Hence, there was a need to assess medical students' knowledge and perception of pharmacy training at the undergraduate level to give an insight into their foreknowledge of an area of competence in pharmacy practice which could affect their collaborative relationship when they practice after graduation.

## METHODS

This was a descriptive, cross-sectional study conducted among 200 level to 600 level (year 2 to year 6) medical students of the University of Ilorin in February 2017. The University was established in 1975 and located in North Central Nigeria. Of a total of 657 registered students, a by proportionate sampling among students in each level, a sample size of 300 was calculated for which 310 was administered. Convenient sampling from randomly selected students was done and a semi-structured questionnaire was used to elicit responses from the voluntary participants. A pilot study among 10 students two from each level was previously done among Ladoké Akintola University, College of Medicine in nearby neighboring Oyo state, South West Nigeria. The reliability of the questionnaire was determined by determining the Cronbach's alpha of the questionnaire according to the method described by Ariba and Odunfa in SPSS my research companion [20] where the value obtained was 0.7.

The questionnaire was self-administered by the students with supervision/ guide by the research team and research assistants who were final year pharmacy students were assigned to retrieve the completed questionnaires. A total of 302 questionnaires were retrieved after completion. The questionnaire was in two sections. The first section was to obtain demographic information from the student (Table 1) while the other part was to assess the knowledge and perception of the students about pharmacy training in Nigerian Universities. Data from the survey were analyzed using SPSS software version 19. Chi-square test was used for inferential statistics and p-value less than 0.05 was considered statistically significant.

## RESULTS

Out of 310 questionnaires distributed for self-administration, 302 were adequate filled and returned giving a response rate of 97.4%.

**Table 1. Demographic characteristics of the students.**

Characteristics	Variable	N (%)
Age groups (years)	15-20	138 (45.7)
	21-25	140 (46.4)
	26-30	20 (6.6)
	Over 30	8 (1.3%)
Gender	Male	160 (53.0)
	Female	142 (47.0)
Level	300	60 (21.9)
	400	70 (23.2)
	>400	52 (17.2)
Mode of entry	UTME	228 (75.5)
	Direct entry	60 (19.2)
	Transfer	14 (4.6)

UTME = Unified Tertiary Matriculation Examination (National examination that qualifies applicants for tertiary education admission in Nigeria).

Knowledge and perception of medical students on admission requirements for pharmacy students into the undergraduate degree program, awareness of clinical training and ward round and clerkship program for students as well as their understanding of pharmacists' role in patients care. Responses obtained from these were presented in Table 2.

The influence of mode of entry of medical students on their knowledge of clinical training by pharmacy students was assessed by chi-square analysis using cross-tabulation of a contingency table. The results obtained a strong relationship between these categorical variables as shown in Table 3.

The association between students' gender and awareness of pharmacy students in the ward round and clerkship training was also assessed with cross-tabulation with chi-square test. The result of a p-value less than 0.05 was obtained showing a relationship of effects between the variables assessed (Table 4).

**Table 2. Knowledge and perception of medical students about pharmacy training.**

Characteristics	Variables	N (%)
Knowledge of admission requirements	Same as medicine	36 (11.2)
	Similar to medicine	192 (63.6)
	Different from medicine	58 (19.2)
	Don't know	14 (5.3%)
Awareness of clinical training in pharmacy education	Aware	160 (53.6)
	Slightly aware	82 (27.2)
	Not aware	58 (19.2)
Main source of information of the respondents on the clinical training of pharmacy students	Pharmacy students' friends	185 (61.3)
	Course lectures	43 (14.2)
	Media	12 (4.0)
	Other sources	10 (3.3)
Knowledge of clinical ward round by the respondents	Have the knowledge	216 (71.5)
	No knowledge	50 (16.6)
	Can't say	36 (11.9)
Knowledge of number of years to study pharmacy by the respondents	Four	2 (0.7)
	Five	278 (81.8)
	Six	10 (3.3)
	Don't know	12 (4.0)
Knowledge of degree obtained in pharmacy	B.Sc	84 (13.0)
	B.Pharm	200 (66.2)
	MBBPharm	2 (0.7)
	Don't know	16 (5.3)
Do you agree that pharmacists could be a valuable member of the health care team?	Strongly agree	6 (2.0)
	Agree	112 (37.1)
	Slightly agree	100 (33.1)
	Disagree	65 (21.5)
	Slightly disagree	19 (6.3)

**Table 3. Association between mode of entry of medical students and their knowledge of whether pharmacy students undergo clinical trainings or not.**

	Knowledge of clinical training of pharmacy students			Total	
		Yes	No		I can't say
Mode of Entry	UTME	166 (72.8%)	44 (19.3%)	18 (7.9%)	228 (75.5%)
	Direct Entry	40 (67.8%)	3 (5.1%)	16 (27.1%)	59 (19.5%)
	Transfer	10 (66.7%)	3 (20.0%)	2 (13.3%)	15 (5.0%)
	Total	216 (71.5%)	50 (16.6%)	36 (11.9%)	302 (100%)

Chi square = 20.61, p-value = 0.001

**Table 4. Association between students' gender and their awareness of pharmacy students undergoing clinical ward round training.**

	Awareness of clinical ward round of pharmacy students			Total	
		Aware	Slightly aware		Not aware
Gender	Male	92 (57.5%)	48 (30%)	20 (12.5%)	160 (53.0%)
	Female	70 (49.3%)	34 (23.9%)	38 (26.8%)	142 (47.0%)
Total		162 (53.6%)	82 (27.2%)	58 (19.2%)	302 (100%)

Chi square = 9.927, p-value = 0.007

Association between student's educational level and agreement with pharmacist being members of health care team was analyzed with chi-square analysis. The results showed a chi-square value of 77.8 and a p-value of 0.000 (less than 0.05).

## DISCUSSION

Knowledge and perception of the respondents about pharmacy students training were high. This could be as a result of the presence of the school of pharmacy within the same university system which could have enhanced the students' level of knowledge. This knowledgebase could be of advantage to appreciate the depth of knowledge a pharmacist had undergone and expectation of his practice competence in a multidisciplinary health care team.

The health profession education and collaborative practice are interdependent and there is a need for interprofessional training to understand an area of competence of other professions to minimize conflict arising from ignorance of other professions competence and scope of practice [7, 21].

Despite being the third-largest health profession in the world, the significance of pharmacists' role in the health care profession is less understood by many including other members of health care team [22]. Understanding training of pharmacists by other health care providers particularly doctors will enable them to understand areas of competence of pharmacists. In this study, majority of the students were aware of similar requirements for studying pharmacy as compared to medicine and only less than a quarter of them were believed that the requirements were different or did not even know at all. For effective inter-professional collaboration in health care practice to achieve an optimal therapeutic outcome, inter-professional education is of utmost importance to foster cordial relationship among the health care

personnel. Understanding of area of competence of other professional will enhance the ability to work together [23]. Clinical training in pharmacy equips future pharmacists' competence in clinical pharmacy practice. Although the awareness level was high, unexpectedly a sister profession in training would still have up to one-fifth of them not aware of the type of training his counterpart was going through. Also, the majority of students got informed through friends possibly from the pharmacy. This is an indication that the trainers of medical students possibly hardly mention about pharmacy profession and the areas of competence which would have prepared their mind for an inter-professional relationship. This was evident as only a few students got aware of pharmacy clinical training from their lecturers. Up to a quarter of students had little or no knowledge of pharmacy students undergoing training in clinical ward round and clerkship.

About three-quarter of the respondents believed that pharmacists should be members of the health care team although with different level of agreement as seen in Table 2. This is a good response because understanding this at training level will reduce friction among the practicing professionals. This finding was consistent with the advocacy on collaborative practice among health care professionals particularly doctors and pharmacists to enhance the quality of care delivery in health care settings and promote the safe use of medicines [10, 24]. Although, the respondents still need to be properly educated as to the role being played by pharmacists in the healthcare team as only 2% of them strongly agreed and about one-third just slightly agreed that pharmacists should be important members of the healthcare team.

The respondents' knowledge of pharmacists' training for the clinical ward round was significantly influenced by their mode of entry. Those who studied medicine directly from year one had better knowledge than

others. This could be as a result of their introductory year involving their relationship with pharmacy students as a result of similar courses they studied together and their inquisitiveness into pharmacy training. Others who came in through direct entry (DE) or transfer might come from other study backgrounds without such interaction with pharmacy training.

Gender influence on the awareness of medical students' awareness of clinical world round training revealed that there was a significantly higher number of male students who were aware of this than their female counterpart. This could be as a result of more number of female students who have been participating in the clinical ward round and clerkship program among the pharmacy students in the last few years of the clinical clerkship program because there has been far number of female students than male, 4:1 particularly the first four consecutive years in of admission into the undergraduate pharmacy program. Hence there could be a tendency for interaction among female pharmacy students and female counterpart in medical training. It has been observed that there are more women attending a school of pharmacy than men and the trend is going towards having more lady pharmacist than men [25]. The presence of female pharmacy students in a larger number than their male counterparts could be the reason why male medical students are more aware or conscious of the presence of pharmacy students in the ward round/clerkship training than their female counterparts. There could be the possibility of male medical students more conscious of the presence of pharmacy students in the ward round participation than their female counterpart.

---

## CONCLUSION

---

There was a high level of knowledge among medical students of clinical training in pharmacy education and the majority of them agreed that pharmacists could be important members of the health care team. Hence, there is high expectation that there could be a better inter-professional relationship among this generation of health care professionals.

---

## REFERENCES

---

1. Babar ZU. Pakistan National University of Pharmaceutical Sciences. *Am J Pharm Educ.* 2006; 70:123-127.
2. Lebovitz L, Eddington ND. Trends in the Pharmacist Workforce and Pharmacy Education. *Am J Pharm Educ.* 2019; 83(1):7051.
3. U.S. Bureau of Labor Statistics, "Pharmacists: Training, Other Qualifications, and Advancement", *Occupational Outlook Handbook*, 2008; 9th Edition, <http://www.bls.gov/oco/ocos079.htm#training>.
4. Austin Z, Ensom MHH. Education of Pharmacists in Canada. *Am J Pharm Educ.* 2008; 72(6):128.
5. Samuelson M, Tedeschi P, Aarendonk D, De La Cuesta C, Groenewegen P. Improving interprofessional collaboration in primary care: position paper of the European Forum for Primary Care. *Qual Prim Care.* 2012; 20(4):303-312.
6. Zwarenstein M, Goldman J, Reeves S. Interprofessional collaboration: effects of practice-based interventions on professional practice and healthcare outcomes. *Cochrane Database Syst Rev.* 2009; (3):CD000072.
7. Interprofessional Education Collaborative Expert Panel. Core competencies for interprofessional collaborative practice: report of an expert panel. (<http://www.aacn.nche.edu/education-resources/ipecreport.pdf>); 2011 Accessed Sept 9, 2017.
8. Canadian Interprofessional Health Collaborative. A national interprofessional competency framework. Vancouver: Canadian Interprofessional Health Collaborative; 2010: 1-36.
9. Bosch B, Mansell H. Interprofessional collaboration in health care. *Can Pharm J (Ott).* 2015; 148(4):176-179.
10. Manolakis PG, Skelton JB. Pharmacists' Contributions to Primary Care in the United States Collaborating to Address Unmet Patient Care Needs: The Emerging Role for Pharmacists to Address the Shortage of Primary Care Providers. *Am J Pharm Educ.* 2010; 74(10):S7.
11. International Pharmaceutical Federation (FIP). *Global Pharmacy Workforce Report (2009)*. <http://www.fip.org/files/fip/2009%20FIP%20Global%20Pharmacy%20Workforce%20Report.pdf>
12. Keshishian F, Brocavich JM, Boone RT, Pal S. Motivating factors influencing college students' choice of academic major. *Am J Pharm Educ.* 2012; 74(3):46-52.
13. Pcn.gov.ng [internet]. Abuja: Benchmark for Minimum Academic Standard in Pharmaceutical Sciences. Available from: <http://www.pcn.gov.ng/> [Last updated on 2014 Jan 25, Last accessed 23<sup>rd</sup> July, 2018].
14. Nuc.edu.ng [internet]. Abuja: List of Nigerian universities and year founded. Available from: <http://www.nuc.edu.ng/pages/universities.asp>. [Last updated on 2013 Jan, Last accessed on 23<sup>rd</sup> May, 2018].
15. Ogaji JI, Ojabo CE. Pharmacy education in Nigeria: The journey so far. *Arch Pharma Pract.* 2014; 5:47-60.
16. Pharmanews. Health Policy and Regulation. 2016 Edition: Vol. 39 No. 2. Available online at: <http://www.pharmanews online.com/now-that-pharmd-has-been-approved/>
17. National Universities Commission benchmark minimum academic standards for undergraduate

- programs in Nigerian universities-Pharmaceutical Sciences; 2007.
18. Ali G, Khan SH, Nazir S, Khan A. Assessment of Effective Clinical Pharmacy Clerkship as an Emerging Programme on Drug Related Problems in Pediatric Ward- A Single Centre Study from North West Part of Pakistan. *Pharmacol.* 2013; 1:11-29.
  19. The Society of Hospital Pharmacists of Australia (SHPA) committee of specialty practice in clinical pharmacy. SHPA guidelines for the practice of selected clinical pharmacy activities. *Aust J Hosp Pharm.* 1990; 20:248-249.
  20. Bolarinwa OA. Principles and methods of validity and reliability testing of questionnaires used in social and health science researches. *Niger Postgrad Med J.* 2015; 22(4):195-201.
  21. Al-Ghananeem AM, Malcom DR, Shammass S, Aburjai T. Action to Transform Pharmacy Education and Practice in the Arab World. *Am J Pharm Educ.* 2018; 82(9):7014.
  22. van Mil JW, Schulz M, Tromp TF. Pharmaceutical care, European developments in concepts, implementation, teaching, and research: a review. *Pharm World Sci.* 2004; 26(6):303-311.
  23. Rotz ME, Dueñas GG, Grover AB, Headly A, Parvanta CF. Exploring first-year pharmacy and medical students' experiences during a longitudinal interprofessional education program. *Curr Pharm Teach Learn.* 2015; 7(3):302-311.
  24. Nijjer S, Gill J, Nijjer S. Effective collaboration between doctors and pharmacists. *Hospital Pharmacist.* 2008; 5:179-182.
  25. Gardner SF, Stowe CD. The Impact of a Gender Shift on a Profession: Women in Pharmacy. *Forum on Public Policy.* 2006; 1:1-13.



This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.