

## Original Research

# Assessment of attitudes of University of Nigeria pharmacy students toward pharmaceutical care

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### ABSTRACT\*

**Objective:** The purpose of this study was to describe the attitude of University of Nigeria pharmacy students towards pharmaceutical care.

**Method:** A survey of pharmacy students in their second to fifth year was conducted. A modified 13-item standard Pharmaceutical Care Attitudes Survey (PCAS) was used for the study. Reliability and factorial validity of the modified instrument were assessed.

**Results:** Modification of the instrument did not alter its validity. Students of the University of Nigeria had a positive attitude towards pharmaceutical care as attitude score of all the items were above the midpoint score of 2.5. The mean scale score of second and third year students were significantly lower than that of the fifth year's (Oneway ANOVA,  $p < 0.001$ ). Females had a higher positive attitude score compared to male students (Students t-test,  $p = 0.005$ ). There was no significant difference in the mean scale score among those that had work experience and those without work experience. Marital status did not influence attitude score.

**Conclusion:** University of Nigeria pharmacy students had a positive attitude towards pharmaceutical care. However, it is necessary to provide sites where students could acquire practice experience and these sites should be designed to enable students observe the integration of pharmaceutical care activities into pharmacy practice.

**Keywords:** Attitude of Health Personnel. Community Pharmacy Services. Education, Pharmacy, Nigeria.

### EVALUACIÓN DE LAS ACTITUDES DE LOS ESTUDIANTES DE FARMACIA DE LA UNIVERSIDAD DE NIGERIA HACIA LA ATENCIÓN FARMACÉUTICA

#### RESUMEN

**Objetivo:** El propósito de este estudio fue describir las actitudes de los estudiantes de farmacia de la Universidad de Nigeria hacia la atención farmacéutica.

**Método:** Se realizó una encuesta a estudiantes de farmacia entre segundo y quinto año. Se utilizó para el estudio una versión modificada de 13 ítems del Pharmaceutical Care Attitudes Survey (PCAS). Se evaluaron la fiabilidad y la validez factorial del instrumento modificado.

**Resultados:** La modificación del instrumento no afectó a su validez. Los estudiantes de la Universidad de Nigeria tienen una actitud positiva hacia la atención farmacéutica porque las puntuaciones de los ítems de actitud estaban todas por encima del valor medio de 2,5. La media de la escala para los estudiantes de segundo y tercer año era significativamente más baja que los de quinto año (Oneway ANOVA,  $p < 0,001$ ). Las mujeres tenían más actitudes positivas comparadas con los hombres (Students t-test,  $p = 0,005$ ). No había diferencia significativa en los valores medios de los que tenían experiencia laboral y los que no. El estado civil no influyó sobre la puntuación de actitud.

**Conclusión:** Los estudiantes de farmacia de la Universidad de Nigeria tienen una actitud positiva hacia la atención farmacéutica. Sin embargo, es necesario proporcionar lugares donde los estudiantes puedan adquirir experiencia práctica y estos lugares deberían designarse para que los estudiantes puedan observar la integración de la atención farmacéutica en el ejercicio de la farmacia.

**Palabras clave:** Actitud del personal sanitario. Servicios de farmacias comunitarias. Educación de farmacia. Nigeria.

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### INTRODUCTION

Pharmaceutical care is recognized as a prominent activity within a health care system. It is a structured, systematic and documented type of pharmacy practice which comprises the detection, prevention and solutions to drug related problem.<sup>1</sup>

The aim is to achieve rational and evidence-based pharmacotherapy which is beneficial for each patient and for the society.<sup>1</sup> Unlike most developed countries, pharmaceutical care practice is still in its embryonic stage in Nigeria.<sup>2</sup> The Pharmacist Council of Nigeria (PCN) in 2005 set minimum standards to assure the practice of pharmaceutical care in pharmacy premises.<sup>3</sup> The need for pharmaceutical care application is frequently addressed in continuing education programmes organised by PCN, in conferences and workshops in the country. However, Nigerian pharmacists are yet to fully accept pharmaceutical care concept and implement it in their practice settings. For example a study carried out in Benin City, Nigeria showed that community pharmacists in Nigeria are marginally involved in the primary health care programmes and they barely provide preventive services.<sup>4</sup>

Admittedly, operationalising pharmaceutical care in Nigeria will not be so easy. Nigeria has a unique health sector in which patients take care of their health from 'out-of-pocket' expense. In many cases, patients or their families have no money to pay for drugs<sup>5</sup> and thus are forced to seek health care outside the formal health sector. The problem is compounded by the erratic drug distribution system which has made pharmacy practice unattractive for many pharmacists, and their role provided by unqualified personnel. Outside these major issues, there are other objective barriers that hamper the implementation of pharmaceutical care. For example, deficient clinical knowledge and communication skills, insufficient time, lack of adequate technology and personnel, and negative attitudes concerning pharmaceutical care may inhibit the practice of pharmaceutical care.<sup>6-8</sup> However, aside addressing the time, technology, and personnel concerns, it is imperative to foster positive attitudes concerning pharmaceutical care.<sup>9</sup> For countries where pharmaceutical care practice is still evolving like in Nigeria, fostering positive pharmaceutical care attitude amongst pharmacist should be the first and fundamental strategy so as to stimulate its wide spread acceptance and implementation. It is equally important to nurture positive pharmaceutical care attitudes not only to practitioners of today but more importantly, the practitioners of tomorrow.<sup>9</sup>

There is need to establish whether the training given to pharmacy students in Nigeria are good enough to stimulate a positive attitude towards pharmaceutical care practice. Such findings would serve as a useful baseline data to monitor progress in the training of future pharmacy practitioners in Nigeria.<sup>10</sup> There are few reports of Nigerian students' attitude toward pharmaceutical care in the literature. A recent study was conducted in University of Benin, investigating attitude of their students toward pharmaceutical care.<sup>10</sup> This present study aimed to add to the above mentioned study by describing the attitude of pharmacy students toward pharmaceutical care in University of Nigeria, the biggest pharmacy school in Nigeria based on population.

## METHODS

The study was performed at the Faculty of Pharmaceutical Sciences, University of Nigeria. Nigeria is the most populous country in Africa with about 140 million inhabitants and it has about 91 universities. The federal government operates 26 of the universities. The state government own 30 and the rest are privately owned. Only 15 of the universities run pharmacy programme. The Pharmacist Council of Nigeria (PCN) regulates pharmaceutical education in Nigeria. With the exception of one pharmacy school that run Pharm D programme, all the other pharmacy faculties have a 5-year bachelor of pharmacy degree. University of Nigeria, Nsukka (UNN) is the largest pharmacy school in Nigeria and graduates an average of 180 pharmacists every year.

According to the curriculum, the concept of pharmaceutical care is introduced first, in the second year through the introductory course on pharmacy practice. In this course, pharmacy students are introduced to dimensions of pharmacy practice, including pharmaceutical care. In their third year, the students take pharmacy management courses where they are taught how to implement pharmaceutical care model in hospitals and community pharmacies on a theoretic basis. In the fourth and final year, students are offered specifically some clinical pharmacy courses and they also undertake a clerkship course with pharmaceutical care concepts built into these courses. However, the major limitations faced is that the sites used for clinical clerkship is not ideal since pharmaceutical care services are not yet offered in these sites. Students are not exposed to practice settings where pharmaceutical care is carried out so that they can observe integration of pharmaceutical care into practice.

The population of this study comprised of undergraduates students of pharmacy in UNN who were in their professional year (i.e. 2nd to 5th year). Faculty of pharmacy, UNN has about 800 students. The population size of this study (i.e. 2nd to 5th year students) was 615. Students participating in the survey were those present in the class at the time the questionnaires were distributed. A self completion 13-item standard Pharmaceutical Care Attitudes Survey (PCAS) developed and re-validated in the United States was used.<sup>9,11</sup> This same instrument has been validated in Nigeria.<sup>10</sup> The initial instrument was constructed on a 5-item scale. However, in this present study the instrument was transformed to a forced-choice response scale i.e. a 4-item response scale with an even number of responses and no middle neutral or undecided choice.<sup>12</sup> The item responses were as follows: 4=strongly agree; 3=agree; 2=disagree; and 1=strongly disagree. In this situation, the respondent is forced to decide whether they lean more towards the agree or disagree end of the scale for each item. Two of the 13 items were negatively worded. We included a section that assessed the respondents' demographic data which were gender, age, marital status, year of study, and work experience. The questionnaire was distributed

by a final year student (carrying out the survey as his final year project) to the students present in the different classes at the moment of the survey. A brief instruction was given to the students on the purpose and importance of the survey. The exercise was done before the first lecture in the day. The students were given ten minutes to fill and submit the questionnaires.

The retrieved questionnaires were entered into Statistical Package for Social Sciences (SPSS 13.0, Chicago, IL) and double checked by another staff of the department of Clinical Pharmacy, UNN for consistency. Demographic data were represented by frequency (percentages), and median [interquartile range]. The two negatively worded items were reversed. Due to the modification done on the questionnaire, internal consistency of the responses to the instrument items were determined by calculating Cronbach's alpha, inspecting partial alphas of each item and determining the item to total correlation. Items with partial alpha less than 0.3 were deleted.<sup>12</sup> Factor analysis (Principal component analysis) was also conducted to assess whether the sub-scales of the instrument matched that of the original instrument. Principal component analysis employed Varimax rotation with Kaiser normalization and list-wise deletion of missing data. Factors selected for rotation had eigenvalues greater than 1. Items with factor loadings greater than or equal to 0.40 were considered significant, and loadings of 0.50 or greater were considered 'very significant'.<sup>13</sup> Sub-scales were composed of the items with their highest factor loading on the same factor. Rated scores were treated as interval data suited for quantitative analysis. Mean item scores were computed for the individual items. Mean scale scores for each respondent were also computed. A midpoint of 2.5 was used for the 4-point scale. The 2.5 midpoint of a 4-point scale was arrived at by adding all the scores and computing the average. Mean scale scores above the midpoint were regarded as positive attitude while below the mid-point were deemed as negative attitude. Since mean scale scores were normally distributed, parametric tests were used for inferential statistics. One-way ANOVA with post-hoc test, Scheffe's or Students' t-test were used to examine the variance in attitude score among the different demographic variables. A two-tailed significance level of 0.05 was used.

## RESULTS

There were 412 participants in all, from four classes (2nd, 3rd, 4th, and final year). Majority of the participants had no work experience. Details of the demographics are presented in Table 1. The reliability analysis for the 13 questionnaire items were found to be 0.63 with two items contributing poorly to the scale. The two items were therefore deleted. The final reliability score was 0.72. Two dimensions or factors emerged from the Factor analysis conducted. These two factors accounted for 59.6% of the variance with the first factor accounting for a greater proportion of the variance (46.5%). Items 5-11 had a loading of greater than

0.5 on the first component; items 1-3 had a loading of 0.5 or greater on a second component. Although item 4 had a factor loading of 0.38 on component one, it was included as an item in the first component. As in the original instrument, component one was labelled "Professional benefit" while component two was labelled "Professional duty". Details of the Factor analysis are displayed in Table 2.

Table 3 shows the attitude score of students on different items in the questionnaire. The mean item score of all the items were above the midpoint of 2.5. Table 4 shows the attitude score of students based on demographic sub-groups. Attitude score of the students increased with increasing class level. The attitude score of second and third year students were significantly lower than that of the fifth year's (Oneway ANOVA,  $p < 0.001$ ). Females had a higher attitude score compared to male students (Students t-test,  $p = 0.005$ ). There were no significant differences in the attitude score among those that have had work experience and those without work experience. Marital status did not influence attitude score.

	Frequency*	%
<b>Sex</b>		
Female	216	52.4
Male	182	44.2
<b>Age</b>		
16-25	258	62.6
26-35	106	25.7
>35	4	1.0
<b>Marital Status</b>		
Single	358	86.9
Married	44	10.7
Divorced	-	-
Widowed	1	0.2
<b>Year of study</b>		
2nd year	98	23.8
Third year	110	26.7
Fourth year	102	24.8
Fifth year	99	24.0
<b>Work experience</b>		
Yes	66	16.0
No	317	76.9
<b>Work place</b>		
Community pharmacy	41	62.1
Hospital pharmacy	7	10.6
Industrial pharmacy	6	9.0
Others	12	18.2

\*The sample number might not sum up to 412 because some participants were excluded from the calculation due to improper filling of their questionnaires.

## DISCUSSION

This study described the attitude of Nigerian pharmacy students towards pharmaceutical care. It also assessed some factors that could lead to the observed attitude score. The instrument used for the assessment was a standardised questionnaire developed and re-validated in the United State of America.<sup>9,11</sup> The questionnaire had been validated in Nigeria and used for a similar assessment.<sup>10</sup> However, because this instrument was modified in this present study, It was pertinent to evaluate the validity of the instrument. Item analysis led to the

exclusion of two negatively worded items. It was possible that the respondents did not understand these two questions. Factor analysis brought out two components in the scale that matched with the original scale. These components were "Professional duty" and "Professional benefit" as

named in the original instrument.<sup>6,8</sup> The item corresponding to "return on effort" were the deleted items and therefore did not emerge in this present study. Factor analysis showed that modification of the instrument did not alter its factorial validity significantly.

Table 2: Factor loadings of the items

	Items	Component	
		1 <sup>a</sup>	2 <sup>b</sup>
1	All pharmacists should perform pharmaceutical care		0.61
2	The primary responsibility of pharmacists in all health care settings should be to prevent and solve medication related problems		0.54
3	Pharmacists' primary responsibility should be to practice pharmaceutical care		0.74
4	Pharmacy students can perform pharmaceutical care	0.38	
5	I think the practice of pharmaceutical care is valuable	0.58	
6	I would like to perform pharmaceutical care as a pharmacist practitioner	0.59	
7	Providing pharmaceutical care is professionally rewarding	0.62	
8	I feel that pharmaceutical care is the right direction for the profession to be headed toward	0.58	
9	I feel that pharmaceutical care movements will improve patients health	0.61	
10	I feel that pharmaceutical care movements will improve patients health	0.64	
11	I feel that practising pharmaceutical care will benefit my professional pharmacy career as a pharmacy practitioner	0.66	

Extraction Method: Principal Component Analysis.  
 Rotation Method: Varimax with Kaiser Normalization.  
<sup>a</sup>Professional benefit  
<sup>b</sup>Professional duty

Table 3: Survey items and students response (N = 412)

	Item	N*	Mean item score	SD
1	All pharmacists should perform pharmaceutical care	401	3.32	0.81
2	The primary responsibility of pharmacists in all health care settings should be to prevent and solve medication related problems	403	3.48	0.66
3	Pharmacists' primary responsibility should be to practice pharmaceutical care	381	3.39	0.61
4	Pharmacy students can perform pharmaceutical care	381	3.39	0.61
5	I think the practice of pharmaceutical care is valuable	395	3.65	0.55
6	I would like to perform pharmaceutical care as a pharmacist practitioner	397	3.45	0.63
7	Providing pharmaceutical care is professionally rewarding	396	3.45	0.61
8	I feel that pharmaceutical care is the right direction for the profession to be headed toward	396	3.32	0.70
9	I feel that pharmaceutical care movements will improve patients health	396	3.48	0.58
10	I feel that pharmaceutical care movements will improve patients health	397	3.74	0.46
11	I feel that practising pharmaceutical care will benefit my professional pharmacy career as a pharmacy practitioner	402	3.55	0.55

\* The sample number might not sum up to 412 because some participants were excluded from the calculation due to improper filling of their questionnaires.  
 SD=Standard deviation

Table 4: Attitude score of the students based on some demographic variables (n = 412)

	Frequency*	Mean	p-value
Pharmacy Class			
1. Second year	64	3.33	<0.001
2. Third year	85	3.41	
3. Fourth year	79	3.46	
4. Fifth year	78	3.56	
Gender			
1. Male	135	3.39	0.005
2. Female	162	3.50	
Marital Status			
1. Single	268	3.44	0.198
2. Married	32	3.51	
Work Experience			
1. Yes	50	3.43	0.822
2. No	236	3.45	

\*The sample number might not sum up to 412 because some participants were excluded from the calculation due to improper filling of their questionnaires.

Pharmacy students of University of Nigeria had a positive attitude towards pharmaceutical care. Our results are comparable to a similar study carried out in University of Benin in Nigeria which showed that their students indicated moderately positive attitudes toward pharmaceutical care.<sup>10</sup> In our study, male student had a less positive attitude than their female counterpart. This may show that males have less disposition towards pharmaceutical care. It might be important to pay particular attention to this special group during the cause of their pharmacy education. Only one-fifth of the students had work experience in a pharmacy. Students that had work experience did not have more positive attitude towards pharmaceutical care. This is somewhat expected since pharmaceutical care is still in its developmental stage in the country and many of the premises where students may have worked might not carry out pharmaceutical care practice. This underscores the need to introduce practical courses that provide pharmaceutical care practice experience in the undergraduate programme using settings that are designed to prepare students for pharmaceutical care practice. These sites would provide students with the opportunity to observe the integration of pharmaceutical care activities into pharmacy practice.<sup>14</sup> It may also be necessary for Pharmacists Council of Nigeria to review practice experience sites where young graduates of pharmacy schools in Nigeria undertake their one year internship programmes. These internship sites

should practice the basic tenets of pharmaceutical care.

Our study may have some limitations which are worth noting in interpreting the results. The mean scores for most items were quite high with low variability scores. High scores obtained in this study may be due to compliance response bias i.e. the respondents agreed with statements as presented. It could also be that they tried to portray themselves in a more favourable light.

### CONCLUSIONS

University of Nigeria pharmacy students had a positive attitude towards pharmaceutical care. Pharmacies where students acquire practice experience should be designed to enable students observe the integration of pharmaceutical care activities into pharmacy practice.

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### CONFLICT OF INTEREST

There is no conflict of interest.

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