Nigerian Pharmacy Students' Attitudes Toward Pharmaceutical Care

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Abstract

Objectives: The objectives of this study were to investigate and describe the attitudes of students in a Nigerian school of pharmacy toward pharmaceutical care.

Methods: A cross-sectional (first-fourth year, n=250) survey of pharmacy students was conducted. Using anonymous responses based on a Likert-type scale, the students completed a self-administered questionnaire designed to test the research objectives. Descriptive statistics on the sample characteristics and questionnaire items including means, standard deviations, and frequency distributions were computed. A Varimax factor analysis with Kaiser normalization was employed. Student's t-test and a one–way analysis of variance (ANOVA) were utilized for inferential statistics.

Results: A Cronbach's alpha reliability coefficient for the survey instrument was found to be 0.78. Of the respondents, 88% agreed that all pharmacists and pharmacy students should perform pharmaceutical care. About half (48%) also indicated that providing pharmaceutical care takes too much time and effort. Attitude rating was 46.33 ± 9.90 (range, 11 to 55; midpoint, 33). Females had significantly higher positive attitudes than their male counterparts ($p < 0.0001$). Positive attitudes were also associated with age ($p < 0.0001$), exposure to pharmacy curriculum ($p = 0.048$), and work experience ($p = 0.007$).

Conclusion: Nigerian pharmacy students in the cross-sectional survey indicated moderately positive attitudes toward pharmaceutical care. Positive attitude ratings were associated with age, sex, curricular exposure, and work experience in a pharmacy setting.

Key words: attitudes, Nigeria, pharmaceutical care, pharmacy students, rating scale

Introduction

The world-wide acceptance of pharmaceutical care as the mission of the pharmacy profession is shaping pharmaceutical education and practice. As a result, pharmaceutical care is adopted as the focus of good pharmacy education.[1] Obstacles that differ in practice settings and places have hampered efforts geared toward the implementation of pharmaceutical care world wide. Some obstacles have identified include deficient clinical knowledge and communication skills, insufficient time, and negative attitudes of pharmacy practitioners.[2-5] Attitude factors may represent key obstacles in realizing pharmacists' contribution to society.[6] Chisholm and Wade have indicated the importance of the need to foster positive attitudes regarding pharmaceutical care among practitioners and, more importantly, among future practitioners.[7] Pharmaceutical care philosophy of practice is enabling pharmacy students to visualize how the profession is evolving, irrespective of the future practice settings the students select.[8]

Several approaches have been reported to improve students' attitudes toward pharmaceutical care. One method to foster enhanced attitudes toward pharmaceutical care is exposure to the principles and practice of pharmaceutical care as part of early pharmacy education.[7] There are reports indicating the need to teach pharmacy students the concept of pharmaceutical care and the importance of applying this philosophy of practice to the benefits of patients.[9-12] Another method that may produce positive attitudes for future practitioners is to encourage pharmacy practice experience early in students' pharmacy education. In fact, obtaining pharmacy practice experience before the pharmacy professional curriculum has begun may result in more positive attitudes toward pharmaceutical care.[7] In addition, the effectiveness of using actual patients in the classroom to develop positive students' attitudes toward pharmaceutical care has been demonstrated.[13] A patient-centered intervention programme has also

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been described and demonstrated to improve students' attitude toward providing care for HIV/AIDS patients.[14]

McDonough et al strongly recommended that students interact with patients early in their academic careers to improve interpersonal communication and empathy skills.[4] The opportunity for students to interact with patients and develop practical concepts about the importance of performing pharmaceutical care occurs traditionally in the latter stages of the pharmacy curriculum during the experiential component. However, introducing students to patients early in the pharmacy curriculum demonstrates the importance of performing pharmaceutical care. Additionally, these early experiences may help students develop positive attitudes regarding pharmaceutical care activities. Such attitudes will hopefully motivate students to incorporate these concepts into practice.[13] The purpose of the pharmaceutical care shadowing experience was to improve the pharmacy students' attitudes toward good professional practices. During the pharmaceutical care shadowing experience, the students gain exposure to relevant ethical and practical issues of pharmacy practice and are expected to share their experiences with fellow classmates and faculty members in a formalized setting.[15] The establishment of student-driven, faculty-observed pharmaceutical care clinics within schools and colleges of pharmacy can help to effectively prepare students for the challenges of an active patient care practice.[16] Another study has determined whether completion of a patient counseling course improved pharmacy students' perceptions of the importance of pharmaceutical care and whether there was a difference in students' perceptions of pharmaceutical care provided in retail settings compared with that provided in clinical settings. This report indicates that teaching the concept of pharmaceutical care and incorporating it into a patient counseling course is more instructive when a clinical setting is used.[17]

Most of the reports concerning future pharmacy practitioners' attitudes toward pharmaceutical care are based on experience in developed countries. As the philosophy of pharmaceutical care spreads to other parts of the world, there is a need to build on professional literature by incorporating evidence from the developing countries. Nigeria is one such country, where pharmaceutical care is gradually dominating the picture of professional philosophy. This most populous country in Africa has an estimated population of over 120 million inhabitants. The number of universities in Nigeria is growing, with 45 currently operating. The federal government owns 23 of these universities, state governments own 18, and the remaining 4 are privately owned. Only 9 of the 45 universities have pharmacy programmes, but plans are underway to establish new schools of pharmacy in Nigeria. The Pharmacists Council of Nigeria regulates pharmaceutical education in the country. All the pharmacy faculties have a 5-year bachelor of pharmacy unclassified (i.e., not classified into first, second, or third class) degree programme. Only the University of Benin received the Council's approval and commenced a 6-year doctor of pharmacy programme in 2001, with a gradual phasing out of its bachelor of pharmacy degree programme. Since the commencement of the doctor of pharmacy degree, this university has been at the centre of pharmaceutical care advocacy in Nigeria. Whereas, the students are exposed to the philosophy and practice of pharmaceutical care, there has been no study on the attitudes of students in the faculty toward pharmaceutical care; therefore, such a study would be necessary. The findings would be a useful baseline data to monitor progress in the training of future pharmacy practitioners.

The objectives of this study were therefore, to investigate and describe the attitudes of the Nigerian pharmacy students toward pharmaceutical care using an existing pharmaceutical care assessment instrument.

Methods

The investigation was performed at the Faculty of Pharmacy, University of Benin, Nigeria. Students participating in the survey represent a random sample of 250 pharmacy students in their professional years. The pharmacy students were selected using a table of random numbers. The respondents completed a self-administered questionnaire designed to test the research objectives. The instrument was developed and re-validated in the United States of America.[18,19] This 13-item standard Pharmaceutical Care Attitudes Survey (PCAS) has been widely employed to assess students' attitudes. Two of the 13 item constructs were negatively worded. The 5-point (Likert-type) response scale was: strongly agree = 5; agree = 4; neutral = 3; disagree = 2; and strongly disagree = 1. Respondents were

asked to state the degree to which they agreed or disagreed with the attitude items posed to them. We also added a section to gather data on some demographic characteristics of the respondents. These were sex, age, marital status, professional year, and work experience in a pharmacy.

Returned questionnaires were entered into Microsoft Excel software and checked for accuracy. Data were then loaded into SPSS (version 11.0) for descriptive statistical analysis or GraphPad Instat (version 2.05a) for inferential statistical analysis. Negatively worded attitude items were reversed to enable summation of scores; a logical midpoint between the agree-to-disagree axis was assumed. Mean scores with standard deviations and percentage frequencies were determined. Factor loading was computed to determine items contributing to group summary scores, and 2 items with factor loading of less than 0.4 were excluded. The factor analysis also evaluated the construct validity of the instrument. Cronbach's alpha was calculated to estimate the internal consistency of the responses to questionnaire items. Principal component analysis employed Varimax rotation with Kaiser normalization and list-wise deletion of missing data. This process was accomplished in order to assess the dimensions of students' attitudes toward pharmaceutical care. Rated scores were treated as interval data suited for quantitative analysis. Relationships between the demographic profile and responses were explored using Student's *t*-test and one-way ANOVA. Inferential statistics were calculated with the aid of GraphPad Instat, which reports exact *P* values, hence a *P* value of less than 0.05 was interpreted as significant.

Results

The survey achieved a response rate of 88.0% (220/250). The majority of the respondents were females (57%) and about the same proportion (59%) were aged between 20 and 24 years. About a third of students (31%) were in their second professional year and 44% had work experience in a pharmacy setting. Details of the demographics are presented in Table 1.

Table 1: Demographic characteristics of the students (N=220)

	Number reporting	%
Sex:		
Female	126	57.3
Male	94	42.7
Age (years):		
Under 20	14	6.4
20 – 24	129	58.6
25 – 29	62	28.2
30 and above	15	6.8
Marital status:		
Single	208	94.5
Married	12	5.5
Professional year:		
4th year (BPharm)	49	22.3
3rd year (BPharm)	46	20.9
2nd year (PharmD)	69	31.4
1st year (PharmD)	56	25.5
Work experience in a pharmacy:		
Yes	96	43.6
No	124	56.4

Of the respondents, 88% agreed or strongly agreed that all pharmacists and pharmacy students should perform pharmaceutical care. About half (48%) also agreed/strongly agreed that providing pharmaceutical care takes too much time and effort, Table 2.

Table 2: Students' responses to the questionnaire

Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. All pharmacists should perform pharmaceutical care	136(61.8%)	57 (25.9)	9 (4.1)	14 (6.4)	4 (1.8)
2. The primary responsibility of pharmacists in all health care settings should be to prevent and solve medication-related problems	105(47.7)	85 (38.6)	13 (5.9)	11 (5.0)	6 (2.7)
3. Pharmacists' primary responsibility should be to practice pharmaceutical care	82 (37.3)	80 (36.4)	27(12.3)	27 (12.3)	4 (1.8)
4. Pharmacy students can perform pharmaceutical care during their clerkships	78 (35.5)	115(52.3)	22(10.0)	3 (1.4)	1 (0.5)
5. I think the practice of pharmaceutical care is valuable	142 (64.5)	69 (31.4)	3 (1.4)	4 (1.8)	2 (0.9)
6. Providing pharmaceutical care takes too much time and effort	32 (14.5)	72 (32.7)	36(16.4)	46 (20.9)	34 (15.5)
7. I would like to perform pharmaceutical care as a pharmacist practitioner	110 (50.0)	75 (34.1)	28(12.7)	4 (1.8)	3 (1.4)
8. Providing pharmaceutical care is professionally rewarding	127 (57.7)	64 (29.1)	23(10.5)	6 (2.7)	0 (0.0)
9. I feel that pharmaceutical care is the right direction for the profession to be headed toward	110 (50.0)	79 (35.9)	22(10.0)	7 (3.2)	1 (0.5)
10. I feel that pharmaceutical care movement would benefit pharmacists	109 (49.5)	89 (40.5)	17 (7.7)	5 (2.3)	0 (0.0)
11. I feel that pharmaceutical care movement will improve patient health	145 (65.9)	65 (29.5)	6 (2.7)	1 (0.5)	2 (0.9)
12. I feel that practicing pharmaceutical care will benefit my professional pharmacy career as a pharmacy practitioner	125 (56.8)	78 (35.5)	12 (5.5)	4 (1.8)	1 (0.5)
13. Providing pharmaceutical care is not worth the additional workload that it places on the pharmacist	12 (5.5)	20 (9.1)	27(12.3)	77 (35.0)	82 (37.3)

Chronbach's alpha for the 13 questionnaire items was found to be 0.777. About 50% of the total variance obtained was due to 3 of the 13 items, the first contributing 33.3%, whereas the second and third items had 9.7% and 8.9% respectively. Following determination of communalities, 2 items had factor loading of less than 0.4 and were therefore excluded from the summary score. These items were: "pharmacy students can perform pharmaceutical care during their clerkships," (#4), and "I would like to perform pharmaceutical care as a pharmacist practitioner" (#7). The rated scores and factor loadings, which are used to determine items that belong to the group responses, are presented in Table 3.

Based on the remaining 11 items that loaded above 0.4, the mean total score was computed to be 46.33 ± 9.90 (range, 11 to 55; midpoint, 33). Varimax rotation yielded 3 components. The first component had 10 items and a reliability coefficient of 0.816.The second component comprised 2 items with a reliability

coefficient of 0.411, and the third component had only one item and indeterminable reliability coefficient. However, standard grouping of the 13 items as the instrument's developers recommended produced low reliability coefficients as follows: professional benefits (0.635), professional duty (0.562), and return on efforts (0.411). Further inferential statistical analysis indicated that female pharmacy students had significantly higher positive attitudes toward pharmaceutical care than their male

Table 3: Factor loadings, mean score and standard deviation of questionnaire items

Item	Factor loading	Mean score*	Standard deviation
1	0.607	4.34	0.96
2	0.429	4.24	0.96
3	0.538	3.95	1.07
4	0.213	4.21[a]	0.71
5	0.408	4.57	0.70
6	0.605	3.10[b]	1.32
7	0.341	4.30[a]	0.86
8	0.425	4.42	0.79
9	0.628	4.32	0.82
10	0.739	4.37	0.73
11	0.654	4.60	0.66
12	0.573	4.46	0.72
13	0.580	3.90[b]	1.16
Mean Total		46.33	9.90

*Strongly agree = 5; agree = 4; neutral = 3; disagree = 2; strongly disagree = 1
[a] = Items with low factor loading that were excluded from summary score
[b] = Reversed score for negatively worded questionnaire items; N = 215 valid list-wise

counterparts (t = 6.11; p<0.0001). Positive pharmaceutical care attitudes were also associated with age (F = 16.47; p<0.0001), exposure to pharmacy curriculum (F = 2.67, p = 0.048), and work experience in a pharmacy (t = 2.74, p = 0.007). See Table 4.

Discussion

Negative attitudes are a barrier to performing pharmaceutical care. The need to foster positive attitudes toward pharmaceutical care among future practitioners of pharmacy is justified. Despite the rapid adoption and widespread acceptance of pharmaceutical care as the focus of pharmacy, the implementation of the philosophy in pharmaceutical education is not widespread. This study represents the first initiative to evaluate students' pharmaceutical care attitudes in Nigeria where pharmaceutical care is being gradually introduced. Though the instrument of data collection was developed in the United States, where pharmacy students have relatively higher level of exposure than their Nigerian counterparts, the instrument's internal consistency in this study was considered satisfactory. Furthermore, we had to use a composite score rather than the subscales, which were considered inappropriate for this study. Overall, the Nigerian students surveyed indicated positive attitudes toward pharmaceutical care in general terms but the dimensions of their attitudes could not match the suggested dimensions of professional benefits, professional duty and returns on efforts[7,14]. We speculate 2 main reasons for this difference. These are differences in the environment of pharmacy practice and pharmacy curricular exposures. The evolution of pharmacy practice models indicates an uneven adoption of a new practice model as opportunities for its existence emerge rather than a series of abrupt changes all over the globe.[20,21] Pharmacy practice and education in Nigeria are still focused primarily on drugs and their distribution with some fragments of clinical pharmacy activities.

Previous data had suggested that female pharmacy students had more positive attitudes toward pharmaceutical care than men. Age and pharmacy work experience were also found to be factors[7,18]. This study provides further evidence supporting previous reports. The findings of this study have

implications for pharmacy education in Nigeria. Though the present investigation was conducted in only one of the 9 schools of pharmacy in Nigeria, the results may be an indication of attitudes in other schools as well. Again, the Pharmacists Council regulates pharmacy education in Nigeria. A previous study on attitudes of Nigerian pharmacists toward pharmaceutical care found a preference for a combination of traditional pharmacy practice and pharmaceutical care, as well as gradual introduction of the practice philosophy in Nigeria.[22] There is, therefore, a need for increasing the pharmaceutical care content of the Nigerian pharmaceutical education. Additionally, evidence-based models such as early introduction of

Table 4: Comparison of attitude ratings based on the demographic subgroups

	Number reporting	Mean score	Standard deviation
Sex: n=215*			
Female	122	4.24	0.87
Male	93	3.54	0.78
		t = 6.11; p< 0.0001	
Age (years): n=213*			
Under 20	13	4.23	0.97
20 – 24	125	3.51	0.78
25 – 29	61	4.27	0.84
30 and above	14	4.24	0.82
		F = 14.67; p < 0.0001	
Professional year: n=214*			
4th year (BPharm)	49	4.29	0.87
3rd year (BPharm)	45	4.21	0.78
2nd year (PharmD)	66	3.86	0.80
1st year (PharmD)	54	4.12	0.95
		F = 2.67; p = 0.048	
Work experience in a pharmacy: n=220*			
Yes	96	4.17	0.93
No	124	3.85	0.78
		t = 2.74; p = 0.007	

*Number reporting may be < 220 due to non-response to an item

pharmaceutical care into pharmacy education, availability of actual patients, and pharmacy students observation of practicing pharmacists should be encouraged.[7,13,14]

Limitations

Though the present investigation was conducted in only one of the 9 schools of pharmacy in Nigeria, the results may be an indication of attitudes in other schools as well. Again, the Pharmacists Council regulates pharmacy education in Nigeria. A previous study on attitudes of Nigerian pharmacists toward pharmaceutical care found a preference for a combination of traditional pharmacy practice and pharmaceutical care, as well as gradual introduction of the practice philosophy in Nigeria.[22] There is, therefore, a need for increasing the pharmaceutical care content of the Nigerian pharmaceutical education.

Not all the students in the survey had been exposed to the concept of pharmaceutical care which could have possibly affected their responses. However, the questionnaire was prefaced with this definition: “pharmaceutical care is a practice philosophy whereby the pharmacist takes responsibility for identifying, preventing, and solving a patient’s drug and health related problems.” The purpose of prefacing the questionnaire was to give all the respondents the same point of reference to the concept of

pharmaceutical care. Furthermore, it may be useful to revalidate the PCAS from the point of view of the students. Since one of the 13 questionnaire items may not be relevant to all pharmacy students, in particular those students who are not familiar with clerkship experiences. Previous research with the PCAS suggested the use of a reduced 12-item (PCAS-reduced) instrument without the clerkship item. The validity of one global score on the PCAS has not been established[13].

Conclusions

This study, as the first of its kind in Nigeria, is considered an important contribution, especially because it provides baseline evidence to monitor changes regarding transitions toward pharmaceutical care education and practice in the country. Nigerian pharmacy students in the cross-sectional survey indicated moderately positive attitudes toward pharmaceutical care. Positive attitude ratings were associated with age, sex, curricular exposure, and work experience in a pharmacy setting. Further research would be necessary to clarify the dimensions of students' pharmaceutical care attitudes. A nation wide survey of students in all the Nigerian pharmacy schools would provide additional evidence. Again, the validity of the widely used Pharmaceutical Care Attitude Scale (PCAS) requires a cross-validation in Nigeria. So far, we have used it to undertake a baseline study to find the direction of students' attitudes, but the dimensions of these attitudes require further clarification.

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