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Nationally Recognized Standardized Pharmacy Examinations: A Survey of First-Year Professional Pharmacy Students Opinions

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Abstract

A survey was conducted among first year pharmacy students at Howard University College of Pharmacy to assess their opinions about the standardized pharmacy exams: Pharmacy Curriculum Outcomes Assessment (PCOA), pre-North American Pharmacist Licensure Exam (pre-NAPLEX), North American Pharmacist Licensure Exam (NAPLEX) and Multistate Pharmacy Jurisprudence Exam (MPJE). A 4-point Likert scale was utilized to collect data on a 7-query questionnaire. A total of 44 first-year professional pharmacy students participated in the survey. Analysis of the survey data showed that compared to 14 (31.8%) respondents who disagreed, 30 (68.2%) strongly or somewhat agreed that they were familiar with the exams (p = 0.0487). A further 34 (77.3%) believed that they should be exposed to these exams at an early stage of their pharmacy training (p = 0.0271). There were no significant differences between the responses obtained on the rest of items in the questionnaire (p = 0.1245 to 1.000).

Keywords: *PCOA, NAPLEX, MPJE, standardized testing, Likert scale.*

Introduction

Colleges and schools of pharmacy in the USA formulate curricula which are supposedly to meet expectations and learning needs of students. Passing the North American Pharmacist Licensure Examination (NAPLEX) and for most states the Multistate Pharmacy Jurisprudence Exam (MPJE) are requirements for pharmacist licensure to practice pharmacy in the USA. To prepare them for performing well in these standardized tests, pharmacy students are encouraged early on to take Pharmacy Curriculum Outcomes Assessment (PCOA) exam. Despite its usefulness, PCOA is administered by less than 20% of colleges and schools of pharmacy. It has been argued that standardized tests such as PCOA affect grades, progression in courses and finally success in licensure exams (1). Randolph et al (2) have shown a significant correlation between performances in PCOA and NAPLEX tests. Although not a required test, pre-NAPLEX has been reported as significant predictor of NAPLEX score (3). The current survey was launched to get the opinion of first year professional pharmacy students at Howard University on their knowledge regarding these exams in the hope of elucidating what they know about PCOA, pre-NAPLEX, NAPLEX and MPJE tests. Based on the findings of the survey, students can be encouraged to know more about contents of the tests, so that they can prepare for them methodically.

Methods

A questionnaire was developed by using a Qualtrics tool and sent on-line to 44 first year professional pharmacy students at Howard University. A 4-point Likert score (1 = strongly agree; 2 =somewhat agree; 3 = somewhat disagree; 4 = strongly disagree) was utilized to collect data on the main part of the survey. The survey consisted of two parts: eight demographic items and seven items related to the examinations. In the demographic section, data on age, gender, level of education, state of residence, work experience, type of work, length of work and annual income prior to starting pharmacy education were collected. For this section, 95% Confidence Interval (CI) were determined. The statistical percentage spread was computed for each item in the demographic data.

An average numeric value of the 4-point Likert survey scale was computed for each of the seven items to determine the approximate position on the 1-4 scale. A 2-tailed Fisher

exact test was applied to analyze the response obtained collected through the Likert scale. The strongly agree and somewhat agree responses were combined and compared with similarly combined somewhat disagree/strongly disagree responses.

Results

Among the survey respondents, there were more females (*n*=34, 77.3%) than males (*n*=10, 22.7%). About 58.1% (*n*=26) were in the age group 18-24 years, while 41.9% (*n*=18) were 25-34 years of age, with one respondent not providing an answer to this question. The majority of the participants (*n*=19, 43.2%) were from states other than Maryland (*n*=12, 27.3%), Virginia (*n*=9, 20.5%) and Washington, D.C. (*n*=4, 9.1%). Prior to starting pharmacy education, a significant number of respondents had worked (*n*=42; 95.5%) and only 2 (4.5%) had not worked. Twenty-seven respondents (62.8%) worked in pharmacy-related work-setting, whereas 16 (37.2%) worked in non-pharmacy related or healthcare areas, with no response from one participant. The annual incomes ranged from less than USD 10,000 to over 49,000, with the majority (39.5%) earning less than USD 10,000. The length of work time ranged from less than one year to over five years. Prior to joining the college of pharmacy, 59.1% (*n*=26) completed four years of college education (Table 1). The average numeric Likert scale score of the survey was in the range 1.84-2.5 (Table 2).

Characteristics	Respondents (n, %)	95% CI (% range)[1]
Age (years)[2]		
18-24	25 (58.1)	43.4-72.9
25-34	18 (41.9)	27.1-56.6
Gender		
Male	10 (22.7)	10.3-35.1
Female	34 (77.3)	64.9-89.6
States		
Washington, D.C.	4 (9.1)	0.6-17.6
Maryland	12 (27.3)	14.9-42.8
Virginia	9 (20.5)	8.5-32.4
Others	19 (43.2)	28.6-57.8
Work prior to college of pharmacy		
Yes	42 (95.5)	89.3-100
No	2 (4.5)	0.0-10.7
Annual income[2]		
< USD 10,000	17 (39.5)	24.9-54.2
10,000-19,000	7 (16.3)	5.2-27.3
20,000-29,000	3 (7)	0.0-14.6
30,000-39,000	8 (18.6)	6.9-30.2
40,000-49,000	3 (7)	0.0-14.6
>49,000	5 (11.6)	2.1-21.2
Type of work[2]		
Pharmacy related	27 (62.8)	48.3-77.2
Non-pharmacy related	9 (20.9)	8.8-33.1
Non-pharmacy related or healthcare related	7 (16.3)	5.2-27.3
Years worked		
None	1 (2.3)	0.0-6.7
< 1	7 (15.9)	5.0-26.7
1-3	14 (31.8)	18.1-45.6
4-5	11 (25)	12.2-37.8
>5	11 (25)	12.2-37.8
Education		
Some college	12 (27.3)	14.1-40.4
2 years of college	2 (4.5)	0.0-10.7
4 years of college	26 (59.1)	44.6-73.6
Professional	4 (9)	8.5-32.4

[1]CI = Confidence Interval; normal approximations of binomial exact values.
[2]In each of these categories, one participant did not provide answers.

Table 1: Demographic characteristics of respondents.

Questionnaire items	Strongly Agree (*n*, %)	Somewhat agree (*n*, %)	Somewhat disagree (*n*, %)	Strongly disagree (*n*, %)	Average Likert score[1]	*P*[2]
I am familiar with which test and when to take to take these standardized tests (PCOA, Pre-NAPLEX, NAPLEX MPJA) (*n* = 44)	14 (31.8)	16 (36.4)	12 (27.3)	2 (4.5)	2.0	0.0487
I am aware of the requirement and what is needed to prepare to take the exams (*n* = 44)	10 (22.7)	17 (38.6)	12 (27.2)	5 (11.4)	2.2	0.7477
I am aware of the differences between the group exams (*n* = 44)	11 (25)	15 (34.1)	14 (31.8)	4 (9.1)	2.22	0.2083
I feel that adequate information and resources were offered to me and were accessible to become familiar with information with these standardized exams (*n* = 43)	7 (16.3)	20 (46.5)	11 (25.6)	5 (11.6)	2.33	0.7366
I believe students starting first year should be exposed to standardized testing at an early stage in their pharmacy program (*n* = 44)	18 (40.9)	16 (36.4)	9 (20.5)	1 (2.2)	1.84	0.0271
I am aware that scoring on standardized testing is a good correlation of knowledge of pharmacy (*n* = 44)	10 (22.7)	17 (38.6)	11 (25)	6 (13.6)	2.3	1.000
I believe I am a strong standardized test taker (*n* = 44)	5 (11.4)	14 (31.8)	12 (27.3)	13 (29.5)	2.5	0.1245

[1]Average Likert scores were calculated by multiplying each response by the number of responses and then dividing by the number of respondents.
[2]*P* values < 0.05 are considered significant. The combined strongly agree and somewhat agree responses were compared with the respective combined somewhat disagree/strongly disagree answers.

Table 2: Questionnaire and Answers of Respondents on a 4-point Likert scale.

A significant number of the participants (*n*=30, 68.2%, *p*=0.0487) said they are familiar with these standardized tests, including PCOA, Pre-NAPLEX, NAPLEX, and MPJA. A majority of students (*n*=27, 61.3%, *p*=0.7477) also said they are aware of the requirements that are needed to prepare to take these exams. Although it has not reached statistical significance, only less than half of the students agreed that they are not strong standardized test takers (*n*=19; 42.2%, *p*=0.1245). Over three-fourth of the participants believed that starting first year, students should be exposed to the resources and access to information about the standardized tests (*n*=34; 77.3%, *p*=0.0271). Over sixty percent (*n*=27; 61.3%) participants said they are aware of the scores on the standardized tests have a strong correlation of the level of the knowledge acquired in pharmacy school. However, nearly sixty percent (*n*=26, 59.1%; *p*=0.2083) of the students are not aware of the differences among the different standardized tests listed above.

Discussion

The two tests that are required to pass before becoming a licensed pharmacist in the United State after obtaining a pharmacy degree are NAPLEX and MPJE. The current state average NAPLEX first-time pass rate is 92.1% and the national average is 91.7% although a scaled score of 75 or better is considered a pass. Published studies (4) have identified factors that predict NAPLEX outcome. However, there are limited published resources describing students' opinion on their knowledge and familiarity of the tests while they are in their early stages of their academic career as pharmacy students.

The goal of this study was to get the opinion of first professional pharmacy students on their knowledge regarding these exams in the hope of elucidating what they know about PCOA, pre-NAPLEX, NAPLEX and MPJE tests. Based on the results, it seems that majority of participants are well familiar with the standardized tests and are also aware of the requirements that are needed to prepare to take these exams. Despite their adequate knowledge of the tests and the requirements, many of them felt that they may not be strong in participating in such type of tests. Being exposed to these tests at an early stage in pharmacy program is what most participants support. They also agreed that these tests are accurate measures of their pharmacy knowledge, even though they may not be aware of the differences among the three standardized tests.

As noted above, Likert scale data analysis was used in the interpretation of the survey responses (5). When taking the average scores of the seven questions of the survey, the respondents somewhat agreed with the statements as can be discerned from the average Likert score (1.84-2.33). Only one item of the survey: "I believe I am a strong standardized test taker" scored 2.5, which is close to the "somewhat disagree" score of 3. When the combined agree and disagree response data were analyzed, a statistically significant number of respondents expressed familiarity with the tests. They also believed they should be exposed to the tests early on in their training (Table 2).

Conclusion

A survey of 44 professional first year Howard University College of Pharmacy students showed agreeable responses of varying degrees to the questions posed in the questionnaire. The majority of the respondents were familiar with standardized PCOA, pre-NAPLEX, NAPLEX and MPJE tests and were aware of the differences and the requirements for these tests. They also agreed they have adequate resources, and they expressed the need for exposure to the tests early in their educational training. The survey participants agreed there was a good correlation between the scoring system and knowledge of pharmacy. The majority believed they are not strong standardized test takers.

Conflicts of Interest

The authors disclose no conflict of interest.

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