Short Communication

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Impact of A Previous Academic Background in Coping Up with the Pharmacy School

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ABSTRACT

Introduction: Succeeding in the first year of pharmacy school is crucial and many factors play a role in it. The purpose of this study was to provide further insight into the Non-academic predictors of success for First year pharmacy students. In this paper we have looked at some of the key factors including years in between starting a pharmacy program and undergraduate, clinical/pharmacy work and impact of covid-19 and having remote learning.

Methods: The participants in this study attend The Howard University College of Pharmacy. Each participant was asked ten questions, in addition to 8 demographic questions, designed to collect their perceptions of the experiences that aid them while in their first professional year of study. Methods used in this study was software Statistical Package for the Social Sciences (SPSS).

Results: The current class of 2024, are experiencing a significantly different situation from other first professional students while navigating schoolwork and the Covid-19 pandemic. For consideration, the participants were taking the survey during the height of quarantine, and social distancing and the majority (81.8%) of students felt that it had a significant impact on their success in the first year. The results of this study have shown that 61.4% of students agreed and perceived that entering pharmacy school right after undergraduate contributed to their success, 38.6% disagreed with this statement. It was also found the total 45.5% of participants agreed their clinical and 50.3% agreed their pharmacy experience they had prior to entering pharmacy school contributed to their success, 54.5% disagreed with this statement on clinical experience and 49.7% on pharmacy experience, respectively.

Conclusion: The primary goal of this study was to see if this prior educational background influences the students handling the workload and their performance based on their perception. Majority of the participants recommend to starting pharmacy school right after undergraduate classes with no or minimum gap in between. They also believed that besides having a BA/BSc degree, a high GPA in science courses also helped them handle the heavy load of pharmacy courses. Majority also agreed a full load course as an undergraduate and working as pharmacy technicians helped them to cope up with the first-year pharmacy program. The same was true regarding getting involved in pre pharmacy clubs. However, this study was done as students go through Covid-19 pandemic, the overwhelming majority said their performance was significantly affected.

Short Communication

Success in the first year of pharmacy school is a challenging task with many coinciding factors. The following study looks at determining factors of success for individuals in their first year of pharmacy school based on the amount of time taken between undergraduate and pharmacy school. Most other studies have looked at other factors such as strong prior academic GPA and high PCAT performance. In a study done with the 1992 first year students in the University of Georgia college of Pharmacy to determine the

pre-pharmacy academic predictors of success for their first year in pharmacy [1]. It was determined that math/science GPA (measured on a 4.0 scale) and achievement of a 4-year college degree were the most significant predictors for success in the first year of pharmacy school. In another study done in 2018 by Eiland and colleagues to look at the same predictors of academic success in pharmacy students. Eiland compiled three years of admission data from 417 students (students from 2014, 2015, and 2016) to look at the pre-pharmacy curriculum data, they found that cumulative and science GPA were significant ($p<0.05$) predictors of the final pharmacy cumulative GPA (measured on a 4.0 scale). Unlike the previous study, the average pre-pharmacy cumulative GPA (3.34) and science GPA (3.24) of the students at Auburn University college of pharmacy was provided [2]. However, one area that is markedly lacking in the prior research done to determine the success factors of individuals in their first year of pharmacy school is the impact of time taken off between undergraduate and pharmacy school. This is a cross-sectional blind study with individuals who have no time off, versus people taking time away from school between undergraduate and pharmacy school.

This study will paint a broader picture of success points for first year students of pharmacy. In addition, when looking at admissions criteria many studies did not include, prior student data on clinical/pharmacy work completed and how it may have contributed to the success of students in the program. This study also holds in consideration the unusual circumstances of COVID-19 and its impact on first year pharmacy students. It is speculated that students who have taken time off will have less successful first year compared to the ones who have not taken a year off with many science classes fresh in their minds. Also, students with prior clinical experience, especially in the pharmacy, will have an unchallenging time acclimating themselves to medications, disease states, and professionalism than students who have not had such opportunities [3]. The goal of this study is to determine factors such as years lapsed between pharmacy school and undergraduate coursework and clinical/pharmacy experience on success among pharmacy students.

Methods

A survey was administered using an online data collecting and analyzing software Statistical Package for the Social Sciences (SPSS) using a 4-scale system. The survey consisted of 8 demographic questions and 3 useful functional survey questions. Approximately, 44 students participated in the survey in October 2020. The online survey, in the format to be answered on a scale of

a. Strongly agree.

b. Somewhat agree.

c. Somewhat disagree.

d. Strongly disagree.

For the demographic information relevant answer choices were given. The data analysis was done with the percentages to determine the statistical significance between success in pharmacy school and years between pharmacy school; the success in pharmacy school and the clinical/pharmacy experience prior to pharmacy school, while considering the impact of Covid-19 and online schooling on coping with the first year.

Results

A total of 44 students requested to complete a survey in this study with one hundred percent response rate. Several demographics data that includes age, gender, work experience, etc. collected and as summarized in Table 1. Over these, more than three-quarter of the participants (77.27%) were females. All of them the survey respondents were under 35 years old with majority (59%) between 18-34 years of age. Over half of them came from states other than the DMV area to join our pharmacy program. However, the others 27.27% are residents of Maryland, one-fifth (20.45 %) are residents of Virginia. Participants also asked if they have had a job, how much they were making, and the type of job they held prior to joining our pharmacy school. Overwhelming number of students (95.5%) said they had worked before joining our pharmacy program. But when asked what type of job they were working, the majority of them (62.8%) had a pharmacy related job. Additionally, only one-third said that they'd had a non-pharmacy related job. Seven (16.28%) participants said they had non-health care related jobs.

Table 1: Prior Educational Background Repo

	Response Rate (%)	No. of Responses
Gender		
Male	22.7	10
Female	77.27	34
AGE		
18 - 24	59.09	26
25 - 34	40.91	18
35 - 44	0	0
45 or older	0	0
Residence Before Coming to HU		
Maryland	27.27	12
Virginia	20.45	9
Other States	43.18	19

When asked about their annual income, over ten percent (11.3%) were paid over $50,000 annually while others (16.3%) were paid less than $20,000. The remaining (22.56%) made between $20,000 - $50,000. Additionally, more than half of students worked for more than four years before attending the pharmacy program. Over one-quarter (25.6%) of the participants reported to work over 5 years. Students were also asked to state the highest educational level achieved before joining the pharmacy program. The majority of students (59.09%) have at least a 4-year degree, while 27.7% of students said they have some college and 4.55% have an associate degree. Interestingly, close to ten percent (9.09%) of students said they have another professional degree in-

cluding a Master of Science degree. As shown in Table 2, the survey results it was found that; 61.5% agree that starting pharmacy school right after completing undergraduate courses was beneficial during their first year in pharmacy school. When looking at the influence paid clinical work and pharmacy technician experience had on their ability to cope with the first year; only less than half of the participants (45.5%) agreed it was beneficial during their first year in pharmacy school. The participants were also asked if their experience helped them to succeed as first-year students and over half (59.1%) agreed. Specifically, half of the participants agreed (36.36% strongly agree, 13.64% somewhat agree) that their pharmacy tech job contributed to their success as a first-year pharmacy student. When asked if starting pharmacy school during COVID-19 has made coping with the first year of pharmacy school harder, over eighty percent agreed (40.91% strongly agreed 40.91% somewhat agreed) that the Covid-19 pandemic made it harder for them. The results are shown in Table 3.

Table 2: Survey Questions Response Related To The Impact Of A Previous Academic Background In Coping Up With The Pharmacy School (N=44).

Survey Questions	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
I believe it is my high science GPA has helped me through my first year of pharmacy school.	4 (9%)	22 (50%)	15 (34%)	3 (6.8%)
It is my paid clinical work before pharmacy school that has helped me to cope with the first year of pharmacy school.	5 (11.4%)	15 (34.1%)	10 (22.7%)	14 (31.8%)
I believe my pharmacy tech job experience has helped me to cope with the first year of pharmacy school.	16 (36.7%)	6 (13.6%)	8 (18.2%)	14 (31.8%)
Being involved in pre-pharmacy school clubs during undergraduate has prepared me for my first year of pharmacy school.	6 (13.6%)	16 (36.7%)	9 (20.5%)	13 (29.6%)
The pharmacy program I have chosen fits my needs and goals and is supportive in helping me to cope with the first year of pharmacy school.	19 (43.2%)	20 (45.6%)	3 (6.8%)	2 (4.6%)
Having a fuller schedule (more credits) during undergraduate helped me to cope during first year of pharmacy school.	11 (25%)	17 (38.6%)	9 (20.5%)	7 (15.9%)
Starting pharmacy school right after undergraduate and having most of the material fresh has helped me to cope with the first year of pharmacy school.	14 (31.8%)	13 (29.6%)	10 (22.7%)	7 (15.9%)
Starting pharmacy school during COVID-19 has made difficult in coping with the first year of pharmacy school harder.	18 (40.9%)	18 (40.9%)	7 (15.9%)	1 (2.3%)

Table 3: Prior Educational Background Reponses (N=44).

Highest Education Attended Before Coming to HU	Response Rate (%)	No. of Responses
Some College	27.7	12
2-year degree/associate degree	4.55	2
4-year degree	59.09	26
Professional degree	9.09	4
Doctorate	0	0

Discussion

To practice pharmacy in the U.S., one must earn a Doctor of Pharmacy (Pharm.D.) degree from an accredited pharmacy institution and pass a state pharmacy licensure exam. U.S. pharmacy institutions are accredited by the Accreditation Council for Pharmacy Education (ACPE). A degree in pharmaceutical science or related discipline will not prepare or permit to practice pharmacy or care for patients in the U.S. The Pharm.D. degree requires at least 2 years of undergraduate study followed by 3-4 years in the Pharm.D. curriculum. Some pharmacy schools require or give preference to students with a bachelor's degree. Despite this variation in admissions, many students do not make the decision to join a pharmacy school while still in college. Based on our data collected, over sixty percent of first year pharmacy students have at least a bachelor's degree before coming to the program (Table 4).

Table 4: Response to Job and Income Related Questions (N=44).

Have You Worked Before Coming to HU?	Response Rate (%)	No. of Responses
Yes	95.45	42
No	4.55	2
Annual Income If You Have Worked		
$10,000 - $19,999	16.28	7
$20,000 - $29,999	6.98	3
$30,000 - $39,999	18.6	8
$40,000 - $49,999	6.98	3

>$49,999	11.3	5
TYPE OF JOB HELD		
Pharmacy Related	62.79	27
Non-Pharmacy but health care related	20.93	9
No-Pharmacy or Non-Health care related	16.28	7
Number of Years Worked Before Coming tO HU		
< 1	16.28	7
1 – 3	32.56	14
4 – 5	25.58	11
> 5	25.58	11

The primary goal of this study was to see if this prior educational background influences the students handling the workload and their performance based on their perception. However, it was not possible to collect the objective data such as grades or GPA to correlate the perceived performance data obtained from the survey. The majority of the students (61.4%) believe that starting pharmacy school right after undergraduate classes has had a huge contributing factor to coping with the first year in pharmacy school. This is due to the fact that many of the core classes are built upon information learned in undergraduate levels and having the material fresh helps to make connections easier rather than relearning them again. However, this data was not supported by about one-third (28.6%) of the participants. The data collected in this study is also supported by a study done by McCall and colleagues, stating that obtaining a BS degree prior to pharmacy school, outside of other factors, was significantly correlated with a higher mean P1 GPA [4]. Furthermore, the mean cumulative GPA of students with a BS degree was 86.4 versus cumulative GPAs of those without a BS degree which were 84.9, respectively ($p = 0.039$). In addition to a higher success rate, having a BS degree prior to pharmacy school leads to a significant increase in likelihood of graduating from the Doctor of Pharmacy program without academic delay or suspension ($p = 0.021$ and $p = 0.027$, respectively). Although a similar correlation was observed in our study, only about sixty percent of the students said that they believe that having at least a BA/BSc degree helped them to handle the heavy workload during their first-year academic career.

The majority of participants (59%) also believed that besides having a BA/BSc degree, a high GPA in science courses also helped them handle the heavy load of pharmacy courses. However, over forty percent (41%) do not believe the sciences courses have any impact on their ability to cope up with courses in pharmacy school. In a study by McAll and colleagues it was found that completing advanced biology courses prior to pharmacy school was significantly correlated with a higher mean P1 GPA and a higher graduation rate [4]. Other studies have also shown that chemistry and math grades are the two major contributors to success in pharmacy school [5]. In our study, no distinction was made between the various types of science courses. Although it has been shown studies that GPA in science (specifically biology, math, or chemistry) courses are considered as a predictor of success in the P1 year, over forty percent of the participants believed it did not contribute to their success as a first-year student. Furthermore, it was determined that less than half (45.5%) agreed that their paid clinical work as a background aided them in coping with pharmacy school. It is speculated that these experiences improve the familiarity, with disease state, medications, and general professionalism while in the first year of pharmacy school. Contrarily, less than half of students did not perceive clinical work as useful. This may be due to the fact that most of the courses in first year pharmacy schools are not directly related to patient care and focused on basic science knowledge.

Close to two-third survey participants (63.6%) agreed that taking a full load course as an undergraduate helped them to cope up with the first-year pharmacy program. Pharmacy students in most pharmacy schools are expected to take 18-20 credit hour preselected courses during their first year, first semester academic year. Even though the number of the credits is not unique to some undergraduate programs, the workload for each course in a professional school is much heavier and requires lots of reading and time commitment. Despite this known fact, we can only imagine why about forty percent of the respondents said they did not agree with it. We did not ask participants to give us the reasons for their response, and thus we were unable to determine the justification. This can be looked into for future studies. Work experience as a pharmacy technician prior to attempting entry into a pharmacy school, will provide a great advantage for getting into pharmacy school. Knowing the various brand and generic names and doses of medications while working as a pharmacy technician is crucial for success as a pharmacy student. However, most clinical courses do not start until the second year of most pharmacy programs, students may not value their experience as much early in their academic career as a first-year student. That may be the reason why only half of the survey participants (50.3%) said they agreed when asked if they believe their pharmacy technician job experience has helped them to cope with their courses.

The same was true regarding getting involved in pre pharmacy clubs. A pre-pharmacy club is a student organization for undergraduates who plan to pursue a Doctor of Pharmacy degree (PharmD). The club's mission is to provide resources and opportunities to introduce undergraduates to the world of pharmacy and to help its members become the most qualified applicants to the PharmD program. When survey participants asked if their enrollment in Pre-Pharmacy clubs during their undergraduate years was helpful in the pharmacy program, only half of the survey respondents (50.3%) agreed that it has prepared them well to handle the workload as a first year student. However, the survey did not ask the participants how the club helped them cope up with the pharmacy workload. In regards to starting pharmacy school during a pandemic, the survey results show that over eighty

percent agreed (40.91% and 40.91% of students have strongly agreed or somewhat agreed, respectively) that it had an effect on their performance and made it harder to cope up with schoolwork. Therefore, starting pharmacy school during the COVID-19 pandemic has had a a perceived negative impact on coping with the first year of pharmacy. The reasons could be economically, socially, or health based. The survey did not collect the specific reason for each participant but takes this into consideration for the perception of success in the first year for this set of participants. While there are many challenges in P1 year, it is good to see the high response of satisfaction with the overall pharmacy program since close to ninety percent of the participants (88.8%) said that the program they have chosen fit their needs and goals and are supportive in helping them to cope as a first year student.

Conclusion

The primary goal of this study was to see if this prior educational background influences the students handling the workload and their performance based on their perception. Majority of the participants recommend to starting pharmacy school right after undergraduate classes with no or minimum gap in between. They also believed that besides having a BA/BSc degree, a high GPA in science courses also helped them handle the heavy load of pharmacy courses. Majority also agreed a full load course as an undergraduate and working as pharmacy technicians helped them to cope up with the first-year pharmacy program. The same was true regarding getting involved in pre pharmacy clubs. However, this study was done as students go through Covid-19 pandemic, the overwhelming majority said their performance was significantly affected.

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