Acta Scientific Pharmaceutical Sciences (ISSN: 2581-5423)

Volume 6 Issue 12 December 2022

Research Article

Influences When Deciding to Study Pharmacy in Bulgaria: A Survey Amongst Pharmacists and Pharmacy Students

Krassimira Zaykova[1], Hristo Zaykov[2], Silviya Nikolova[3] and Asena Serbezova[4]*

[1]*Faculty of Medicine, Medical University, Varna, Bulgaria*

[2]*Faculty of Pharmacy, Medical University, Varna, Bulgaria*

[3]*Faculty of Public Health, Medical University, Varna, Bulgaria*

[4]*Faculty of Public Health, Medical University, Sofia, Bulgaria*

***Corresponding Author:** Asena Serbezova, Professor, Faculty of Public Health, Medical University, Sofia, Bulgaria.

DOI: 10.31080/ASPS.2022.06.0916

Received: October 25, 2022

Published: November 30, 2022

Abstract

There are various reasons why individuals choose a particular career path. Awareness of motivational factors could enhance student recruitment strategies as well as helping them to focus on specializations/elective disciplines while studying. The objective was to investigate what factors influenced students to study pharmacy. Comparisons were conducted to ascertain whether gender, age, year of study and city where students received their education affected responses. Data were collected in September using a Google-based questionnaire developed with reference to the published literature. Responses were coded and entered into Jamovi software v.2.2.5 for statistical analysis. Responses were received from 289 pharmacists and pharmacy students. 70.4% of the participants were female. 31.7% were last year's students and 16.5% - first-year students. 87% responded that the desire to work in the health sector was very important/important for their decision to choose pharmacy. Only 8.1% answered that the orientation from career consultation centers was important for their choice of pharmacy study. Students' and pharmacists' reasons for choosing pharmacy focused mainly on the desire to work in the health sector, the possibility to improve people's health, the variety of opportunities for professional realization (pharmacies, manufacturing, clinical trials, labs, pharmaceutical marketing, etc.), job security, high recognition and status of the pharmacy profession in the society. Shortage of pharmacists and flexible working hours have less importance on the choice to study pharmacy. Advice from classmates, friends and family members and positive personal experience as a patient from pharmacies/pharmacists have least influence.

Keywords: Pharmacy; Education; University; Students; Career; Choice

Introduction

There are various reasons why individuals choose a particular career path. Awareness of motivational factors could enhance student recruitment strategies as well as helping undergraduates to focus on specializations/elective disciplines while studying. Little is known about what influences the choice of school of pharmacy. The review of the published literature showed that Pratt [1] and Burlage [2], followed by Booth., *et al.* [3] and Rees [4] were possibly the earliest English published studies of factors influencing the choice of pharmacy as a career. About 20 years later Silverthorne., *et al.* studied the motivational influences on pharmacy undergraduates [5]. Many studies conducted worldwide have examined the reasons and motivations for students to choose

pharmacy as a major. Some studies have shown that students chose pharmacy schools as their first choice, while others have found that students chose it as their second choice. A variety of factors influence students' choice of pharmacy as a major including interest in science, desire to earn a high salary, desire to help people, desire for economic security and prestigious career, influence of family members, pharmacists or guidance counselors, and inability to get into medical school (i.e., pharmacy was their second choice) [6-12]. Alsheri., *et al*. performed a study that showed pharmacy students in Saudi Arabia selected pharmacy as their first choice because it will develop them professionally, financially, and intellectually [13]. S. Sharif and R. Sharif demonstrated that the desire to serve and help others and interest in science were the common motivations to choose pharmacy in United Arab Emirates [14].

To our knowledge, no previous studies have been conducted in Bulgaria to explore factors that may play a role in deciding to opt for pharmacy as a major. The objective of the current study was to investigate what factors influenced students in Bulgaria to study pharmacy, to compare the results with similar studied performed in other countries and to provide information which could be potentially helpful to professional organizations, career advisors and potential employers. A qualitative study like this can illustrate how career deciding occurs and provide insight into the process from a student's perspective [12].

Materials and Methods

Before the development of the survey, a literature search was conducted using various internet search. Data were collected in September 2021 using a Google-based questionnaire developed with reference to the published literature [6-10,13,14]. Responses were coded and entered in Jamovi software v.2.2.5 for statistical analysis. Responses were received from 289 pharmacists and pharmacy students. Data analysis was conducted using Jamovi software v.2.2.5. Frequency distribution, ranks, averages, and standard deviations were used to describe the sample. Chi-square analysis with two categorical variables was performed to test for possible differences regarding gender and place of studies of the respondents. Nonparametric Mann-Whitney U-test was used to compare the differences in the attitude of Pharmacy students and graduates regarding the profession of pharmacists. Statistically significant results were obtained at alpha level less than 0.05.

Results and Discussion

The sample of our study included 197 students and 92 graduates of pharmacy of Bulgarian universities. The average age of students in the sample was 22 ± 2.53, whereas for graduated pharmacists was 40.5 ± 10.6. Overall, the minimum age of participants in the sample ranged between 18 and 71 years. Additionally, results from Chi-square test showed that there were no statistical differences by gender between students and graduated pharmacists in the sample (χ^2 = 0.053, p = 0.817 (Table 1). Still, a trend of greater interest by female respondents in the profession is highlighted in both groups (above 70%).

Pharmacy				
Gender		**Students**	**Graduated**	**Total**
Males	N	58	26	84
	%	29.6%	28.3%	29.2%
Females	N	138	66	204
	%	70.4%	71.7%	70.8%
Total	N	196	92	288
	%	100.0%	100.0%	100.0%

Table 1: Respondents' distribution by gender.

Note: 288 out of 289 people disclosed their gender; N-number; %- percent.

Students studying pharmacy were enrolled in different years but most of them in first (26.6%, n = 51), second (13.5%, n = 26), and fifth year (50.5%, n = 97) (see Figure 1).

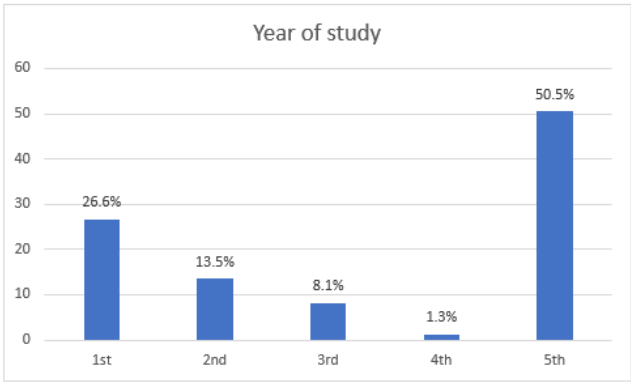

Figure 1: Distribution of pharmacy students by year.

Interestingly, the comparison students and graduated pharmacists regarding the place of their studies and graduation has shown a statistical difference (χ^2 = 67.0, p = 0.001) between the respondent's groups showing the historical shift in Bulgaria of an increase of higher education institutions in major cities where more students could enroll and graduate as a pharmacist (Table 2).

		Group		
University		**Students**	**Graduated**	**Total**
Medical University Varna	N	66	13	79
	%	83.5%	16.5%	100.0%
Medical University Pleven	N	38	3	41
	%	92.7%	7.3%	100.0%
Medical University Plovdiv	N	36	11	47
	%	76.6%	23.4%	100.0%
Sofia University	N	12	3	15
	%	76.6%	23.4%	100.0%
Sofia Medical University	N	40	67	107
	%	37.4%	62.6%	100.0%
Total	N	192	97	289
	%	66.4%	33.6%	100.0%

Table 2: Place of studies and graduation of respondents.

Legend: N-number;%- percent.

The results from the comparison of the attitudes of students and graduated pharmacists regarding their choice of the profession showed differences in several opinions. For example, current students consider of high importance the possibility for professional development (U = 7337, p = 0.001), security at work (U = 8790, p = 0.001) and salary (U = 8701, p = 0.001). Additionally, compared to the graduated pharmacists, they report as important the idea of being independent at work (U = 7704, p = 0.002), the flexibility of their work time (U = 7611, p = 0.001), the opportunity for private business (U = 8983, p = 0.001), and the possibility to work not only nationally but internationally because of the shortage of pharmacists worldwide (U = 6621, p = 0.001). Interestingly, students considered as less importance the advice of others regarding their professional choice in life. However, they differed significantly with graduated pharmacists who consider as important the influence and advice given by friends when choosing a profession in life such as pharmacy (U = 7767, p = 0.043). Peer influence of family members, classmates, public image and desire to serve others were assessed by both, students and graduated pharmacists, as of less importance (Table 3).

The main differences in the opinions of male and female respondents are related to the fact that females are more likely

	Group	N	Mean	Median	Standard deviation	Mann Whitney U-test/p-level of significance
Possibility for professional development	Students	197	4.66	5.00	0.729	7337**
	Graduated	92	4.37	5.00	0.946	
Shortage of pharmacists worldwide	Students	197	3.80	4.00	1.317	6621**
	Graduated	92	3.11	3.00	1.456	
Independence	Students	197	4.15	5.00	1.180	6704**
	Graduated	92	3.57	4.00	1.337	
Flexible work time	Students	197	4.04	5.00	1.239	7611**
	Graduated	92	3.65	4.00	1.370	
Predictable working hours	Students	197	4.17	5.00	1.187	7263*
	Graduated	92	3.68	4.00	1.350	
Security	Students	197	4.67	5.00	0.727	8790**
	Graduated	92	4.36	5.00	0.859	

Opportunity for private business	Students	197	3.98	5.00	1.307	8983**
	Graduated	92	3.52	3.00	1.227	
Salary	Students	197	4.46	5.00	0.889	8701**
	Graduated	92	4.15	4.00	0.994	
Prestigious status	Students	197	4.26	5.00	1.161	8922
	Graduated	92	4.32	5.00	1.148	
Public recognition	Students	197	3.90	4.00	1.298	8932
	Graduated	92	3.95	4.00	1.226	
Desire to improve people's health	Students	197	4.50	5.00	0.977	8545
	Graduated	92	4.45	5.00	0.999	
Desire to serve to people	Students	197	4.18	5.00	1.243	9045
	Graduated	92	4.21	5.00	1.125	
Desire to work in the health sector	Students	197	4.54	5.00	0.950	8904
	Graduated	92	4.51	5.00	0.943	
Desire for direct work with people	Students	197	3.87	4.00	1.371	8545
	Graduated	92	3.84	4.00	1.198	
Impressions as a client in a pharmacy	Students	197	3.20	3.00	1.522	9045
	Graduated	92	3.21	3.00	1.516	
Positive impressions from the work in a pharmacy	Students	197	3.47	4.00	1.500	8904
	Graduated	92	3.53	4.00	1.425	
Friends' influence	Students	197	2.22	2.00	1.229	7767*
	Graduated	92	2.62	3.00	1.459	
Family influence	Students	197	3.61	4.00	1.387	7923
	Graduated	92	3.89	4.00	1.370	
Positive experience of studying natural sciences in high school	Students	197	3.88	4.00	1.356	8961
	Graduated	92	3.84	5.00	1.447	
Professional advisory center	Students	197	2.04	1.00	1.366	7933
	Graduated	92	1.72	1.00	1.151	
Peer advice	Students	197	1.78	1.00	1.168	8696
	Graduated	92	1.64	1.00	1.012	
Teacher's advice	Students	197	2.37	2.00	1.389	8201
	Graduated	92	2.18	1.00	1.452	
Statistically significant at: *<0.05; **<0.001						

Table 3: Comparison of attitudes of students and graduated pharmacists regarding the profession of being a Pharmacists (1- not important; 5- very important).

to consider the teacher's advice when choosing the carrier of pharmacist (t = -2.0001, p = 0.047) although both females and males in the sample considered the teacher's advice relatively unimportant. Also, females were more likely to receive advice from a professional development center (2.07 ± 1.376) than males (1.52 ± 0.942), and these differences were statistically significant (t = -3.341, p = 0.001). Both men (2.95 ± 1.521) and women (3.70 ± 1.397) are influenced in their choice of future profession by the impressions they have formed from the observations of working in a pharmacy, and these impressions have a stronger role in women (t = -3.968, p = 0.0001). In addition, significant factors, and differences in the choice of the pharmaceutical profession between men and women were also found regarding the understanding that the pharmaceutical profession provides security (t = -2.722, p = 0.024) and opportunities for flexibility of working hours (t = -2.120, p = 0.035) (Table 4).

	Gender	N	Mean	Standard deviation	Independent t-test	P-level of significance
Teacher's advice	Male	83	2.06	1.291	-2.001	.047
	Female	200	2.41	1.446		
Classmates' influence	Male	83	1.64	.995	-.801	.424
	Female	200	1.76	1.158		
Professional advisory center	Male	83	1.52	.942	-3.341	.001
	Female	200	2.07	1.376		
Positive experience of studying natural sciences in high school	Male	83	3.83	1.413	-.268	.789
	Female	200	3.88	1.380		
Family influence	Male	83	3.65	1.263	-.356	.722
	Female	200	3.72	1.433		
Friends' influence (different than classmates)	Male	83	2.27	1.221	-.612	.541
	Female	200	2.37	1.350		
Positive impressions from the work in a pharmacy	Male	83	2.95	1.521	-3.968	.0001
	Female	200	3.70	1.397		
Desire to manage own business	Male	83	3.92	1.290	.653	.314
	Female	200	3.81	1.302		
Job security	Male	83	4.40	.869	-2.722	.024
	Female	200	4.63	.746		
Predictable working hours	Male	83	3.88	1.320	-1.031	.303
	Female	200	4.05	1.243		
Flexible working hours (i.e.swap of shifts)	Male	83	3.64	1.453	-2.120	.035
	Female	200	4.00	1.213		
Independence	Male	83	4.08	1.261	1.002	.317
	Female	200	3.92	1.254		
Global shortage of pharmacists and possibility to work abroad	Male	83	3.41	1.506	-1.097	.273
	Female	200	3.61	1.352		
Various career options (pharmacy, clinical trials, manufacturing of medicines, wholesaling, research and development of medicines, marketing etc.)	Male	83	4.51	.802	-.784	.434
	Female	200	4.59	.828		

Table 4: Average values of attitudes by gender.

Legend: Answers on a Likert scale (1-not important/5-very important).

Age was found to be a significant factor in the choice of occupation among younger respondents. For example, the salary (t = -2.685, p = 0.008) and the desire for own business (t = -2.376, p = 0.018) are leading among younger respondents for choosing the profession. The emphasized business interest of the younger respondents is also supported by the differences in attitudes regarding the possibility of the pharmacist being the manager and supervisor of the work performed (t = 3.103, p = 0.002). Respondents under 29 years of age define the independence of the profession as an important factor 4.12 ± 1.192 for choosing a profession compared to respondents over 29 years of age 3.62 ± 1.336.

In addition, the young respondents' understanding of the profession, that pharmacists can easily find a job (t = 1.964, p = 0.051) and that they can be offered flexible working hours (t = 3.152, p = 0.002) have a greater weight than for respondents over 29 years of age. Finally, young respondents are more attracted to the pharmaceutical profession and since they could be involved in various work activities such as clinical trials, manufacturing of medicines, regulatory activities, wholesaling activities, development, marketing, and others (t = 2.916, p = 0.004). Younger respondents consider the fact that there is a shortage of pharmacists worldwide and there are opportunities for professional realization outside of Bulgaria as an advantage in their choice of profession (t = 4.120, p = 0.001) (table 5).

	Age (years)	N	Mean	SD	t-test	Significance level
Teacher's advice	<29	199	2.38	1.185	1.185	0.237
	>29	85	2.16	0.968		
Classmates' influence	<29	199	1.80	1.326	1.527	0.128
	>29	85	1.58	1.224		
Professional advisory center	<29	199	1.99	1.362	1.411	0.159
	>29	85	1.75	1.451		
Positive experience of studying natural sciences in high school	<29	199	3.86	1.388	-0.100	0.920
	>29	85	3.88	1.373		
Family influence	<29	199	3.65	1.234	-0.978	0.329
	>29	85	3.82	1.483		
Friends' influence (different than classmates)	<29	199	2.25	1.479	-1.911	0.057
	>29	85	2.58	1.460		
Positive impressions from the work in a pharmacy	<29	199	3.45	1.529	-0.527	0.598
	>29	85	3.55	1.509		
Impressions as a client in a pharmacy	<29	199	3.18	1.371	-0.301	0.764
	>29	85	3.24	1.154		
Desire to serve to people	<29	199	3.83	0.963	-0.729	0.466
	>29	85	3.95	0.850		
Desire to work in a health sector	<29	199	4.52	1.251	-0.446	0.656
	>29	85	4.58	1.056		
Desire to provide services to the society	<29	199	4.14	1.185	-0.990	0.323
	>29	85	4.29	0.968		
Desire to improve peoples' health	<29	199	4.46	1.023	-0.661	0.509
	>29	85	4.54	0.867		
Public recognition	<29	199	3.88	1.315	-0.343	0.732
	>29	85	3.94	1.189		

Prestigious status	<29	199	4.23	1.196	-0.809	0.419
	>29	85	4.35	1.077		
Salary	<29	199	4.45	0.891	2.685	0.008
	>29	85	4.13	1.009		
Desire to manage own business	<29	199	3.95	1.302	2.376	0.018
	>29	85	3.55	1.258		
Job security	<29	199	4.62	0.813	1.964	0.051
	>29	85	4.42	0.713		
Predictable working time	<29	199	4.16	1.198	3.152	0.002
	>29	85	3.65	1.351		
Flexible working hours (i.e. swap of shifts)	<29	199	3.98	1.263	1.708	0.089
	>29	85	3.69	1.354		
Independence	<29	199	4.12	1.192	3.103	0.002
	>29	85	3.62	1.336		
Global shortage of pharmacists and possibility to work abroad	<29	199	3.77	1.323	4.120	0 .001
	>29	85	3.05	1.447		
Various career options (pharmacy, clinical trials, manufacturing of medicines, wholesaling, research and development of medicines, marketing etc.)	<29	199	4.66	0.720	2.916	0.004

Table 5: Average values of attitudes by age.

Ultimately, we tested to what extent the attitudes of the respondents have changed over time. We used Spearman's correlation (rho) to test for proportionality of occupational preference among students from different courses of study. The results showed after the first year the leading attitudes towards career choice have changed. As the course of study progresses, students consider family influence as a proportional factor in their desire to work in the pharmaceutical profession (rho = 0.144, p = 0.015). Another important thing to note is that the motivation factors as an opportunity for business development (rho = -0.247, p = 0.001), independence of activity (rho = -0.241, p = 0.001), the feeling of multiple professional opportunities in the country and abroad (rho = 0.172, p = 0.004), as well as the romantic feeling of exercising the profession to help people (rho = -0.125, p = 0.036) or the positive impressions of working in a pharmacy (rho = -0.169, p = 0.004) or as patients and client (rho = 0.156, p = 0.008) fade among respondents from above courses. (Table 6). Medical university and advice from outside the family appear to be of minor influence except for advice given by a professional career development center which is relevant for younger students (rho = -0.154, p = 0.009).

	Course of study
Medical university	rho = 0.323 ; p = 0.001
Teacher's advice	rho = -0.069; p = 0.244
Classmates 'influence	rho = -0.054; p = 0.380
Professional advisory center	rho = -0.154; p = 0.009
Positive experience of studying natural sciences in high school	rho = -0.059; p = 0.324
Family influence	rho = 0.144; p = 0.015
Friends 'influence (different than classmates)	rho = 0.059; p = 0.218
Positive impressions from the work in a pharmacy	rho = -0.169; p = 0.004
Impressions as a client in a pharmacy	rho = -0.156; p = 0.008

Desire to serve to people	rho = -0.225; p = 0.001
Desire to work in the health sector	rho = -0.023; p = 0.704
Desire to provide services to the society	rho = -0.079; p = 0.185
Desire to improve peoples' health	rho = -0.125; p = 0.036
Public recognition	rho = -0.041; p = 0.496
Prestigious status	rho = -0.068; p = 0.252
Salary	rho = -0.083; p = 0.165
Desire to manage own business	rho = -0.247; p = 0.001
Job security	rho = -0.187; p = 0.002
Predictable working hours	rho = -0.198; p = 0.001
Flexible working hours (i.e. swap of shifts)	rho = -0.114; p = 0.055
Independence	rho = -0.241; p = 0001
Global shortage of pharmacists and possibility to work abroad	rho = -0.224; p = 0.001
Various career options (pharmacy, clinical trials, manufacturing of medicines, wholesaling, research and development of medicines, marketing etc.)	rho = -0.172; p = 0.004

Table 6: Correlations between respondents' attitudes and course of study.

Legend: Spierman correlation (rho).

The results of our study revealed variety of factors that influence students' choice of pharmacy as a major including interest in science, desire to help people, desire for economic security and prestigious career as well as influence of family members, pharmacists or career counselors which confirmed the results from surveys performed in other countries [6-14].

Conclusion

Students choose pharmacy as a career primarily for altruistic and clinical reasons. This is confirmed by the results from other international studies. Our survey showed that students' and graduated pharmacists' reasons for choosing pharmacy focused mainly on the desire to work in the health sector, the possibility to improve people's health, the variety of opportunities for professional realization (pharmacies, manufacturing, clinical trials, labs, pharmaceutical marketing, etc.), job security, high recognition, and status of the pharmacy profession in the society. Shortage of pharmacists and flexible working hours have less importance on the choice to study pharmacy. Advice from classmates, friends and family members and positive personal experience as a patient from pharmacies/pharmacists have the least influence. The career advisors and those involved in university recruitment should consider the roles played by personal preferences and values in choosing a pharmacy. Findings on motivating factors and the relationship with age should be considered by the pharmacy managers and team leaders when setting motivation policy. More research is needed on students' early knowledge of the profession, motivational factors, and subsequent achievement in pharmacy programs.

Bibliography

1. R Pratt. "Analysis of a pilot study of factors that motivate individuals to elect the health sciences as a career, with special reference to pharmacy". *American Journal Pharmaceutical Education* 20 (1956): 175-190.

2. HM Burlage. "Motivating influences to the study of pharmacy". *American Journal Pharmaceutical Education* 27 (1963): 75-80.

3. T G Booth., *et al*. "Factors in the choice of pharmacy as a career". *Pharmaceutical Journal* 233 (1984): 420.

4. J A Rees. "Why male and female students choose to study pharmacy". *British Journal of Pharmaceutical Practice* 7 (1984) 90-96.

5. J Silverthorne. ''Factors that influence the career choices of pharmacy undergraduates". *Pharmacy Education* 3 (2003): 161-167.

6. D C Anderson., *et al*. "Influences on pharmacy students' decision to pursue a doctor of pharmacy degree". *American Journal of Pharmaceutical Education* 72.2 (2008).

7. K Rascati. "Career choice, plans, and commitment of pharmacy students". *American Journal of Pharmaceutical Education* 53.3 (1989): 228-234.

8. M C Smith., *et al*. "Reasons for choosing pharmacy as an occupation". *Drugs Health Care* 1 (1974) 89-98.

9. S Capstick., *et al*. "Choosing a course of study and career in pharmacy—student attitudes and intensions across three years at New Zealand School of Pharmacy". *Pharmacy Education* 7.4 (2007): 359-373.

10. S Willis., *et al*. "Who will be tomorrow's pharmacists and why did they study pharmacy?" *Pharmaceutical Journal* 277.7410 (2006) 107-108.

11. W B Lobb., *et al*. "Factors influencing the selection of a major: A comparison of pharmacy and nonpharmacy undergraduate students". *Journal of Pharmacy Teaching* 11.2 (2004): 45-64.

12. W Caroline., *et al*. "Pharmacy career deciding: making choice a "good fit"". *Journal of Health Organization and Management* 23 (2009): 85-102.

13. A M Alshehri., *et al*. "Factors Affecting Pharmacy Students' Decision to Study in Pharmacy Colleges in Saudi Arabia: A Cross-Sectional Questionnaire-Based Analysis". *Healthcare* 9 (2021): 1651.

14. S Sharif and R Sharif. "Choosing Pharmacy as a Major: Motivations and Influence". *Pharmacy Education* 14.1 (2014): 116-120.