

Professional and Academic Perspectives of Pharmacy Students: A Cross Sectional-Study from Brazil

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Abstract

The study aims to assess the professional and academic expectations of pharmacy students of faculties that lives in the northern region of Brazil. Data were collected via a printed questionnaire. The number of students that answered the questionnaire was 600. Regards to academic life, 74.6% believe that faculties offer ideal opportunities. The most desired areas of activity were clinical and hospital pharmacies (45%) and commercial pharmacies (32.3%). Their salary expectations are higher than six national minimum wages. The profession is experiencing a period of enormous positive transformations. The study provides a general view of the several fields of work for pharmacy students to plan and conduct their professional activities to improve the health of the population.

Keywords: pharmaceutical, pharmaceutical education, students, curriculum guidelines, professional expectations

1. Introduction

In Brazil, approximately 230,000 pharmacists are registered in the class council of the states to exert their professional skills in the pharmaceutical sciences (Araújo et al., 2020). Approximately 506 new professionals are registered each year in the pharmacy councils of the states of the Brazilian Amazon basin. In the last years, these professionals faced significant changes in their abilities resulting from resolutions 585/2013 and 586/2013 of the Federal Council of Pharmacy (FCP) that rescued the clinical practice and the right to prescription by pharmacists. In addition, federal law 13021/2014 guaranteed commercial pharmacies the status of health establishments (Young et al., 2014).

The new abilities were a challenge to the pharmacy schools as they required considerable changes to attend the national curriculum guideline (NCG) launched by the Ministry of Education (ME) in 2017, which drives the curricular requirements of the new professional profile (Carrido et al., 2015). Given the complexity of modifications in the basic curriculum, several pharmacy schools presented difficulties in the implantation of the NCG, leading to the involvement of different institutions, such as the Federal and Regional Councils that planned conjunct strategies to facilitate the implementation of the national guideline. (Young et al., 2014; Monteguti et al., 2016).

The familiarity with the national and regional features of pharmaceutical education in different regions of the country, the professional expectation, the historical trajectory, the educational and professional recommendations, and the integration between academic and professional activities contribute to NCG implementation in the Brazilian schools of pharmacy (Carrido et al., 2015). Personal and professional expectations of students contribute to the analysis of the organizational structure of pharmacy schools and facilitate the identification of processes involved in professional and academic references (Almetwazi et al., 2020). The present study aimed to evaluate the academic perception and the professional expectations of students of pharmacy schools in the Brazilian Amazon region.

2. Method

2.1 Study Population, Sampling Size, and Sampling Method

A descriptive survey was conducted to evaluate the academic and professional expectations of pharmacy students of public and private schools in the State of Para, Brazil. Students are admitted to pharmacy schools after completing the intermediate scholar degree and having passed a national or institutional selection process. The sample size was calculated using an online calculator (Sample Size Calculator- Creative Research Systems) with a power of 80% and a 95% confidence level. The number of participants estimated was 600 (Cardoso-Filho et al., 2015).

2.2 Pilot Study

The apparent validity of the study questionnaire was assessed through peer review by relevant experts. Expert comments were used to improve the final version of the questionnaire and remove any ambiguity or redundancy. In addition, the questionnaire was tested by 30 participants to estimate the reliability by Cronbach's alpha index, which has values above 0.7 for all variables tested.

2.3 Instrument of Analysis (Questionary)

The survey questionnaire was based on previous studies (Young et al., 2014; Carrido et al., 2015; Carrido et al., 2015; Monteguti et al., 2016), with some changes to attending the objectives of the study. The questionnaire was composed of three main domains: the first with questions regards to age, ethnicity, family income, academic background, and influences on professional choice; the second refers to whether the pharmacy school provides appropriate opportunities for training and is proactive to encourage the practices of health care and offer practical and/or laboratory classes, the coherence between the curriculum and NGC of the Ministry of Education, and if students are receiving knowledge to act as a pharmacist. Professional expectations, including salary expectations after graduation and the desired area of the pharmaceutical sciences, constitute the third domain.

2.4 Data Collection

After verifying the validity of the study, the questionnaire was distributed to 600 students in the fifth year of faculty. Data were collected from January 2020 to July 2021.

2.5 Ethical Considerations

The study was conducted following the Declaration of Helsinki, 2008, and was approved by the Research Ethics Committee of the Institute of Health Sciences of the Federal University of Pará, under number 4,689,369. Students were informed about the objectives of the present research and given the option to withdraw from the study. Students were also informed that their identity and personal information will not be disclosed, and the data will be used only for the present study.

2.6 Statistical Analysis

Data are expressed as median and range or as the frequency of occurrence. The chi-square t-test and the Fischer exact test were used to compare the variables. The significance level accepted was 5%.

3. Results

A total of 600 questionnaires were answered by the students. The median age was 28 years. Most of the students were females, and their families perceived a monthly stipend below \$500,00. The social and demographic characteristics of the students are presented in Table I.

Table 1. Social and demographic characteristics

Characteristic	n = 600 (%)	p
Age, years	28.9 (18-52)*	-
Ethnicity		
Caucasian	31	
Black	15	<0.0001**
Mestizo	51	
Asian	3	
Familiar stipend		
\$250-500	78.7	<0.0001**
> \$500	21.3	
Intermediate scholar degree		
Public	13.3	
Private	86.7	<0.0001**
Pharmacy school		
Public	60	
Private	40	0.0455**
Influence to choose the profession		
Employability	66	<0.0001**
Family and/or friends	25	
Other	9	
The academic intends to attend a postgraduate course		
Sim	600	100**

* Median and range ** chi-squared and, when necessary, Fischer exact test

Overall, the students believe that the school offers sufficient knowledge for their professional skills. In addition, most students reported that the curricular grade follows the NCG and that can execute their tasks in a commercial pharmacy. The aspects investigated in academic life are presented in Table II.

Table 2. Academic perception

Question	Answer "yes" (%)	%
Does the pharmacy school provide suitable conditions for training in pharmacy?	448	74.7
Does the curricular grade comply with the NCG?	364	60.7
Does the pharmacy school have disciplines that encourage health care?	460	76.7
Does the pharmacy school have practical and/or laboratory classes??	512	85.3
Do you are receiving the knowledge for your act as a pharmacist?	432	72.0

The students reported familiarity with the areas of activity of the pharmacist. The most mentioned were clinical and hospital pharmacy, followed by commercial pharmacy and clinical analysis. Salary expectations ranged from \$300 to \$1000 (Table III).

Table 3. Professional expectation

Variables	n = 600	%
Do you know the areas of expertise of the pharmacist?	492	82.0
Desire Area		
Food industry	8	1.3
Clinical analysis	40	6.7
Education/teacher	19	3.2
Commercial pharmacy	194	32.3
Hospital and clinical pharmacy	270	45.0
Pharmaceutical industry	15	2.5
Management	4	0.7
Integrative and Complementary Practices	9	1.5
Public health	17	2.8
Toxicology	24	4.0
Monthly salary expectation		
\$200-\$300	176	29.4
\$400-\$900	188	31.3
> \$1000	236	39.3

4. Discussion

There are nine pharmacy schools in the state of Para, eight are particular and one is public. Most of them are in the metropolitan area Belem, the capital of the state. Almost 30% students ingresses in pharmacy schools each year, demonstrating that future pharmacists seek better social and economic status, as the profession is the one that most employed the newly graduated (Costa et al., 2018).

The demographic characteristics of the student are in line with the profile found in other faculties from different regions of Brazil. For instance, the mean age agreed with values reported in faculties from the southeast region (De Oliveira et al., 2017; Almetwazi et al., 2020; Alnajjar et al., 2020). The mean age was high when compared to the mean age of 18 years when most of the students complete the intermediate scholar degree. There was a similar distribution of sexes, demonstrating the empowerment of females in several fields of the pharmaceutical profession (Costa et al., 2018; Almetwazi et al., 2020). The Midwest Pharmacy Workforce Research Consortium reveals a significant increase in the number of female pharmacists (Comert et al., 2016).

A relevant finding was the proportion of pharmacy students who self-declared black or mestizo (66,6%), which can be related to the affirmative actions of social inclusion implemented by municipal and federal institutions in the last ten years, that reduced the social differences among Caucasians, blacks, mestizos, and Indians (Larochelle et al., 2016). The low familiar salary of most students is characteristic of the northern and northeast regions of the country that have the lowest human development indexes. Affirmative actions enable students with a low familiar salary to courses the pharmacy schools (Cardoso-Filho et al., 2015). For instance, a high proportion of students were from particular institutions, which increased the number of admissions over the years owing to governmental actions such as the student finance fund that represents an opportunity to ingress in particular schools (Gonyeau et al., 2018; Lott et al., 2020; Oliveira et al., 2021).

The Organization for Economic Cooperation and Development reported that individuals with a graduation course receive a high monthly salary in Brazil (Gonyeau et al., 2018). The importance of a graduation course to support successful trajectories is reinforced by the plans adopted by faculties that adequate the teaching and learning process to the real scenario of the students (Oliveira et al., 2021).

A relevant issue at the graduation level is the ability of students to link the theoretical and practical contents learned at faculty with the abilities required by public and private employers (Salata, 2018). Most of the students answered that the faculty provide curricular content in line with NCG resolution; the disciplines stimulate health care; they have theoretical

and laboratory classes and believed that are receiving the knowledge necessary for pharmaceutical practice (Heringer, 2018). This finding disagrees with Filisbino & Moraes (2013), that reported several weaknesses and difficulties of several faculties to form pharmacists able to apply the theoretical knowledge of pharmaceutical care in real scenarios. Probably, the involvement of several actors, such as the regional and federal councils, has contributed to the strengthening of pharmaceutical care in the graduation courses in Brazil (Chagas et al., 2017; Astbury et al., 2020).

Most students recognize the areas of expertise of a pharmacist that is encouraged by its vocation; the humanistic aspects of the profession interconnected with the prevention of diseases and health promotion and with the proximity of the community, as seen in several small cities of the Amazon basin, where the pharmacist is the health professional more accessible to the population (Minard et al., 2016). Finally, the pharmacist has high employability, for instance, in 2018, was the third profession with more formal employment, because since 2014 the presence of a pharmacist has been mandatory in the entire period of operation of a pharmacy and/or drugstore in Brazil (Minard et al., 2016).

All students have the intent to ingress in a post-graduation course in the areas of pharmaceutical science, because of the need for competent specialists, sensible for individual and familiar problems, and capable of attending to the expectations of the community (Lott et al., 2021). Resolution 572/2013 of the Federal Council admits 10 areas of expertise of a pharmacist in Brazil: food industry, clinical and laboratory analysis, education, pharmacy, clinical and hospital pharmacy, pharmaceutical industry, public health, integrative and complementary practices, and toxicology (Castro et al., 2019). In the study, the commercial, clinical, and hospital pharmacies were the areas chosen by students to extend their knowledge after graduation, which emphasize the actuation of the pharmacist with patients, considering the philosophy of the care and the approximation of the patients, which is in line with the NCG (Freitas et al., 2016; Katoue, 2021).

The pharmacy faculties are passing by a positive transformation that will provide opportunities for the pharmacist to improve their insertion in the care of patients, which will have a significant impact on the health of the population. The pharmacy students in the north region of Brazil know the resolutions, their areas of actuation, their professional expectations, and the necessities to attain their professional skills.

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