

## Quality indicators of pharmacists' services in community pharmacies in Paraná State, Brazil

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Pharmacists and their pharmacies have been evolving in their roles as health promoters in Brazil. Some examples are the recent legislation reaffirming the role of Brazilian pharmacies as health institutions, rather than having only a commercial profile, giving greater clarity to pharmacists about their roles as health care providers. This evolution came with the recognition that is already seen in other developed countries, confirming the need for the pharmacist as a health promoter, and not simply a dispenser of drugs in society. This study has obtained the profile and activities of community pharmacists, as well as the quality indicators of private community pharmacies throughout the State of Paraná through the application of an online survey sent to pharmacists in the state. Out of all pharmacists surveyed, 533 were part of the final analysis, being the pharmacists to complete the survey in full. Participants were mostly female (69.4%) and were, on average,  $35.2 \pm 9.2$  years old. Of these, 60% worked in pharmacy chains and just 37% of all pharmacist respondents were issuing the Declaration of Pharmaceutical Services. The current study showed that many pharmaceutical services are not adopted by pharmacies as these services bring no significant financial reward. Regarding the structure, the Paraná State showed that pharmacies present a good overall structure. The kind of pharmacy (chain or independent) influenced the pharmaceutical services provided and the available structure, where the independent pharmacies provide a wider range of services and have better structure. This study was able to identify the profile and behaviors of pharmacists and also the quality indicators of pharmacies in Paraná State.

**Uniterms:** Pharmaceutical care. Pharmacists/professional practice. Community pharmacy/structure indicators/Paraná State, Brazil.

### INTRODUCTION

The pharmaceutical profession has undergone important changes in the last few decades in Brazil, especially in relation to community pharmacies, with changing roles and a focus on providing clinical services to patients.

The pharmacy, as commercial establishment, has evolved significantly (França Filho *et al.*, 2008; Silva, Vieira, 2004), with regulatory advancements such as the publication of law 13.021/14, which inverts the profit

oriented logic, by defining the pharmacy as a health care entity geared toward providing a pharmaceutical service, and technical and clinical assistance, to promote the best health care for the patients (Brasil, 2014; Souza, 2012).

The term service refers to a set of activities organized in a work process. In a broad definition, pharmaceutical services represent any particular service provided by pharmacists and they may be clinical or not. The pharmaceutical care includes a wide range of clinical services, ranging from the benchmarks to pharmacotherapeutic monitoring itself. Recently, in order to clarify definitions and guide professional activity, the Federal Council of Pharmacy (CFF) – National Pharmacy Council – in 2013 published the resolutions 585 and 586,

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which regulate the attributions of clinical pharmacists and of pharmaceutical prescription.

The importance of pharmaceutical services has been recognized by various studies (Blenkinsopp, Bond, Raynor, 2012; Castelino, Bajorek, Chen, 2010; Krska *et al.*, 2001), which indicate improvements in the profile of medication usage (Castelino, Bajorek, Chen, 2010; Cobb, 2014; Cramer, 2004; Gellad, Grenard, Mcglynn, 2009; Hatah *et al.*, 2014; Machado *et al.*, 2007b), clinical outcomes (Charrois *et al.*, 2009; Machado *et al.*, 2007a; Santschi *et al.*, 2012; Sookaneknun *et al.*, 2004; Wubben, Vivian, 2008), humanistic outcomes (Garrett, Bluml, 2005; Singhal *et al.*, 1999) and economical outcomes (Altowaijri, Phillips, Fitzsimmons, 2013; Cranor, Christensen, 2003; Desborough *et al.*, 2012; Gallagher *et al.*, 2015; Garrett, Bluml, 2005; Riley, 2013), in numerous chronic conditions, besides the level of evident patient satisfaction. As such, many countries, including the United States, Canada and the United Kingdom, have added clinical pharmaceutical services to their healthcare systems. These services have allowed polymedicated patients, patients with chronic conditions and patients with comprehension or cognitive difficulties to have access to individual appointments for pharmacotherapy revision and pharmacotherapeutic follow up.

These systems present well defined financial precepts, in which the professionals and establishments are remunerated according to the health care activities they provide (Blake, Madhavan, 2010; Latif, Pollock, Boardman, 2011; NHS, 2008,2009; Riley, 2013). Quality is a determining factor for the success of any clinical service and, as such, a good general structure, accompanied by a good work process, increases the success chances of a pharmaceutical care service. A structure comprised of a good human resources team, good facilities and material and financial resources paired together with a good process, in which the professional is enabled and confident and interacts appropriately with their patient, tends to produce more positive health care outcomes (Donabedian, 2005; Vuori, 1991).

In Brazil, despite recent advancements, it is still under development in terms of pharmaceutical care, the initiatives are independent and uncoordinated, and there are numerous discrepancies among different regions, in terms of the profile of professionals and of the work processes that are adopted. Whereas overviews of the pharmaceutical activity in Paraná State are few and short, the objective of this study is to characterize the profiles and activities of community pharmacists, as well as the quality indicators of private community pharmacies in Paraná State - Brazil.

## METHODS

In order to conduct this transversal study, email addresses from all active pharmacists in the State of Paraná were obtained from the *Conselho Regional de Farmácia do Paraná* (CRF-PR), and these professionals were surveyed in the period of time from October 2013 to January 2014 through the tool SurveyMonkey®.

### Structure of the questionnaire

The questionnaire consisted of both open- and closed-ended questions, organized into sections: sociodemographic data, work process and dynamics and pharmaceutical services provided.

The section on sociodemographic data consisted of questions pertaining to gender, age, city of activity, number of pharmacies/drugstores where the professional works, weekly workload in hours, experience time in drugstores, year of graduation, education level, type of technical responsibility and pharmacy ownership. The preference of pharmacists between management area or technical assistance was assessed through a question with three possible answers and these possible answers were the preference for management area, technical assistance or both.

The section on work process and dynamics consisted of questions pertaining to indicators of structure, in accordance with various works (Cipolle, Strand, Morley, 1998; Farris, Kirking, 1993; Machuca, Fernández-llimós, Faus, 2003), such as appropriate conditions for pharmaceutical care, which includes Internet access, human resources, equipment, facilities, financial resources and material resources.

The section on pharmaceutical services provided consisted mainly of questions pertaining to the technical regulation on 'Good Practices in Pharmacy' by the *Conselho Federal de Farmácia* (CFF, 2001) and Resolution 44, from August 17<sup>th</sup>, 2009, by the *Diretoria Colegiada da Agência Nacional de Vigilância Sanitária (ANVISA)* (Brasil, 2001; Brasil, 2009). These include dispensing the provision of pharmaceutical services and the issuance of the *Declaração de Serviços Farmacêuticos - DSF* (Declaration of Pharmaceutical Services – DPS), that is the product of any service or procedure provided to patients. It is a document that contains all procedures and services performed by the pharmacist in order to ensure safety and access to information to patients. It also provides to the pharmacist a "memory" of what was done, and provides for future follow-up actions.

## Data analysis

Data analysis was performed on the software SPSS®, version 20.0 (SPSS Inc., Chicago, IL). The answers to this questionnaire were collected from the online platform. Only the complete questionnaires were then put through descriptive and inferential statistical analyses. Variables were tested according to their normality, and based on these data the appropriate statistical tests were selected.

Descriptive analyses included the frequency, which was demonstrated by percentages, mean, median, standard deviation and interquartile interval (defined by the percentile 25 and percentile 75).

Scores were created for the variables of structure and of provision of service. In order to establish the score for structure, the following variables related to the pharmacy were considered: availability of seating area for clients awaiting care, availability of private or semi-private space for tending to clients and availability of work equipment, such as a computer, Internet access and a printer. As such, the score for structure varies from 0 (no structure available) up to 5 (all essential structural assets available).

The scores for pharmaceutical services were obtained from the eight services included in the survey, which were: application of injectables, blood pressure measurements, ear piercing, body temperature measurements, capillary blood glucose measurements, home care, bandaging and application of a nebulizer. The scores varied from 0 (no pharmaceutical service provided) to 8 (eight pharmaceutical services provided).

Another variable was the MHDI (municipal human development index), an adaptation of the global HDI (human development index) to be used for Brazilian cities, with three main focus points: long and healthy life, access to knowledge and dignified standard of living through income (PNUD, 2014). This variable was binary: cities of high and very high MHDI were combined into one group and cities with medium and low MHDI were combined into another group.

Some of the variables were transformed from the initial data in order to concentrate characteristics in a higher or more balanced number of participants. In this context, the modified education level – originally there were four levels, undergraduate, graduate, master's and Ph.D., which were separated into two groups (graduation and post-graduation) – is of note. The scores for pharmaceutical services were also transformed by removing the pharmacists who did not provide any of the pharmaceutical services. As a result, the score, which was named 'Score services 8', varies from 1 (one pharmaceutical service provided) up to 8 (eight

pharmaceutical services provided).

The variable for type of pharmacy was also grouped, in order to separate independent pharmacies from the others. The variable was then named 'Type of pharmacy V2', characterizing pharmacies as either independent pharmacies or chain pharmacies (local, state and national chains).

This study is in accordance with norms for research with human beings and was approved by the Committee of Ethics in Research (*Comitê de Ética em Pesquisa – COEP*) of the *Universidade Estadual de Ponta Grossa*, under number 316,374/2013.

## RESULTS AND DISCUSSION

A total of 12,401 email addresses were obtained from the information provided by CRF-PR. After removal of duplicates, 9,837 email addresses remained, of which 952 were returned (email address nonexistent or unavailable) and were removed, resulting in 8,885 email addresses to be used in the survey. After invitations for participating in the survey were sent, 1,851 pharmacists responded (20.8%), and 533 of these complete the survey in full.

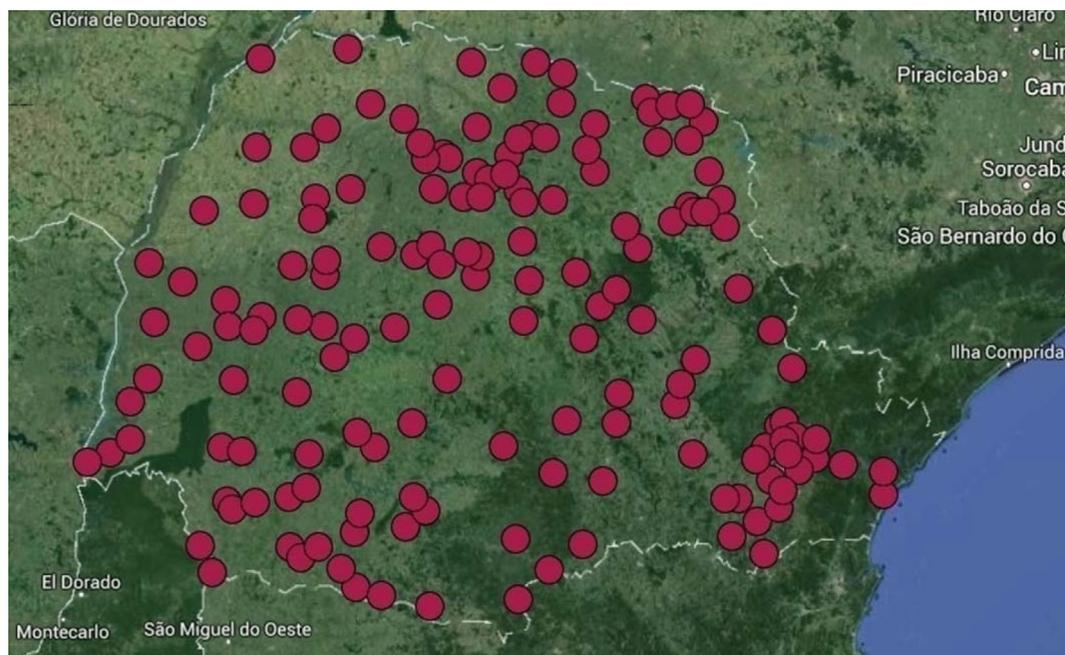
The distribution of respondents was considerably homogeneous throughout the State of Paraná, with responses from 158 different cities (Figure 1).

Pharmacists were predominantly female (69.4%), with an average age of  $35.2 \pm 9.2$  years and average years in education of  $11.4 \pm 8.2$  years (Table I). Most pharmacists (the majority of respondents) were located in cities with high/very high MHDI (83.7%).

Statistical analysis between genders showed that women predominated in the post-graduate group, with 54.1% of women being in this group *versus* 41.7% of men ( $\chi^2=6.888$ ,  $p<0.05$ ). Men, on the other hand, had more experience in retail and had been graduated for longer,  $p<0.05$ . Regarding provision of pharmaceutical services, 95.1% of men *versus* 85.1% of women ( $\chi^2=10.762$ ,  $p<0.05$ ) provided pharmaceutical services. Regarding the transformed variables 'Score of services 8' and 'Score of structure', men belonging to these pharmacies had a higher general score in both,  $p<0.05$ , this may demonstrate that the level of study has less influence than the experience in retail on the provision of pharmaceutical services.

Regarding education level, 50.2% of pharmacists had some kind of post-graduate training. This is higher than similar surveys have found in other states of Brazil and even in other countries (França Filho *et al.*, 2008; Correr *et al.*, 2004; Hughes *et al.*, 2010; Khan, 2015; Reis, 2013).

The cross-analysis of the modified variable education level *versus* both 'Score of structure' and 'Score of



**FIGURE 1** - Distribution of respondents in the State of Paraná.

services 8' revealed that pharmacists with a post-graduate level of education had higher scores in both,  $p < 0.05$  and  $p = 0.057$  respectively. This shows that education level tends to influence both structure (pharmacists with post-graduate qualification select better structures or transform the existing one) and provision of pharmaceutical services (number of pharmaceutical services provided). This data can be explained considering that the higher level of education provides pharmacists with the skills to provide better pharmaceutical care services. Moreover, more time in educational institutions can awaken a critical thinking among professionals.

The analysis of the type of pharmacy where pharmacists worked revealed that 60% were part of some sort of pharmacy chain. These pharmacists had a median of 2 assistants and usually worked their work shift alone (65.1%).

Cross-analysis of the type of pharmacy *versus* MHDI revealed that in cities with medium and low MHDI, pharmacies that were part of national chains were the least present, followed by pharmacies that were part of state chains, 5.2% and 10.4%, respectively ( $\chi^2 = 17,345$ ,  $p < 0.05$ ). Additionally, the analysis of the binary variable of the type of pharmacy *versus* provision of pharmaceutical services showed that chain pharmacies were more predominant in the group that does not provide pharmaceutical services, 17.5% *versus* 3.3% for independent pharmacies ( $\chi^2 = 24,787$ ,  $p < 0.05$ ).

Evaluation of the type of pharmacy, binary variable, in relation to the variables 'Score of structure' and

'Score of services 8', revealed that chain pharmacies scored lower in both cases. This shows that independent pharmacies have better structure for provision of pharmaceutical services and that they also provide more pharmaceutical services. This may be explained by the fact that independent pharmacies have higher rates of ownership by pharmacists than do chain pharmacies, 57.5% *versus* 42.5%, respectively.

In the Paraná State, pharmacists presented similar preferences towards the management and administration area and towards the technical or assistance area (interest in both areas 58.2%). This differs from the State of Santa Catarina, where pharmacists have higher preference for the technical or assistance area (França Filho *et al.*, 2008). When time since graduation of pharmacists is taken into account in the analyses, more recently graduated pharmacists show a higher level of interest in the managerial/administrative area ( $p < 0.05$ ). This may be explained by the lack of experience of recently graduated professionals in providing services.

According to respondents, 42.8% of customers are attended directly by the pharmacists. Furthermore, in a regular work week the pharmacist spends 4 hours on average performing activities related to the SNGPC (Sistema Nacional de Gerenciamento de Produtos Controlados - National Management System for Controlled Products). These numbers show a worrisome reality, in which less than half of patients had access to the pharmacists, and indicate the need for an increase in trained human resources and of work hours dedicated to clinical activities in order to provide effective

**TABLE I** - Profile of pharmacists in the State of Paraná (n=533)

Characteristics	n (%)
<b>Gender</b>	
Female	370 (69.4)
Male	163 (30.6)
<b>Education level</b>	
Graduation	265 (49.7)
Specialization or MBA	245 (46.0)
Master's degree	20 (3.8)
PhD	3 (0.6)
<b>Type of pharmacy</b>	
Local/regional pharmacy chain	174 (32.6)
State pharmacy chain	49 (9.2)
National pharmacy chain	97 (18.2)
Independent pharmacy	213 (40.0)
<b>Type of responsibility</b>	
Technical director pharmacist	233 (43.7)
Owner pharmacist	167 (31.3)
Manager pharmacist	114 (21.4)
Technical assistant pharmacist	102 (19.1)
Substitute pharmacist	38 (7.1)
<b>Experience time working in retail</b>	
0-10 years	327 (61.4)
11-20 years	138 (25.9)
21-30 years	58 (10.9)
31 years or more	10 (1.9)
<b>Areas of interest</b>	
Technical/assistance area	160 (30.0)
Administration/management area	63 (11.8)
Both areas	301 (58.2)

pharmaceutical attendance. The second piece of data shows that pharmacists cannot blame the SNGPC for taking time away from customers.

When the structure of the pharmacies where the pharmacists worked was considered, the pharmacies in Paraná State had good structure available in general (Figure 2), even when compared to studies published in other states, such as Santa Catarina, São Paulo and Espírito Santo (França Filho *et al.*, 2008; Tomassi, Ribeiro, 2012; Fernandes, 2014). However, almost 50% of pharmacists did not have access to a private or semi-private space for tending to customers, which compromises the quality of the services provided and is far from ideal.

When asked about which pharmaceutical services were provided, there was a prevalence of services for blood

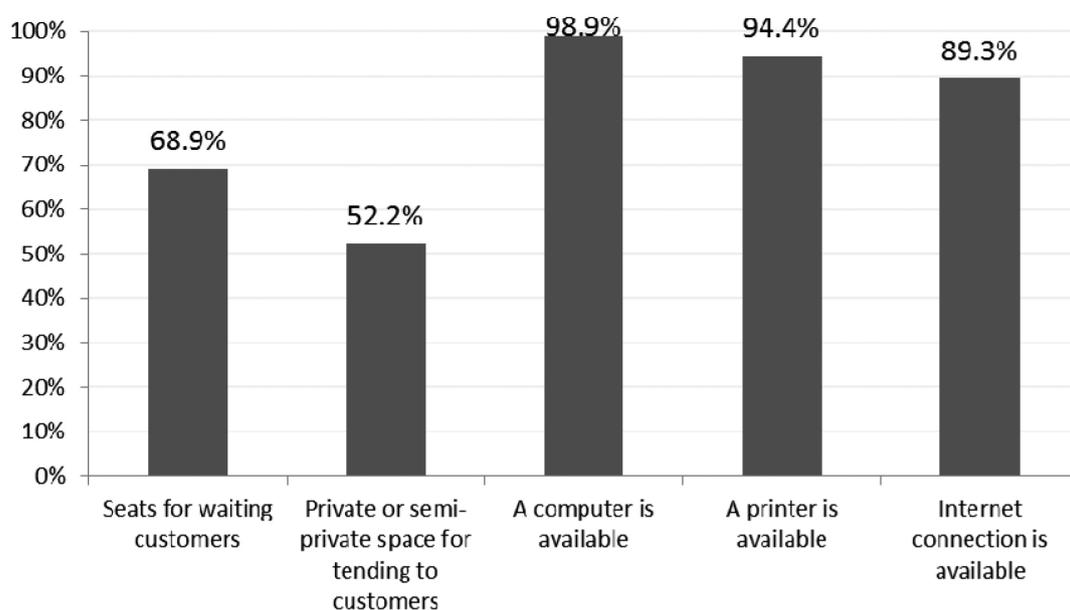
pressure measurement and application of injectables. Figure 3 shows the (abbreviated) frequency data for the application of injectables, blood pressure measurement, ear piercing, body temperature measurement, capillary blood glucose test, home services, bandaging and administration of nebulizers, which were in accordance with previous data publications regarding the state capital of Paraná (Correr *et al.*, 2004). In the State of Santa Catarina, the percentages are similar, except for the blood glucose test, which was 4 times higher than in the Paraná State (França Filho *et al.*, 2008).

The survey also gathered data regarding the number of procedures performed per week and the price for such procedures. Blood pressure measurement and application of injectables were the services with the highest medians of frequency, of 30 and 14 weekly procedures, respectively. The other services had a weekly frequency of  $\leq 6$ . The services with the highest prices were ear piercing and home services, both with a median of R\$10.00, whereas other services had prices  $\leq$  R\$5.00, which shows that pharmaceutical services are undervalued.

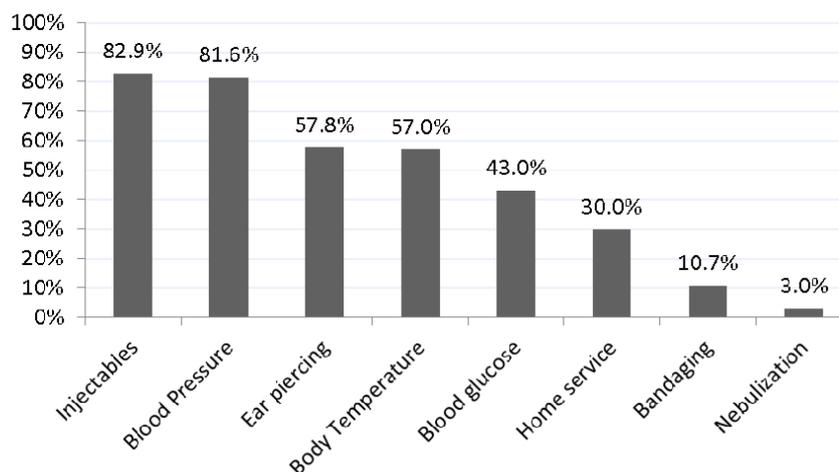
Regarding the issuance of the Declaration of Pharmaceutical Services (DPS), only 37% of professionals issue the DPS, which shows that most pharmacists are not following the current law (Brasil, 2009). Other studies have also shown this tendency of not abiding by law (Fernandes, 2014; Reis, 2013). In Brazil, the pharmaceutical services statement is considered an important product of pharmaceutical services, it ensures that the patient has access to data on the services and procedures performed, ensuring traceability and safety of pharmacotherapy, as well as empowering the patient in relation to their care. The low utilization of this official document may reflect a lack of knowledge regarding the regulatory laws of the profession, rather than an actual oversight.

The analysis of the MHDI variable versus the variables of 'Score of structure' and 'Score of services 8' showed that, surprisingly, the cities with an MHDI classification of medium or low had the highest scores both for structure and for services provided,  $p < 0.05$ . This result shows that the pharmacies in these cities have better structure for provision of pharmaceutical services and also provide more pharmaceutical services than cities with high or very high MHDI.

This situation can be explained by the higher prevalence of independent pharmacies in cities with lower MDHI, which can facilitate a more intimate contact with the patient, leading to bonding and customer fidelity and to a prioritization of the clinical rather than the commercial aspects of pharmaceutical



**FIGURE 2** - Indicators of structure of community pharmacies in the State of Paraná.



**FIGURE 3** - Pharmaceutical services performed by pharmacists in the State of Paraná.

activities. Furthermore, cities with a lower MHDI tend to be lacking in health care services. In this context, the pharmacy is the closest, if not the only, alternative for the resolution of problems, which leads to a higher need for pharmaceutical services.

## CONCLUSIONS

In the present study, pharmacists from community pharmacies in the State of Paraná showed a great interest in further education (post-graduate training). Men were found to provide more pharmaceutical services and to work in pharmacies with better structure for these services, despite being more represented in the group with the lowest degree of specialization. The structure of

pharmacies in Paraná State is in a general manner good, but still far from ideal.

Responses to the survey have shown that pharmaceutical services are poorly adopted and are evidently undervalued in Paraná State. They have also revealed that few pharmacists correctly follow the legislation and issue the DPS.

The larger chain pharmacies, both national and state-wide, provide fewer pharmaceutical services and have worse structure for the provision of these services when compared to independent pharmacies. Chain pharmacies are also more prevalent in cities with higher MHDI, showing a primarily commercial focus, however, the publication of the law 13,021 in 2014, which defines the pharmacy as a health institution, and the recent expansion

of clinical services in the community pharmacy, will have a tendency to change this situation in the long term.

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