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Article

Collaborative attitudes between pharmacists and physicians in Brazil

Fernanda Oliveira Prado[1], Dyego Carlos Souza Anacleto de Araújo[1], Kérilin Stancine Santos Rocha[1], Luiza Correia Cunha[1], Alessandra Rezende Mesquita[1], Divaldo Pereira Lyra Júnior[1]*

[1]Laboratory in Teaching and Research of Social Pharmacy, Federal University of Sergipe, São Cristóvão, Sergipe, Brazil

Pharmacist-physician collaboration is a strategy for optimizing patient care and improving health outcomes. Nevertheless, there is a lack of information in Brazil about collaborative practices among these professionals. The aim of this study was to measure collaborative attitude of pharmacists and physicians who were working together in a teaching hospital. A cross-sectional study was conducted from June 2018 to January 2019 with pharmacists and physicians working in a teaching hospital in Northeastern Brazil. These professionals were invited to provide responses to the Brazilian version of the "Scale of Attitudes Towards Pharmacist-Physician Collaboration" (SATP²C); their scores ranged between 16 and 64 points. The software Epi Info TM (version 3.5.4) was used for data analysis, and data were expressed in means. Forty-four professionals participated in this study. The mean age was 33.5 (DP = 7.1) years. More than half of participants were male (n = 25, 56.8%). The means from the SATP²C for pharmacists and physicians were 54.20 and 50.91, respectively, indicating good collaborative attitudes. There was no statistical difference between the mean scores of pharmacists and physicians. Participants showed a predisposition for collaborative teamwork. Future studies should focus on understanding the process by which collaboration translates into clinical practice.

Keywords: Interprofessional relationship. Intersectoral collaboration. Pharmacist. Physician.

INTRODUCTION

Interprofessional collaboration involves professionals from various disciplines working together in a mutually trusting and respectful relationship by communicating with each other and making decisions together, and in this collaborative process each one exercises specific skills and performs a clear role in contributing to appropriate patient care (Van, Mitchell, Krass, 2011; WHO, 2010). According to previous studies, the collaborative process between pharmacists and physicians optimizes drug therapy and patients' health outcomes (Aguiar *et al*., 2018; Polgree *et al*., 2015). Consequently, several institutions have encouraged this approach as a strategy for optimizing the provision of services, avoiding failures, and promoting patient safety (Matuda, Aguiar, Frazão, 2013; WHO, 2010).

The "Scale of Attitudes Towards Pharmacist-Physician Collaboration" (SATP²C) (Hojat, Gonnella, 2011) is a collaborative attitudes measurement scale used most frequently among pharmacy and medical students. Globally, some studies have also used it to measure collaborative attitudes between pharmacists and physicians, as interprofessional collaboration is directly involved in improving health outcomes (Seselja-Perisin *et al*., 2016; Seselja-Perisin *et al*., 2019; Wang *et al*., 2016).

In light of this, several studies have explored factors that influence interprofessional collaboration between pharmacists and physicians (Löffler *et al*., 2017; Pezzino *et al*., 2017), and attitudinal aspects have been highlighted as being a significant influence on collaborative practices

***Correspondence:** D. P. Lyra Jr. Laboratório de Ensino e Pesquisa em Farmácia Social (LEPFS). Avenida Marechal Rondon, Jardim Rosa Elze, Cidade de São Cristóvão. Estado de Sergipe, Brasil, 49100-000. Phone/Fax: +557921056319. E-mail: lepfs.ufs@gmail.com. Number ORCID: 0000-0002-0266-0702. Number ORCID: F. O. Prado: 0000-0002-9254-9476, D. C. S. A. de Araújo: 0000-0001-6631-465X, K. S. S. Rocha: 0000-0002-2313-2140, L. C. Cunha: 0000-0002-1653-343X, A. R. Mesquita: 0000-0003-2988-5829

(Van, Mitchell, Krass, 2011). Thus, evaluating whether pharmacists and physicians display collaborative attitudes toward each other is an important step in achieving effective collaborative practices, especially when considering the influence of these professionals on students' attitudes. In Brazil, only one study has focused on the relationship between pharmacy practices and medical students (Prado *et al*., 2018). Therefore, this study aimed to assess the collaborative attitudes between pharmacists and physicians working together in a teaching hospital in northeastern Brazil.

MATERIAL AND METHODS

A cross-sectional study was conducted from June 2018 to January 2019 in a teaching hospital in northeastern Brazil that is fully integrated into the Brazilian healthcare system. Pharmacists and physicians of both genders working in the referenced hospital were invited to participate in the study. Convenience sampling was conducted from a population of 10 pharmacists and 96 physicians. Although physicians were in high number, they worked in shifts and not all of them were always available to participate in this research. Residents were included for both the pharmacist and physician populations. Physicians were not categorized by specialties during data analysis because of sample size; however, this study population consisted of general physicians, nutrologists, orthopedists, infectious disease specialists, pediatricians, general surgeons, plastic surgeons, anesthetists, and emergency physicians.

The participants were invited to answer the Brazilian version of the SATP^{2}C (Cunha *et al*., 2017). This tool was originally developed by Hojat *et al.* (2012) and contains 16 items clustered in three dimensions: "responsibility and accountability," "shared authority," and "interdisciplinary education." Participants rated the items using a four-point Likert scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*), and generated scores ranging from 16 to 64 points. All the items were directly scored except for the 9th, which was a reverse-scored item (4 = *strongly disagree*, 3 = *disagree*, 2 = *agree*, 1 = *strongly agree*). A higher score indicated a more positive collaborative attitude.

Two researchers independently met the participatsat the hospital where the SATP^{2}C was answered. Participants answered the SATP^{2}C only once each. Informed consent was obtained from each participant. Data from the survey instrument were coded and entered into the Epi Info TM software (version 3.5.4), and digitation was performed by two researchers independently. The Kolmogorov-Smirnov test was used to verify data normality, and the Mann-Whitney rank sum test was used to verify differences in total scores and scores by dimensions (responsibility and accountability, shared authority, interdisciplinary education) for pharmacists and physicians, along with total scores by gender. Spearman's rank correlation test was used to verify the ratio between age and score. The results are expressed as medians and interquartile ranges. Differences were considered significant at $P \leq 0.05$.

RESULTS

A total of 44 professionals, consisting of 10 pharmacists (22.7%) and 34 physicians (77.3%), responded to the SATP^{2}C. More than half of the participants were male (n = 25, 56.8%), and the mean age was 33.5 ± 7.1 years.

The mean score for each evaluated item is shown in the following Table. According to the physicians' evaluations, the lowest average score was obtained for the following: "Both pharmacists and physicians should contribute to decisions regarding the type and dosage of medicine given tothe patients" (2.8 ± 0.91). On the other hand, the pharmacists evaluated the following items highly: "Physicians should consult pharmacists for help patients with adverse reaction or refractory to drug treatment" (3.9 ± 0.32), and "Physicians should be made aware that pharmacists can help in providing the right drug treatment" (3.6 ± 0.52).

There were no significant differences between the total mean scores for professionals' collaborative attitudes (physicians = 50.91 ± 5.6; pharmacists = 54.20 ± 4.6; p = 0.100), nor were there significant differences according to gender (male = 51.52 ± 6.53; female = 51.94 ± 4.08; p = 0.815). When comparing scores by dimension

for pharmacists and physicians, there was a significant difference in the shared authority dimension (physicians = 15 IQ14–17; pharmacists = 17 IQ16–17; p = 0.05). No significant correlation was found between age and collaboration scale scores (p = 0.322).

TABLE - Pharmacist and Physician Mean Score of Each Item from Scale of Attitudes Toward Pharmacist-Physician Collaboration

	Sentence	Mean (SD)			Total Score (Mean, SD)
		Pharmacist	Physician	*p*	
Responsibility and accountability	Pharmacists are qualified to assess and respond to patients' drug treatment needs (2)	3.1 (0.57)	3.2 (0.67)	0.746	3.2 (0.64)
	Both pharmacists and physicians should contribute to decisions regarding the type and dosage of medicine given to the patients (8)	3.5 (0.53)	2.8 (0.91)	0.025*	3.0 (0.89)
	There are many overlapping areas of responsibility between pharmacists and physicians in drug treatment of the patients (6)	2.9 (1.20)	3.4 (0.65)	0.122	3.2 (0.81)
	Pharmacists as well as physicians should have responsibility for monitoring the effects of drugs on the patients (11)	3.6 (0.52)	3.1 (0.83)	0.073	3.2 (0.80)
	Pharmacists should be accountable to patients for the drug they provide (5)	3.1 (0.73)	2.9 (0.88)	0.481	2.9 (0.85)
	A physician should be viewed as a collaborator and colleague with a pharmacist rather than his/her superior (1)	3.7 (0.48)	3.62 (0.55)	0.672	3.6 (0.53)
	Pharmacist have special expertise in counseling patients on drug treatment (7)	3.4 (0.70)	2.8 (0.82)	0.063	3.0 (0.82)
	Pharmacists can contribute to decisions regarding drug interactions that can affect the patients (4)	3.7 (0.48)	3.6 (0.56)	0.570	3.6 (0.54)
	Pharmacists should be involved in making drug policy decisions concerning the hospital/pharmacy services upon which their work depends (10)	3.7 (0.48)	3.4 (0.66)	0.257	3.5 (0.63)
Shared authority	Physicians should be made aware that pharmacists can help in providing the right drug treatment (15)	3.6 (0.52)	3.4 (0.81)	0.009*	3.4 (0.66)
	Pharmacists should clarify a physician's order when they feel that it might have the potential for detrimental effects on the patient (12)	3.7 (0.48)	3.2 (0.86)	0.110	3.3 (0.80)
	The primary function of the pharmacist is to fill the physician's prescription without question. (9)	1.1 (0.31)	1.8 (0.71)	0.004*	1.66 (0.71)
	Physicians should consult pharmacists for helping patients with adverse reaction or refractory to drug treatment (14)	3.9 (0.32)	3.6 (0.89)	0.012*	3.4 (0.75)
	Physicians and pharmacists should be educated to establish collaborative relationships (13)	3.9 (0.32)	3.6 (0.89)	0.287	3.7 (0.80)

TABLE - Pharmacist and Physician Mean Score of Each Item from Scale of Attitudes Toward Pharmacist-Physician Collaboration

	Sentence	Mean (SD)			Total Score (Mean, SD)
		Pharmacist	Physician	*p*	
Interdisciplinary education	During their education, pharmacy and medical students should be involved in teamwork in order to understand their respective roles (3)	3.4 (1.3)	3.6 (0.7)	0.543	3.6 (0.85)
	Interprofessional relationships between physicians and pharmacists should be included in their professional education programs (16)	3.6 (0.52)	3.4 (0.81)	0.370	3.4 (0.76)

*$p \leq 0.05$

DISCUSSION

To our knowledge, this is the first study to measure collaborative attitudes between pharmacists and physicians in Brazil. In this study, pharmacists and physicians showed a propensity toward collaborative practice. The mean scores on the SATP^{2}C for Brazilian pharmacists and physicians (54.20 and 50.91, respectively) were similar to those for pharmacists and physicians in Croatia (53.8 and 50.7, respectively) (Seselja-Perisin *et al*., 2016) and slightly lower than those for pharmacists and physicians in the United States (56.3 and 52.8, respectively) (Hojat, Gonnella, 2011). Although pharmacists in the United States are well-established members of the healthcare team and their clinical practice is well consolidated, for pharmacists in Brazil and Croatia, their societal role is currently undergoing change (Nicoletti, Ito, 2017). Nevertheless, the findings for these three countries are similar, revealing positive collaborative relationships among the aforementioned professionals.

As mentioned, the role of pharmacists in Brazil has been undergoing change in recent years, as it has in other countries. Pharmacists now play a much more active role in patient care, with responsibilities for detecting, preventing, and solving drug-related problems in a systematic, continuous, and documented manner (Aguiar *et al*., 2018; Detoni *et al*., 2017). These professionals have been establishing their positions on healthcare teams through collaborative work (Ramos *et al*., 2018). The literature shows that certain factors, including proximity to other professionals, recognition of other professionals' value, exposure to collaborative practices, and, consequently, greater integration into the healthcare team, enable greater opportunities for pharmacists to develop interprofessional relationships that are more conducive to collaborative practice (Aguiar, 2018; Van, Mitchell, Krass, 2011).

Another finding from this study refers to items 14 and 15 of the SATP^{2}C, which showed statistically significant differences between pharmacists and physicians. These items mostly relate to questions concerning shared-authority. Moreover, this could be a reaction to social role theory and the hierarchical model that shows physicians identifying themselves as the dominant authority in patient care and thus feeling that their autonomy is threatened when questioned (Bradley, Ashcroft, Crossley, 2018; Hojat *et al*., 2014). Therefore, pharmacists regard this issue as a barrier to collaborative work with physicians (Vinterflod *et al*., 2018). In Brazil, although healthcare professionals have been encouraged to work together cooperatively, as in multi-professional residency programs, a uniprofessional education model continues to predominate in healthcare courses, especially medical schools, which in practice does little to cultivate acceptance among physicians for sharing decisions

regarding the course of patient treatment (Freire Filho *et al*., 2018; Prado *et al*., 2018). Thus, team recognition of the power and value of each member should be encouraged. The more balanced the relationship between pharmacist and physician, the greater the likelihood of progress in the collaborative process, and consequently, in safety as well as optimized and cost-effective patient care (Nester, 2016).

Individual analyses of items showed that physicians had lower scores than pharmacists for the items "Pharmacists have special expertise in counseling patients on drug treatment" and "Both pharmacists and physicians should contribute to decisions regarding the type and dosage of medicine given to the patients," whereas pharmacists scored lower than physicians for the item "There are many overlapping areas of responsibility between pharmacists and physicians in drug treatment of the patients". These scores reflect perspectives related to the perceived responsibilities of these groups of professionals. These results can be explained by the fact that professionals' roles in the context of collaboration are not well defined (Rubio-Valera, Chen, O'Reilly, 2014). Therefore, the responsibilities of pharmacists and physicians should be clearly defined so that each individual performs the appropriate tasks based on their respective expertise. Moreover, these findings demonstrate the need for teaching students and professionals to work collaboratively to promote and implement curricular changes and to stay up-to-date with professional trends.

This study had certain limitations, however. Firstly, the research was conducted in only one teaching hospital. Additionally, the results should be generalized with caution, given the intentional sampling method and the small sample. And lastly, another possible limitation was participant bias, suggesting that the respondents may have provided socially desired answers.

This study measured collaborative attitudes between pharmacists and physicians working in a teaching hospital in northeastern Brazil. The findings of the study revealed that both groups of professionals have their own predispositions toward collaborating and working on teams together. This result supports the discussion regarding the importance of interprofessional collaboration. Future studies should focus on understanding the process by which collaboration translates into clinical practice.

LIST OF ABBREVIATIONS

SATP^{2}C: Scale of Attitudes Towards Pharmacist-Physician Collaboration

DECLARATIONS ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This research was approved by the Research Ethics Committee Involving Human Beings of the Federal University of Sergipe (00987718.5.0000.5546). The participants were invited to sign an Informed Consent Form before participation in this research.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

COMPETING INTERESTS

The authors declare that they have no competing interests.

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AUTHORS' CONTRIBUTIONS

DPLJ guided the design of the work. LCC made substantial contributions to the design of the work. FOP

applied the SATP²C instrument to the participants and drafted the work. DCSAA also applied the SATP²C instrument to the participants and interpreted the data. ARM and KSSR substantively revised the work. All authors accepted the final version of the manuscript.

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