Original Research

Evaluation of students' attitudes towards pharmacist–physician collaboration in Brazil

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Abstract

Objective. To measure undergraduate pharmacy and medical students' collaborative attitudes regarding Pharmacist–Physician collaboration.

Methods. A cross-sectional descriptive study was conducted from September 2016 to February 2017 in Northeast Brazil. Pharmacy and medical students from the first and the last year of courses were invited to complete Portuguese version of Scale of Attitudes Toward Pharmacist-Physician Collaboration (SATP^{2}C). Descriptive and comparative analyses were performed using IBM SPSS (22 version). Differences were considered significant when p<0.05.

Results. Three hundred seventy students completed the SATP^{2}C. Overall, the students had positive attitudes towards physician-pharmacist collaboration. There was no significant correlation between age and score (p=0.79). Women showed a more positive collaborative attitude than men (53.1, SD=6.8 vs. 55.1, SD=6.3). Pharmacy students had a higher score than medical students (57.5, SD=4.7, vs. 51.1, SD=6.4). The first-year medical students had a higher score than last-year medical students (52.3, SD=6.0 vs. 49.5, SD=6.6; p<0.007). There was no significant difference in the attitudes between the first and last year pharmacy students (p<0.007).

Conclusions. Pharmacy and medical students showed positive attitudes towards physician-pharmacist collaboration. However, pharmacy students presented more collaborative attitudes than medical ones. Additionally, the first-year medical students had more collaborative attitudes than last-year medical students. Studies should be conducted to provide recommendations to improve interprofessional education efforts to further enhance the positive attitudes toward physician-pharmacist collaboration.

Keywords

Intersectoral Collaboration; Interprofessional Relations; Attitude of Health Personnel; Professional Practice; Education, Pharmacy; Education, Medical; Pharmacists; Physicians; Surveys and Questionnaires; Brazil

INTRODUCTION

Interprofessional collaboration is to work together cooperatively, share responsibilities to solve problems, and make decisions for patients, respecting the different qualities and abilities of different health and social care professionals.[1-4] This practice have shown a positive impact on patient care, health services and system improvement.[4-8] That is why several studies highlight the need for collaborative practice between different health care professionals, including physicians and pharmacists.[4,9-13]

Interprofessional collaboration should be encouraged during undergraduation to be effective.[12] The government and universities of some countries, such as Canada, Sweden, the United Kingdom, and Italy, have been promoting the development of interprofessional care.[10] Although there are incentives to work in collaboration, if professionals are not training already in undergraduation level to work together, they are going to have some difficulty.[14] Therefore, some courses of study aim to develop competencies and strategies within interprofessional education.[14,15] According to Centre for the Advancement of Interprofessional Education, interprofessional education is defined as occasions when two or more professions learn with, from and about each other to improve collaboration and the quality of care.[16] This practice may develop and/or improve the students' ability to work together and thereby contribute to the improvement of patient care.[16,17]

Randomized studies show that the involvement of the pharmacist in patient care can provide clinical benefits. A systematic review and meta-analysis of nineteen randomized trials showed a significant reductions in systolic/diastolic blood pressure (−8.1 mmHg [95%CI, −10.2 to −5.9] / −3.8 mmHg [95%CI,−5.3 to −2.3]) with pharmaceutical care compared with usual care.[18] Importantly, the pharmaceutical interventions are most effective when done in collaboration with other health professionals.[19]

In Brazil, the predominant health education model is uniprofessional, however, interprofessional education has been growing in the last years.[20] Since 2002, National Curricular Guidelines for health courses require professionals capable of working in collaboration and interprofessionally, reinforcing the necessity of

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interprofessional education.[21] In addition, in recent years, the pharmacists clinical role has been expanding, for a patient-centered practice model.[22-24] This scenario requires the pharmacists interact with other health professionals, such as physicians, to achieve the best patient outcomes.

In this sense, collaborative attitudes, as well as evaluation of them, must be encouraged on undergraduation level to improve the quality of services offered in the future. Some countries have investigated attitudes of medical and pharmacy students towards physician pharmacist collaboration[12,25], however no study has measured it in Brazil. In this sense an instrument has been translated, adapted and validated by Cunha[26] as the "Attitudes Scale on Medical-Pharmaceutical Collaboration" and can be used to compare the differences between groups in collaborative medical-pharmaceutical attitudes and research on the clinical outcomes of the collaboration between professionals. Therefore, this study aimed to measure undergraduate pharmacy and medical students' collaborative attitudes regarding Pharmacist–Physician collaboration.

METHODS

Design

A cross-sectional descriptive study was carried out from September 2016 to February 2017 in Sergipe State, Northeast Brazil, to evaluate the collaborative attitudes between pharmacy and medical students.

Participants

Pharmacy and medical students from the first and the last year of courses composed the sample, in order to verify if there is difference between the collaborative attitudes of students who were starting and finishing their respective courses. These students were enrolled at the two largest higher education institutions in the state of Sergipe, Brazil. One is private and the other is public, with two campuses located in two different cities. The students were chosen by convenience, being that all students who were present in the universities during researchers' visit of were invited to participate in the study. A population number of the students was provided by higher education institutions. The sample was calculated for a finite population of 763 students, adopting a confidence level of 95% ($p<0.05$) and a margin of error of 5%, totalizing 256 students. Students (1) of both genders (2) who were enrolled in the first or last year of the pharmacy or medical course in one of the two universities and (3) who agreed to participate in the project were included.

Data collection

The pharmacy and medical students were invited to complete the Portuguese version of the Scale of Attitudes Toward Pharmacist–Physician Collaboration (SATP^{2}C).[26] This scale was originally developed by Hojat and Gonnella[20] and was translated and validated to Brazil by Cunha et al.[26], showing adequate psychometric properties. This scale includes 16 Likert-type items on a 4-point scale (1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree). All items are directly scored except for the 9th, which is a reverse scored item (1=strongly agree; 2=agree; 3=disagree; 4=strongly disagree). The respondent can score between 16 and 64. A high score means more positive attitude about the relationship between physicians and pharmacists.[13,27]

The instrument was applied in two forms: in person or online. In both cases, all participants were instructed before the application and could give up at any time. In in-person application, three researchers (FOP, KSSR, DCAA) were at the two universities and asked the students to answer the scale. In online application, the students who did not respond in person were asked to answer the scale in an online version through Google Forms (Google Inc, Mountain View, CA, USA). Besides instrument data, students also provided socio-demographic (gender, age) and academic data (higher education institution/campus, course, year of course).

Data analysis

Data from the survey instrument were coded and entered into IBM SPSS (22 version) software, and digitation was performed by one of the researchers (FOP). The Kolmogorov-Smirnov test was used to check the normality assumption; the Mann-Whitney Rank Sum test was used for difference between groups; and the Spearman Rank Order was used for correlation of age and total score. Results were expressed as mean and standard deviation (SD). Differences were considered significant when the p-value <0.05.

Ethical considerations

This research was approved by the Ethics Committee on Research Involving Human Beings from the Federal University of Sergipe (62433616.8.0000.5546).

RESULTS

Three hundred seventy students composed the sample. The mean age was 22.7 (SD=4.8). Socio-demographic aspects are shown in Table 1.

Overall, the students presented positive attitudes towards collaboration, with a mean total attitude score higher than 3 (Table 2). The mean score of each item for each course is shown in Table 2 and ranged from a low of 2.8 (for the item "Pharmacists are qualified to assess and respond to patients' drug treatment needs") from medical students to a high of 3.8 (for the item "A physician should be viewed as a collaborator and colleague with a pharmacist rather than his/her superior") from pharmacy students.

There was no significant correlation between age and score ($p=0.79$). Women revealed a more positive collaborative

Table 1. Sample's Sociodemographic Aspects

	n	%
Gender		
Male	102	28
Female	207	56
Non informed	61	16
Course		
Pharmacy	207	56
Medicine	163	44
Year of course		
First	216	58
Last	154	42

Table 2. Pharmacy and medical students' mean score of each item from scale of Attitudes Toward Pharmacist-Physician Collaboration

Sentence M (SD)	Pharmacy Student	Medical Student	Total Score
A physician should be viewed as a collaborator and colleague with a pharmacist rather than his/her superior	3.8 (0.4)	3.6 (0.6)	3.7 (0.5)
Pharmacists are qualified to assess and respond to patients' drug treatment needs	3.5 (0.6)	2.8 (0.8)	3.2 (0.8)
During their education, pharmacy and medical students should be involved in teamwork in order to understand their respective roles	3.6 (0.5)	3.6 (0.5)	3.6 (0.5)
Pharmacists can contribute to decisions regarding drug interactions that can affect the patients	3.8 (0.4)	3.2 (0.7)	3.5 (0.6)
Pharmacists should be accountable to patients for the drug they provide	3.4 (0.6)	2.8 (0.8)	3.1 (0.8)
There are many overlapping areas of responsibility between pharmacists and physicians in drug treatment of the patients	3.3 (0.6)	3.3 (0.6)	3.3 (0.6)
Pharmacist have special expertise in counseling patients on drug treatment	3.5 (0.6)	2.8 (0.8)	3.2 (0.8)
Both pharmacists and physicians should contribute to decisions regarding the type and dosage of medicine given to the patients	3.5 (0.7)	2.8 (0.9)	3.2 (0.8)
The primary function of the pharmacist is to fill the physician's prescription without question.	3.7 (0.5)	3.1 (0.6)	3.4 (0.7)
Pharmacists should be involved in making drug policy decisions concerning the hospital/pharmacy services upon which their work depends	3.6 (0.5)	3.3 (0.6)	3.5 (0.6)
Pharmacists as well as physicians should have responsibility for monitoring the effects of drugs on the patients	3.5 (0.6)	3.0 (0.8)	3.3 (0.7)
Pharmacists should clarify a physician's order when they feel that it might have the potential for detrimental effects on the patient	3.7 (0.6)	3.1 (0.8)	3.4 (0.8)
Physicians and pharmacists should be educated to establish collaborative relationships	3.8 (0.4)	3.7 (0.5)	3.7 (0.5)
Physicians should consult pharmacists for helping patients with adverse reaction or refractory to drug treatment	3.6 (0.5)	3.2 (0.7)	3.4 (0.6)
Physicians should be made aware that pharmacists can help in providing the right drug treatment	3.8 (0.5)	3.3 (0.6)	3.6 (0.6)
Interprofessional relationships between physicians and pharmacists should be included in their professional education programs	3.6 (0.6)	3.4 (0.6)	3.5 (0.6)

attitude than men (55.1; SD=6.3 vs. 53.1; SD=6.8; p=0.019), and pharmacy students seemed more likely to have collaborative attitudes (57.5; SD=4.7) than medical students (51.1; SD=6.4, p=0.001). First-year medical students revealed a more positive collaborative attitude than those in their last year (Table 3). In contrast, there were no significant differences in the collaborative attitudes between first year and last year pharmacy students. Regarding mean score for each course in first and last year, medical students showed significant difference (first year=52.3, last year=49.5, p=0.007) while there was no significant difference for pharmacy students (first year=57.1, last year=58.2, p=0.129).

DISCUSSION

Interprofessional collaboration is a widely acknowledged subject. Government, health care decision-makers, and health professionals have been discussing the need for collaborative work to prevent drug-related problems, improve patient safety, optimize team members' skills, and enhance the quality of the health care delivery system.[3-5,28] In this sense, positive collaborative attitudes between pharmacists and physicians are fundamental.[29] In this context, this study evaluated pharmacy and medical students' collaborative attitudes toward pharmacist-physician collaboration in one state of Brazil.

In this study, pharmacy students had more collaborative attitudes than medical ones. Similar results were found by Winkle *et al*., in which first-year pharmacy students' score was significantly higher than that of first year medical students [mean (SD) total attitude score of 56.6 (7.2) vs. 52.0 (6.1)].[12] Another study carried out in Kuwait by Katoue et al. corroborates these findings that pharmacy students expressed more positive attitudes towards interdisciplinary collaboration than medical students [mean (SD) total attitude score of 56.2 (4.9) vs. 44.6 (6.2)].[25] At the beginning of their academic programs, the mean scores for pharmacy and medical students were 60 and 56 (p<0.0001), respectively, which have averages greater than our findings. This could be due to pharmacists' work process that has been changing to assume an active role in patients' health.[4] This new endeavor is also reflected in students' behavior. Similarly, other studies showed a less collaborative attitude from physicians, which may infer that physicians have a common self-perception of being the dominant authority in patient care.[26,30] In this sense, interventions are necessary to encourage medical students to work collaboratively.

This study showed striking differences in scores between pharmacy and medical students and an apparent lack of opinion regarding pharmacist's role by medical students. This may be due to the fact that, in Brazil, patient-centered approach by pharmacists is still recent.[31] In addition, only in 2017 the National Guidelines for Undergraduate education

Table 3. Group differences on the Scale of Attitudes Toward Pharmacist–Physician Collaboration.

	n	M (SD)	*p* value
Gender			0.019[a]
Male	102	53.1 (6.8)	
Female	207	55.1 (6.3)	
Course			0.001[a]
Pharmacy	207	57.5 (4.7)	
Medicine	163	51.1 (6.4)	
Year of course			0.46
First	216	55.0 (5.9)	
Last	154	54.2 (7.0)	

[a] Mann-Whitney Rank Sum test was used for difference between groups, defined as p<0.05

in Pharmacy were updated and it stated that 50% of training hours should be spent in teaching health care.[32] Then, the fact that pharmacist's role is still not well established in Brazil as well as medical students are not aware of this new direction of Pharmacy profession, may explain the low scores. Thus, introducing interprofessional collaboration practices during undergraduation is important to promote better understanding of healthcare team's roles.

A significant difference was observed between genders in this study. Women demonstrated a more positive collaborative attitude. In contrast, Wang *et al.*[15] evaluated the attitudes towards physician-pharmacist collaboration using the SATP^{2}C and found men more prone to a collaborative attitude. According to these authors, this finding may be related to local culture: in China, open-mindedness is a strong characteristic of masculinity. Hojat and Gonnella[27] did not find gender differences in their study. Similarly, Hansson *et al*.[33] investigated differences in attitudes towards collaboration between doctors and nurses among medical students and found a significant difference between male and female students, implying a more positive attitude among female students. This finding is consistent with previous studies and may be associated with women's social and communication skills and maternal attitudes.[33-35] Hojat *et al*.[36] investigated attitudes toward physician-nurse collaboration in the United States and Mexico across genders and noted female physicians did not express more positive attitudes toward physician–nurse collaboration than males. This may indicate that these data may be multifactorial; therefore, future studies should investigate this issue.

The first-year medical students had a higher score than last-year medical students, which may be associated with the emphasis on specialization and profession-specific education that does not stimulate interprofessional collaboration.[37-39] In addition, Hojat *et al*.[34] highlight that physicians see themselves at the top of hierarchical patient care, possessing a greater power position, so they are less likely to demonstrate collaborative attitudes.[12,40] When medical students get in touch with those physicians (in medical institutions and hospitals), they seem to be more influenced by their peers than by some interprofessional collaborative discipline.[33]

This study had some limitations. Brazil is a continental country with cultural and regional differences, and in this sense the sample size did not allow greater generalization, as it included respondents from only one state of Brazil. The time of instrument application could also have influenced the acquired data due to differences in the higher education institutions' calendars; some respondents participated in the research after finishing the period, whereas others participated after starting the period. Another observation was the low rate of return of medical students' participation in the online version of the instrument. Other limitation refers to the cross-sectional nature of study, since it presents the collaborative attitudes of medical and pharmacy students at one point of time and may not reflect these attitudes over time. Another possible limitation is respondents' bias as they could have provided socially desirable responses. Finally, our finds showed the impact that higher education course cause in the student, modeling its attitudes among graduation. For that, other studies should have been conducted in order to improve the health professional formation, making him/her more prepared for collaborative work.

CONCLUSIONS

This study succeeded in measuring undergraduate pharmacy and medical students' collaborative attitudes in one state of Brazil, showing that pharmacy students are more likely to demonstrate collaborative attitudes. It was also verified that first-year medical students demonstrated more collaborative attitudes than last-year medical ones.

Besides, the current study provides basement for discuss and improve undergraduate health courses leading students to develop collaborative attitudes between different professionals. This change in students' attitudes towards interprofessional collaboration has the potential to reflect the health care delivery in the future.

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest to disclose.

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References

1. Baggs JG, Schmitt MH. Collaboration between nurses and physicians about care decisions. J Nurs Scholarsh. 1988;20(3):145-149. doi: 10.1111/j.1547-5069.1988.tb00055.x
2. Coluccio M, Maguire P. Collaborative practice: Becoming a reality through primary nursing. Nurs Adm Q. 1983;7(4):59-63. doi: 10.1097/00006216-198322000-00017
3. Regan S, Laschinger HKS, Wong CA. The influence of empowerment, authentic leadership, and professional practice environments on nurses' perceived interprofessional collaboration. J Nurs Manag. 2016;24(1):E54-E61. doi: 10.1111/jonm.12288
4. World Health Organization. Framework for action on interprofessional education and collaborative practice. Geneva: WHO; 2010.

5. Reeves S, Pelone F, Harrison R, Goldman J, Zwarenstein M. Interprofessional collaboration to improve professional practice and healthcare outcomes. Cochrane Database Syst Rev. 2017;6:CD000072. doi: 10.1002/14651858.CD000072.pub3
6. Zatzick D, Russo J, Lord SP, Varley C, Wang J, Berliner L, Jurkovich G, Whiteside LK, O'Connor S, Rivara FP. Collaborative Care Intervention Targeting Violence Risk Behaviors, Substance Use, and Posttraumatic Stress and Depressive Symptoms in Injured Adolescents – A Randomized Clinical Trial. JAMA Pediatr. 2014;168(6):532-539. doi: 10.1001/jamapediatrics.2013.4784
7. Archer J, Bower P, Gilbody S, Lovell K, Richards D, Gask L, Dickens C, Coventry PA. Collaborative care for depression and anxiety problems. Cochrane Database Syst Rev. 2012;10:CD006525. doi: 10.1002/14651858.CD006525.pub2
8. Carter BL, Bergus GR, Dawson JD, Farris KB, Doucette WR, Chrischilles EA, Hartz AJ. A cluster randomized trial to evaluate physician/pharmacist collaboration to improve blood pressure control. J Clin Hypertens 2008;10(4);260-271. Doi: 10.1111/j.1751-7176.2008.07434.x
9. Nagge JJ, Lee-Poy MF, Richard CL. Evaluation of a unique interprofessional education program involving medical and pharmacy students. Am J Pharm Educ. 2017;81(10):6140. doi: 10.5688/ajpe6140
10. Zanotti R, Sartor G, Canova C. Effectiveness of interprofessional education by on-field training for medical students, with a pre-post design. BMC Med Educ. 2015;15:121. doi: 10.1186/s12909-015-0409-z
11. Rotz ME, Dueñas GG, Zanoni A, Grover AB. Designing and evaluating an interprofessional experiential course series involving medical and pharmacy students. Am J Pharm Educ. 2016;80(5):85. doi: 10.5688/ajpe80585
12. Van Winkle LJ, Fjortoft N, Hojat M. Validation of an instrument to measure pharmacy and medical students' attitudes toward physician-pharmacist collaboration. Am J Pharm Educ. 2011;75(9):178. doi: 10.5688/ajpe759178
13. Van Winkle LJV, Bjork BC, Chandar N, Cornell S, Fjortoft N, Green JM, La Salle S, Lynch SM, Viselli SM, Burdicka P. Interprofessional Workshop to Improve Mutual Understandig Between Pharmacy and Medical Students. Am J Pharm Educ. 2012;76(8):150. doi: 10.5688/ajpe768150
14. Boland DH, Scott MA, Kim H, White T, Adams E. Interprofessional immersion: Use of interprofessional education collaborative competencies in side-by-side training of family medicine, pharmacy, nursing, and counselling psychology trainees. J Interprof Care. 2016;30(6):739-746. doi: 10.1080/13561820.2016.1227963
15. Wang J, Hu X, Liu J, Li L. Pharmacy students' attitudes towards physician–pharmacist collaboration: Intervention effect of integrating cooperative learning into an interprofessional team-based community service. J Interprof Care. 2016;30(5):591-598. doi: 10.1080/13561820.2016.1185095
16. CAIPE. Interprofessional education: a definition. London: CAIPE; 2002.
17. Reeves S, Fletcher S, Barr H, Birch I, Boet S, Davies N, McFadyen A, Rivera J, Kitto S. A BEME systematic review of the effects of interprofessional education: BEME Guide No. 39. Med Teach. 2016;38(7):656-668. doi: 10.3109/0142159X.2016.1173663
18. Santschi V, Chiolero A, Burnand B, Colosimo AL, Paradis G. Impact of pharmacist care in the management of cardiovascular disease risk factors: a systematic review and meta-analysis of randomized trials. Arch Intern Med. 2011;171(16):1441-1453. doi: 10.1001/archinternmed.2011.399
19. Tannenbaum C, Tsuyuki R. The expanding scope of pharmacists' practice: implications for physicians. CMAJ. 2013;185(14):1228-1232. doi: 10.1503/cmaj.121990
20. Peduzzi M, Norman IJ, Germani ACCG, Silva JAM, Souza GC. Interprofessional education: training for healthcare professionals for teamwork focusing on users. Rev Esc Enferm USP. 2013;47(4):977-983. doi: 10.1590/S0080-623420130000400029
21. Brazil. Resolution CNE/CES 2 of 19/02/2002. [Internet] Brasília (BR). National Council of Education; 2002. [updated 2002 Feb 19; cited 2017 Oct 25]. Avaible at: http://portal.mec.gov.br/cne/arquivos/pdf/CES022002.pdf (accessed October 25, 2017).
22. Ramos SF, dos Santos Júnior GA, Pereira AM, Dosea AS, Rocha KSS, Pimentel DMM, de Lyra-Jr DP. Facilitators and strategies to implement clinical pharmacy services in a metropolis in Northeast Brazil: a qualitative approach. BMC Health Serv Res. 2018;18(1):632. doi: 10.1186/s12913-018-3403-4
23. Alcântara TDS, Onozato T, Neto FDCA, Dosea AS, Cunha LC, de Araújo DC, Junior, DPL. Perceptions of a group of hospital pharmacists and other professionals of the implementation of clinical pharmacy at a high complexity public hospital in Brazil. BMC Health Serv Res. 2018;18(1):242. doi: 10.1186/s12913-018-3036-7
24. Dosea AS, Brito GC, Santos LM C, Marques TC, Balisa-Rocha B, Pimentel D, Bueno D, Lyra DP. Establishment, Implementation, and Consolidation of Clinical Pharmacy Services in Community Pharmacies: Perceptions of a Group of Pharmacists. Qual Health Res. 2017;27(3):363-373. doi: 10.1177/1049732315614294
25. Katoue MG, Awad AI, Al-Jarallah A, Al-Ozairi E, Schwinghammer TL. Medical and pharmacy students' attitudes towards physician-pharmacist collaboration in Kuwait. Pharm Pract (Granada). 2017;15(3):1029. doi: 10.18549/PharmPract.2017.03.1029
26. Cunha LC, Neves S, Marques TC, Araujo DCSA, Alcantara TS, Lyra Jr, DP. Cross-cultural adaptation and validation to Brazil of the scale of attitudes toward physician-pharmacists collaboration. Pharm Pract (Granada). 2017;15(2):872. doi: 10.18549/PharmPract.2017.02.872
27. Hojat M, Gonnella JS. An instrument for measuring pharmacist and physician attitudes towards collaboration: Preliminary psychometric data. J Interprof Care. 2011;25(1):66-72. doi: 10.3109/13561820.2010.483368
28. Chisholm-Burns MA, Lee JK, Spivey CA, Slack M, Herrier RN, Hall-Lipsy E, Graff Zivin J, Abraham I, Palmer J, Martin JR, Kramer SS, Wunz T. US pharmacists' effect as team members on patient care: systematic review and meta-analyses. Med Care. 2010;48(10):923-933. doi: 10.1097/MLR.0b013e3181e57962
29. Obreli Neto PR, Marusic S, Lyra-Jr DP, Pilger D, Cruciol-Souza JM, Gaeti WP, Cuman RKN. Effect of a 36-month pharmaceutical care program on coronary heart disease risk in elderly diabetic and hypertensive patients. J Pharm Sci Exp Pharmacol. 2011;12(2):249-263.

30. Vegesna A, Coschignano C, Hegarty SE, Karagiannis T, Polenzani L, Messina E, Zoli R, Maio V. Attitudes towards physician–nurse collaboration in a primary care team-based setting: Survey-based research conducted in the chronic care units of the Tuscany region of Italy. J Interprof Care. 2016;30(1):65-70. doi: 10.3109/13561820.2015.1081878
31. Brazil. Resolution nº 585 of August 29, 2013. [Internet] Brasília (BR). Federal Council of Pharmacy. Avaible from: http://www.cff.org.br/userfiles/file/resolucoes/585.pdf (accessed October 25, 2017).
32. Brazil. Resolution CNE/CES nº 06, of October 19, 2017. [Internet] Brasília (BR). Ministry of Education. 2017. Avaible at: http://portal.mec.gov.br/index.php?option=com_docman&view=download&alias=74371-rces006-17-pdf&category_slug=outubro-2017-pdf&Itemid=30192 (accessed October 25, 2017).
33. Hansson A, Foldevi M, Mattsson B. Medical students' attitudes toward collaboration between doctors and nurses – a comparison between two Swedish universities. J Interprof Care. 2010;24(3):242-250. doi: 10.3109/13561820903163439
34. Hojat M, Ward J, Spandorfer J, Arenson C, Van Winkle LJ, Williams B. The Jefferson Scale of Attitudes Toward Interprofessional Collaboration (JeffSATIC): development and multi-institution psychometric data. J Interprof Care. 2015 May;29(3):238-244. doi: 10.3109/13561820.2014.962129
35. Ward J, Schaal M, Sullivan J, Bowen ME, Erdmann JB, Hojat M. The Jefferson Scale of Attitudes toward Physician-Nurse Collaboration: A study with undergraduate nursing students. J Interprof Care. 2008;22(4):375-386. doi: 10.1080/13561820802190533
36. Hojat M, Nasca TJ, Cohen MJ, Fields SK, Rattner SL, Griffiths M, Ibarra, D, Gonzalez AA, Torres-Ruiz A, Ibarra G, Garcia A. Attitudes toward physician-nurse collaboration: A cross-cultural study of male and female physicians and nurses in the United States and Mexico. Res Theory Nurs Pract. 2001;50(2):123-128.
37. Ebert L, Hoffman K, Levett-Jones T, Gilligan C. They have no idea of what we do or what we know": Australian graduates' perceptions of working in a health care team. Nurse Educ Pract. 2014;14(5):544-550. doi: 10.1016/j.nepr.2014.06.005
38. Khalili H, Hall J, Deluca S. Historical analysis of professionalism in western societies: Implications for interprofessional education and collaborative practice. J Interprof Care. 2014;28(2):92-97. doi: 10.3109/13561820.2013.869197
39. Khalili H, Orchard C, Laschinger HK, Farah R. An interprofessional socialization framework for developing an interprofessional identity among health professions students. J Interprof Care. 2013;27(6):448-453. doi: 10.3109/13561820.2013.804042
40. Hojat M, Gonnella JS, Nasca TJ, Fields SK, Cicchetti A, Lo Scalzo A, Taroni F, Amicosante AM, Macinati M, Tangucci M, Liva C, Ricciardi G, Eidelman S, Admi H, Geva H, Mashiach T, Alroy G, Alcorta-Gonzalez A, Ibarra D, Torres-Ruiz A. Comparisons of American, Israeli, Italian and Mexican physicians and nurses on four dimensions of the Jefferson Scale of Attitudes toward Physician Nurse Collaboration. Int J Nurs Stud. 2003 May;40(4):427-435. doi: 10.1016/S0020-7489(02)00108-6