

**PROFESSIONAL COLLABORATIVE PRACTICE IN PATIENT CARE; EXPLORING  
ATTITUDES OF PHARMACY AND MEDICAL STUDENTS IN A NIGERIAN  
UNIVERSITY****Dr. Onah Otor Paul\* and Siyaka Abdulateef**

Department of Clinical Pharmacy and Pharmacy Administration Faculty of Pharmacy University of Maiduguri Borno State, Nigeria.

**\*Corresponding Author: Dr. Onah Otor Paul**

Department of Clinical Pharmacy and Pharmacy Administration Faculty of Pharmacy University of Maiduguri Borno State, Nigeria.

Article Received on 26/06/2019

Article Revised on 15/07/2019

Article Accepted on 06/08/2019

**ABSTRACT**

Background: Pharmacy practice now emphasizes multi-disciplinary collaborative approach to the provision of pharmaceutical care. This requires acquiring right attitudes so as to be able to collaborate with members of other professionals involved in patient care. Benefits of physician – pharmacist' collaboration are well documented in countries where integration of interprofessional practice is well established. Attitude to collaborative practice among health professionals is reported to be formed well before graduation. Assessment of attitude of healthcare students towards teamwork can be useful indicator of post-graduation collaborative practice. Aim: The study aims to assess attitudes of healthcare students towards pharmacist – physician collaborative practice. Methods: Scale of attitudes towards pharmacist – physician collaboration [SATP2C] questionnaire was administered to fourth and fifth year pharmacy and medical students. Data was analyzed using SPSS 21 for descriptive and inferential statistics. Factor analysis was used to identify items that influenced attitudes. One way ANOVA with post Hoc test and Students t test were used to know if demographic variables significantly influenced attitudes. Results/Discussion: Medical students showed less positive attitudes towards collaboration compared to pharmacy students. Influence of demographic variables showed that final year medical students were less willing to collaborate with pharmacists compared to other categories of students. This result is consistent with many previous studies and it reveals that current model of training healthcare professionals is not adequate to engender teamwork post-graduation. Conclusion: Attitudes to collaborative practice is yet to significantly change among medical students, so it's important to provide opportunities for interaction with students of allied professions early in the course of medical training if collaborative attitude is to change.

**KEYWORDS:** Interprofessional collaboration, attitudes, Pharmacy students.**INTRODUCTION**

The last few decades has witnessed transformational shift of pharmacists from “dispensers” to professionals with expertise in providing pharmaceutical services in collaborative and multidisciplinary care settings. The change in focus of training from product to patient oriented service has brought pharmacist into direct care of patients where team effort is required to solve patient health problems. Pharmacists whose contribution had been largely in the provision of medication related needs is increasingly required to participate in clinical decisions where drug related expertise is needed to optimize therapy.<sup>[1,2]</sup> Effective participation in teamwork is predicated on ability of all health professionals contributing their unique knowledge and skills to solve patient medical problems<sup>[3]</sup>. So optimizing patient treatment outcomes is therefore supposed to be a

collaborative effort of all team members working together to achieve common goals for patients.<sup>[4]</sup>

The new roles of pharmacists in multidisciplinary health teams include but not limited to drug advice, identifying and resolving potential and actual drug therapy problems, preventing drug interactions, prevent medication errors and adverse drug reaction as well as undertake therapeutic drug monitoring among others.<sup>[5,6]</sup> The benefits of pharmacist – physician collaboration towards positive treatment outcomes are well documented.<sup>[7,8,9,10]</sup> and includes improved quality of care, safety, efficiency and cost reductions for patients and health systems.<sup>[4]</sup>

Interprofessional collaboration between physicians and pharmacists is well integrated in many advanced countries, so also is interprofessional learning programs in the training of medical and pharmacy students.<sup>[11,12,13]</sup>

The encouragement of health authorities that health professionals collaborate for the benefit of the patients<sup>[14]</sup> is yet to take root in Nigeria's healthcare system. The health administration system in the country is not structured for all healthcare professionals to make inputs into patient therapy decisions.

For any appreciable success to be achieved in collaborative practice there must be acceptance among physicians and pharmacists that collaboration will bring along expertise and skills that contribute to quality of patient care.<sup>[15]</sup> Research among students who had exposure to interprofessional training reportedly have better attitudes towards collaborative practice.<sup>[16]</sup> A number of challenges to interprofessional collaboration have been reported to include lack experience and skills, mistrust by physicians, lack of physician interest, lack of awareness and unclear definition of roles and responsibilities.<sup>[17,18]</sup> In, Nigeria there is little or no interprofessional training programs built into medical and pharmacy degree programs despite policy acceptance. In order for collaborative practice to thrive there must be interprofessional training and learning components at the undergraduate and postgraduate levels.<sup>[19]</sup> This will provide opportunity for mutual understanding of professional roles and responsibilities as well as minimize negative perceptions of each other's profession.<sup>[20,21]</sup> Several studies have reported that attitudes of medical students towards collaboration has consistently been less than enthusiastic<sup>[22,23]</sup> Recent studies however indicate that medical students are recognizing the fact that collaboration is beneficial and should be encouraged during professional education.<sup>[24,25]</sup>

One of the reasons for negative attitude among physicians towards collaboration is attributable to lack of awareness of cognitive services and other valuable contributions that are provided by pharmacists that ultimately improve therapy outcomes. There is some level of apprehension among physicians that pharmacy profession is encroaching into practice areas that traditionally have been their exclusive preserve,<sup>[30]</sup> Negative attitudes arising from such feelings of professional invasion is likely to be better managed if roles and responsibilities are managed properly.<sup>[31]</sup>

The image of pharmacist as "dispenser" is still very much in perception of physicians, so they are less confident and unwilling to facilitate pharmacists involvement in clinical decisions.<sup>[26,27]</sup> The communication system between healthcare professionals has been reported to be inefficient and little opportunity for professional interaction results in poor attitudes.<sup>[17,28]</sup> It is therefore critical that communication system in clinical settings should be that which allows for continuous professional and social interaction that will ultimately foster collaboration.<sup>[29]</sup>

As pharmacists make way into direct patient care roles in multidisciplinary care settings, there is need to prepare students of healthcare professions for collaborative practice. This will allow for mutual understanding of roles and responsibilities early in course of study, so as to create mutual trust which will hopefully translate to better attitudes towards collaborative practice after qualification.

## OBJECTIVES

To assess attitudes of medical and pharmacy students towards interprofessional collaboration, and to determine influence of some demographic variables on their attitudes.

## METHODS

**Settings:** This study was carried out among medical and pharmacy students of University of Maiduguri, North east Nigeria.

**Sample/sampling:** All medical and pharmacy students in their fourth and fifth year of study who consented to participate were included in the survey.

**Questionnaire:** The 16 item standard scale of attitude towards physician – pharmacist collaboration [SATP2C] is on five point Likert scale but has been modified and revalidated by several researchers.<sup>[32,33]</sup> The modified questionnaire is on a four item scale with the middle "neutral" removed as against the original five item scale. The responses ranged from strongly disagree – 1, disagree – 2, agree – 3, strongly agree – 4.

**Data collection:** The questionnaire was administered on all consenting students during the first lecture period of the day. Willingness to participate was indicated by accepting and returning completed questionnaires. They were given ten minutes to fill and return completed questionnaires.

**Data analysis:** The data were entered into SPSS 20 and double checked by another author. Internal consistency as determined by Cronbach alpha was 0.81. Factor analysis was carried out using principal component analysis, varimax rotation and Kaiser normalization. Factor loadings less than 0.4 were suppressed. Mean item scores were calculated for each respondent and scores above midpoint was considered as positive attitude and vice versa. One way analyses of variance with post hoc or student t test were used to analyze influence of demographic variables attitudes. P values < 0.05 was considered statistically significant.

## RESULTS

Demographic data indicates that there are twice as many males as are female students among respondents.

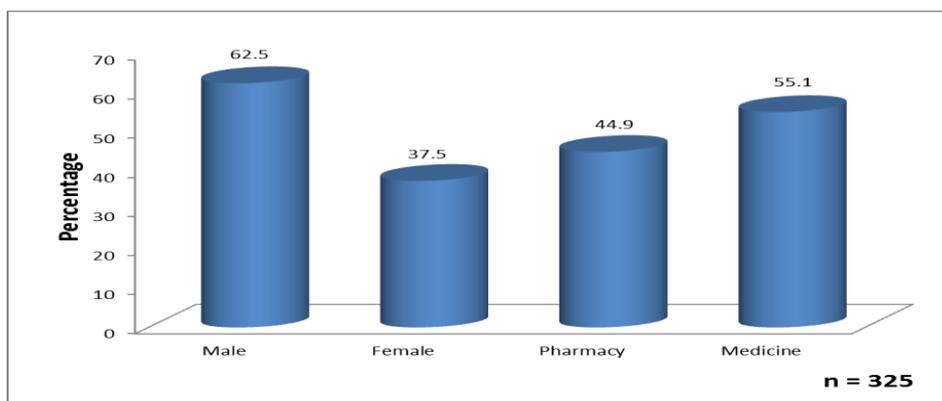


Figure 1: Demographic data.

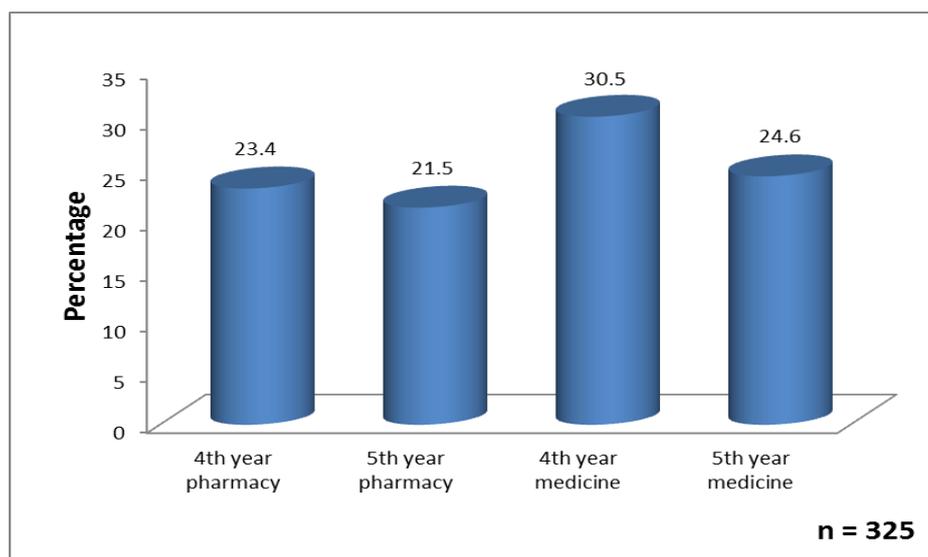


Figure 2: Distribution of students' year of study.

The analysis of results indicate that attitude towards interprofessional collaboration among medical students is significantly lower than that of pharmacy students [ $P < 0.001$ ]. Pharmacy students' generally recorded high scores

on all items; medical students on the other hand have high scores only on some items related to domains of collaboration, expertise, responsibility and role of pharmacists in patient care.

Table 1: Mean response to items.

Items	Pharmacy students		Medical students		P value
	Mean [SD]	Positive [%]	Mean [SD]	Positive [%]	
1. A physician should be viewed as a collaborator And colleague with a pharmacist rather than his/ superior	3.44±0.90	89.9	2.06±1.07	39.6	<0.001
2. Pharmacists are qualified to assess and respond to patients drug treatment needs	3.53±0.85	90.4	2.36±0.97	45.7	<0.001
3. During their education, pharmacy and medical students should be involved in teamwork in order to understand their respective roles	3.53±0.73	93.2	2.60±0.88	60.6	<0.001
4. Pharmacists can contribute to decisions regarding drug interaction than can affect the patients	3.60±0.84	91.1	3.08±0.82	88.3	<0.001
5. Pharmacists should be accountable to patients for the drug they provide	3.36±0.79	88.4	2.94±0.88	78.2	<0.001
6. There are many overlapping areas of responsibility between pharmacists and physicians in drug treatment of patients	3.19±0.93	88.4	2.75±0.80	74.3	<0.001

7. Pharmacists have special expertise in counseling patients on drug treatment	3.53±0.86	90.4	2.47±0.90	55.3	<0.001
8. Both pharmacists and physicians should contribute to decisions regarding the type and dosage of medicine given to patients	3.41±0.84	92.5	2.64±0.88	62.6	<0.001
9. The primary function of the pharmacist is to fill the physicians prescription without questions	1.58±1.08	17.1	2.19±0.98	31.9	<0.001
10. Pharmacists should be involved in making drug policy decisions concerning the hospital/ pharmacy services upon which their work depend	3.49±0.89	91.8	2.78±0.90	74.3	<0.001
11. Pharmacists as well as physicians should have responsibility of monitoring the effects of drugs on the patients	3.34±0.89	90.5	2.69±0.81	63.2	<0.001
12. Pharmacists should clarify a physician's order when they feel that it might have detrimental effect on the patient	3.54±0.77	92.4	2.86±0.89	79.4	<0.001
13. Physicians and pharmacists should be educated to establish collaborative partnerships	3.53±0.83	92.4	3.19±0.88	88.3	<0.001
14. Physicians should consult pharmacists for helping patients with adverse reaction or refractory to drug treatment	3.48±0.71	94.5	2.58±0.93	62.6	<0.001
15. Physicians should be made aware that pharmacists can help in providing the right drug treatment	3.63±0.68	95.2	2.65±0.87	67.6	<0.001
16. Inter-professional relationships between physicians and pharmacists should be included in their professional education programs	3.38±0.87	89.7	2.73±0.84	72.1	<0.001

Factor analysis using principal component analysis and varimax rotation extracted four components related to collaboration, expertise, responsibilities and roles.

Bartlett's test of sphericity [ $<0.001$ ] and Keyser Meyer Olkin test [0.858] both indicated suitability of adequacy and suitability of sample for factor analysis.

**Table 2: Factor analysis.**

Items	Components			
	1	2	3	4
1. A physician should be view as a collaborator and colleague with a pharmacist rather than his/her superior	0.491			
2. Pharmacists are qualified to assess and respond to patient drug treatment needs		0.557		
3. During their education, pharmacy and medical student should be involved in teamwork in order to understand their respective roles				
4. Pharmacists can contribute to decisions regarding drug interaction than can affect the patients		0.711		
5. Pharmacists should be accountable to patients for the drug they provide	0.684			
6. There are many overlapping areas of responsibility between pharmacists and physicians in drug treatment of patients				0.822
7. Pharmacists have special expertise in counseling Patients on drug treatment		0.718		
8. Both pharmacists and physicians should contribute to decisions regarding the type and dosage of medicines given to patients	0.669			
9. The primary function of the pharmacist is to fill the physicians prescription without question	0.820			
10. Pharmacists should be involved in making drug	0.475			

policy decisions concerning the hospital/ pharmacy services upon which their work depend	
11. Pharmacists as well as physicians should have responsibility for monitoring the effects of drugs on patients	0.664
12. Pharmacists should clarify a physician's order when they feel that it might have detrimental effects on the patient	0.471
13. Physicians and pharmacists should be educated to establish collaborative partnerships	0.692
14. Physicians should consult pharmacists for helping patients with adverse reaction or refractory to drug treatment	0.494
15. Physicians should be made aware that pharmacists can help in providing the right drug treatment	0.466
16. Inter-professional relationships between physicians and pharmacists should be included in their professional education programs	0.519

KMO = 0.858. Bartlett's test = <0.001  
 Component 1 = Collaboration [Items 1, 5, 8, 11, 12, 14, 15, 16]  
 Component 2 = Expertise [Items 2, 4, 7]  
 Component 3 = Responsibility [Items 6, 13]  
 Component 4 = Roles [Items 9, 10]

There was no significant difference in attitudes to interprofessional collaboration on the basis of gender, however on the basis of course of study and years spent on their respective training programs, attitudes become significantly different as students proceed to their later years of study [P<001].

**Table 3: Influence demographic variables**

	Mean [SD]	P value
<b>Gender</b>		
Male [n = 203]	2.95±0.97	
Female [n = 122]	3.00±0.94	0.472 [t test]
<b>Course of study</b>		
Pharmacy students [n = 146]	3.35±0.84	
Medical students [n = 179]	2.66±0.89	<0.001 [t test]
<b>Year of study</b>		
4 <sup>th</sup> year pharmacy [n = 76]	2.32±0.93	
5 <sup>th</sup> year pharmacy [n = 70]	3.38±0.61	
4 <sup>th</sup> year medicine [n = 99]	2.63±0.93	<0.001 [one way Anova]
5 <sup>th</sup> year medicine [n = 80]	2.69±0.84	

## DISCUSSION

The ability of healthcare teams to effectively collaborate requires right attitudes towards members of other professions. Several studies have demonstrated that attitudes of professionals influence how members of one profession perceive and behave towards other professions within the team.<sup>[34,35]</sup> The importance of collaborative practice between pharmacists and physicians is well recognized,<sup>[36]</sup> however student attitudes are yet to be fully explored.<sup>[37]</sup> It has been shown that students in interprofessional teams exhibit diverse attitudes; however medical students have consistently demonstrated the least positive attitude towards collaboration.<sup>[35]</sup>

The result of this study showed that pharmacy students exhibited significantly higher positive attitude towards collaborative practice compared to medical students, an

observation that has been consistently reported in many studies.<sup>[38,39,40,41,42]</sup> Among the many factors reported to influence attitude towards collaboration included feelings of "superiority" over other professionals<sup>[43,44]</sup> There have also been reports that physicians believe pharmacists do not have sufficient medical knowledge and training to be involved in clinical decision process in addition to confusion as to their specific roles and responsibilities.<sup>[45,46,47,48,49]</sup> Physicians often have difficulties trusting pharmacists with patient care.<sup>[29]</sup>

The concept of physician- pharmacist collaboration is relatively new in Nigeria, physicians often feel a sense of encroachment into service areas they have traditionally dominated.<sup>[50]</sup> Professional norms among physicians also contribute to negative attitudes towards collaboration. Pharmacists were not traditionally involved in direct patient care, so the new paradigm shift into direct patient

care roles is provoking resistance. While there is positive attitude towards collaboration among pharmacy and medical students in this study, there is 20 – 50% less positive attitude among medical students which is higher than 21% previously reported.<sup>[39]</sup> Interestingly items related to pharmacist contribution to drug prescriptions, drug interaction, adverse reactions and drug selection generally received positive responses. This might suggest that the traditional “superiority and know it all” attitude may be changing among new generation of medical students.

Several reasons may be responsible for less positive attitude observed in this study some of which include absence of interprofessional education opportunities, perception that pharmacist can only perform dispensing function and have nothing more to offer in clinical decision process. There is significant difference in attitudes between final year medical students and those in other levels of study. This may be partly due to increased awareness of professional identity and traditional feeling of not wanting to share authority with other professionals. It's therefore imperative that educational and training programs which facilitate interaction between medical and pharmacy students be introduced early in training, so as to improve interprofessional interactions; foster clearer understanding of pharmacist roles and foster positive attitude towards collaboration.<sup>[51,52]</sup> In most advanced countries, interprofessional education opportunities is an integral part of professional training and consistent improvement in positive attitudes towards collaboration have been reported.<sup>[53,54,55,56]</sup> Interprofessional collaborative practice between physicians and pharmacists is the path into the future of medical care in Nigeria and it should begin during educational training.

## CONCLUSION

Medical and pharmacy students generally exhibited positive attitudes towards interprofessional collaboration; however medical students had significantly less positive attitudes. The attitudes were influenced by course and year of study with students in final years having comparatively higher positive attitudes.

## REFERENCES

- Davidson M, Smith RA, Dodd KJ, Smith JS, O'Loughlan MJ. Interprofessional pre-qualification clinical education. A systematic review. *Aust Health Rev*, 2008; 32: 111 – 120.
- Leonard M, Graham S, Bonacum D. The human factor: the critical importance of effective teamwork and communication in providing safe care. *Qual Saf Health Care*, 2004; 13(suppl 1): i85 – 90.
- Keshtkaran Z, Sharif F, Rambod M. Student's readiness for a perception of interprofessional learning: A cross sectional study. *Nurse Educ Today*, 2014; 34: 991 – 998.
- McDonough R, Doucette W. Developing collaborating relationships between pharmacists and physicians. *J Am Pharm Assoc*, 2001; 41: 682 – 692.
- Cooksey JA, Knapp KK, Walton SM, Cultice JM. Challenges to the pharmacy profession from escalating pharmaceutical demand. *Health Aff (Milwood)*, 2002; 21: 182 – 188.
- Mahdikhani S, Dabaghzadeh F. Benefits of pharmacist participation on hospital team. *Acta Med Iran*, 2016; 54: 140 – 145.
- Lalonde L, Hudson E, Goudreau J, Belanger D, Villeneuve J, Perrault S et al. Physician – pharmacist collaboration care in dyslipidemia management: the perception of clinicians and patients. *Res Soc Adm Pharm*, 2011; 7(3): 233 – 245.
- Kalisch LM, Roughead EE, Gilbert AL. Improving heart failure outcomes with pharmacist – physician collaboration; how close are we?. *Future Cardiol*, 2010; 6(2): 255 – 268.
- Carter BL, Ardery G, Dawson JD, James PA, Bergus GR, Doucette WR et al. Physician and pharmacist collaboration to improve blood pressure control. *Arc Int Med*, 2009; 169(2): 1996 – 2002.
- Sellers J, Kaczorowski J, Sellers C, Dolovich L, Woodward C, William A et al. A randomized controlled trial of a pharmacist consultation program for family physician and their elderly patients. *CMAJ*, 2003; 169(1): 17 – 22.
- Buring Sm, Bushan A, Broeseker A, Conway S, Duncan-Hewitt W, Hansen L, Wesberg S. Interprofessional education definition, student competences and guidelines for implementation. *Am J Pharm Educ*, 2009; 73: 59.
- CAIPE. Centre for advancement of interprofessional education. <http://caipe.org.uk/resources/defining-ipe/>, 2015.
- Accreditation standards. Accreditation standards for the first degree in pharmacy program 2014. The Canadian council for accreditation of pharmacy program [CCAPP], 2014. [http://www.CCGPP-accredit.ca/site/pdfs/university/CCAPP\\_accredit\\_standard\\_degree\\_2014.pdf](http://www.CCGPP-accredit.ca/site/pdfs/university/CCAPP_accredit_standard_degree_2014.pdf).
- Van C, Costa D, Abbot P, Mitchell B, Krass I. Community pharmacist attitudes towards collaboration with general practitioners: development and validation of a measure and a model. *BMC Health Serv Res*, 2012; 16: 320.
- McPherson T, Fontane P. Patient centered care in the community based compounding practice setting. *J Am Pharm Assoc*, 2010; 50(1): 37 – 44.
- Pollard K, Miers M, Gilchrist M. Collaborative learning for collaborative working? Initial findings from a longitudinal study of health and social care students. *Health Soc Care Community*, 2004; 12(4): 346 – 358.
- Rubio-Valera M, Jove AM, Hughes CM, Guillen – Sola M, Rovira M, Fernandez A. Factors affecting collaboration between general practitioners and

- community pharmacist; A qualitative study. *BMC Health Serv Res*, 2012; 12: 188.
18. Tarn DM, Paterniti DA, William BR, Cipri CS, Wenger NS. Which providers should communicate which critical information about a new medication? Patient, pharmacist and physicians perspectives. *J Am Ger Soc.*, 2009; 57(3): 462 – 469.
  19. Snyder ME, Zillich AJ, Primack BA, et al. exploring successful community pharmacist physician collaborative working relationships using mixed methods. *Res Soc Adm Pharm*, 2010; 6(4): 307 – 323.
  20. Hatah E, Braund R, Duffull S, Tordoff J. General practitioners perspectives of pharmacist new services in New Zealand. *Int J Clin Pharm*, 2012; 34(2): 364 – 373.
  21. Leape LL, Cullen DJ, Clapp MD, Burdick E, Demonaco HJ, Ericksson JL, Bates DW. Pharmacist participation in physician rounds and adverse drug events in the intensive care unit. *JAMA*, 1999; 282: 267 – 270.
  22. Laubscher T, Evans C, Blackburn D, Taylor J, McKay S. Collaboration between family physician and community pharmacists to enhance adherence to chronic medications.: Opinions of Saskatchewan family physicians. *Can Fam Physicians*, 2009; 55(12): e69 – 75.
  23. Bryant LJ, Coster G, Gamble GD, McCormick RN. General practitioners and pharmacist perceptions of the role of community pharmacists in delivering clinical care. *Res Soc Adm Pharm*, 2009; 5(4): 347 – 262.
  24. Cheung ST, cheung CL, Persaud J. A survey of junior doctors' attitudes towards pharmacists; and how their interaction can be improved. *Pharm J*, 2003; 270: 163 – 164.
  25. Jubraj B. Assessing junior doctors; how pharmacists can be prepared. *Hospital pharmacists*, 2006; 13: 291 – 294.
  26. McGrath SH, Snyder ME, Duenas GG, Pringle JL, Smith RB, McGivens MS. Physician's perception of pharmacist provided medication therapy management: qualitative analysis. *J Am Pharm Assoc*, 2010; 50(1): 67 – 71.
  27. Rutter PR, Hunt AJ, Jones IF. Exploring the gap: community pharmacists perceptions of their current roles compared with their aspiration. *Int J Pharm Pract*, 2000; 8(3): 204 – 208.
  28. Astrom K, Duggan C, Bates I. Developing a way to improve communication between healthcare professionals in secondary care. *Pharm Educ*, 2007; 7: 279 – 285.
  29. Doucette WR, Nevins J, McDonough RP. Factors affecting collaborative care between pharmacists and physicians. *Res Soc Adm Pharm*. 2005; 1(4): 565 – 578.
  30. Gallagher RM, Gallagher HC. Improving the working relationship between doctors and pharmacists: Is interprofessional education the answer? *Adv Health Sci Educ: Theory and Pract*, 2012; 17(2): 247 – 257.
  31. Kuculkarslan S, Lai S, Dong Y, Al-Bassam N, Kim K. Physician beliefs and attitudes towards collaboration with community pharmacists. *Res Soc Adm Pharm*, 2011; 7(3): 224 – 232.
  32. Chisholm MA, Martin BC. Development of an instrument to measure students' attitudes concerning pharmaceutical care. *Am J Pharm Educ*, 1997; 61: 374 – 379.
  33. Udeoagaranya PO, Ukwe CV, Ekwunife OI. Assessment of attitudes of Nigerian pharmacy students towards pharmaceutical care. *Pharm Pract (Granada)*, 2009; 7(3): 145 – 149.
  34. Mackay S. The role of perception questionnaire [RPQ]: A tool for assessing undergraduate students perception of the role of other professionals. *J Interprof Care*, 2004; 18: 289 – 302.
  35. Leizpig RM, Hyer K, Ek J, Wallenstein S, Vezina ML, Fairchild S, Howe JL. Attitudes toward working on interdisciplinary healthcare teams: A comparison by discipline. *J Am Ger Soc*, 2002; 50: 1141 – 1148.
  36. Howe JL, Hyer K, Mellor J, Lindeman D, Luptak M. Educational approaches for preparing social work for interdisciplinary teamwork on geriatric healthcare team. *Soc Work Health Care*, 2001; 32(4): 19 – 42.
  37. Skinner JH. Transitioning from multidisciplinary to interdisciplinary education in gerontology and geriatrics. *Gerontol and Ger Educ*, 2001; 21[3]: 73 – 85.
  38. Berenguer B, La Casa C, de la Matta MJ, Martin-Calero MJ. Pharmaceutical care; past, present and future. *Curr Pharm Des*, 2004; 10[30]: 3931 – 3946.
  39. Seselia – Perisins A, Mestrovic A, Klinar L, Modum D. Health care professionals and students attitudes towards collaboration between pharmacists and physicians in Croatia. *Int J Clin Pharm*, 2015; 38[1]: 16 – 19.
  40. Hojat M, Spandorfer J, Isenberg GA, Vergare MJ, Fassihi R, Gonella JS. Psychometrics of the scale of attitudes towards physician – pharmacist collaboration: A study with medical students. *Med Teach*, 2012; 34[12]: e833 – e837.
  41. Lon J, Van Wrinkle LJ, Fjortoft N, Hojat M. Validation of an instrument to measure pharmacy and medical students attitudes towards physician – pharmacist collaboration. *Am J Pharm Educ*, 2011; 75[9]: 178.
  42. Wang J, Hu X, Liu J, Li L. Pharmacy students attitudes towards pharmacist – physician collaboration: Intervention effect of integrating cooperative learning into an interprofessional team based community service. *J Interprof Care*, 2016; 30[5]: 591 – 598.
  43. Setiadi A, Wibowo Y, Herawati F, Setiawan E, Presly B, Zaidi MA, Sunderland B. Factors contributing to interprofessional collaboration in

- Indonesian health centres: A focus group study. *J Interprof Educ Pract.*, 2017; 8: 69 – 74.
44. Wibowo Y, Sunderland B, Hughes J. Pharmacist and physicians perspectives on diabetes service delivery within community pharmacies in Indonesia: a qualitative study. *Int J Pharm Pract.*, 2016; 24[3]: 180 – 188.
  45. Muijers PE, Knottnerus JA, Sijbrandij J, Janknegt R, Grol RP. Changing relationships, attitudes and opinions of general practitioners and pharmacist regarding the role of community pharmacists. *Pharm World Sci.*, 2003; 25: 235 – 241.
  46. Hager KD, Uden D, Tomaszewski D. Bridging the location gap: physicians perspectives of physician – pharmacists collaboration in patient care [BRIDGE Phase II]. *J Res Interprof Educ* 5[2]: 1 – 14.
  47. Bleiker P, Lewis A. Extending the role of community pharmacists; the views of GP. *Int J Pharm Pract*, 1998; 6: 140 – 144.
  48. Supper I, Catalo O, Lustman M, Chemla C, Bourgueil Y, Lettrillart L. Interprofessional collaboration in primary healthcare: a review of facilities and barriers perceived by involved actors. *J Public Health*, 2015; 37[4]: 16 – 27.
  49. Smith WE, Ray MD, Shannon DM. Physician expectation of pharmacists. *Am J Health Syst Pharm*, 2002; 59[1]: 50 – 57.
  50. Zillich AJ, Milchak JL, Carter BL, Doucette WR. Utility of a questionnaire to measure physician – pharmacist collaborative relationship. *J Am Pharm Assoc*, 2006; 46: 453 – 458.
  51. Katoue MG, Awad AI, Schwinghammer TL, Kombian SB. Pharmaceutical care education in Kuwait: Pharmacy students “perspectives”. *Pharm Pract (Granada)*, 2014; 12(3): 411.
  52. Matowe L, Abahussain EA, AL – Saffar N, Bihzad SM, AL-Foraih A, AL-Kandery AA. Physician perspectives and expectations of pharmacist professional duties in government hospitals in Kuwait. *Med Princ Pract*, 2006; 15(3): 185 – 189.
  53. Zargarzadeh AH, Jacob S, Klotz RS, Khasawneh FT. Clinical pharmacist and basic scientist: Do patients and physicians need this collaboration? *Int J Clin Pharm*, 2011; 33(6): 886 – 894.
  54. Aston SJ, Rheault W, Arenson C, Tappert SK, Stoecker J, Orzoff J, Galitski H, Mackintosh S. Interprofessional education: a review and analysis of program from three academic health centres. *Acad Med*, 2012; 87(7): 949 – 955.
  55. Cameron A, Rennie S, DiProspero L, Langlois S, Wagner S, Potvin M, Dematteo D, LeBlanc V, Reeves S. An introduction to team work; findings from an evaluation of an interprofessional education experience for 1000 first year health science students. *J Allied Health*, 2009; 38(4): 220 – 226.
  56. Anderson ES, Lennox A. The Leicester model of interprofessional education: developing, delivering and learning from students for 10 years. *J Interprof Care*, 2009; 23(6): 557 – 573.