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Community pharmacists' attitude towards professional practice - a comparative study among two different geographical zones in Malaysia

Abstract

Objective: To compare the differences of the community pharmacists' attitude towards their professional practice among different zones (regions).

Method: This was a comparative study of cross-sectional study of two different regions, using a pre-validated self-administered questionnaire containing three constructs and 37 items. Each question/statement assessed respondents attitude towards professional practice using five point Likert scale from for very low (1) to very high (5). Descriptive statistics was done using frequency, percentage, median and IQR whereas, for inferential statistics, Mann-Whitney test was used for comparing two different set of data's.

Results: Among the 300 respondents, the response rate was 85% and 87% for the two study zones. The attitude score was estimated for the three domains testing the professional practice of the respondents, and the total attitude score was arrived by summing up the three domain scores. The respondents of zone 1 showed 51%, positive attitude score, 45%, neutral attitude score and 4%, negative attitude score. On the other hand, correspondents from zone 2 showed 56%, positive attitude score, 38%, neutral attitude score and 6%, negative attitude score. It was also found that there are no significant relationship between the attitude scores and demographic variables. However, the Mann Whitney test showed a significant correlations among the total attitude score and the attitude score of the three professional practice domains with TIPM followed by TPCA and TMDA with r (300)=0.880, p<0.001, r (300)=0.864, p<.001 and r (300)=.811, p<.001 respectively.

Conclusion: Majority of the respondents showed a mixed attitude score for the three constructs. Continuing education and training programs on professional practice can be an important approach in equipping community pharmacists with the knowledge, skills and behavior change needed to expand their scope of practice in providing public with better quality of therapy and also improving public health outcomes.

Keywords: community pharmacist, attitude, professional practice

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Abdul Nazer Ali,[1] Hema Tharshni Subramaniam,[1] Sunil K Prajapati,[1] Nazer Zulfikar Ahmed[2]

[1]Faculty of pharmacy, AIMST University, Malaysia
[2]Cognizant Technology Solutions India Private Limited, India

Correspondence: Abdul Nazer Ali, Faculty of Pharmacy, AIMST University, Semeling, 08100 Bedong, Kedah Darul Aman, Malaysia, Email abdul.nazerala16@gmail.com

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Abbreviations: TMDA, total managerial and dispensing activities; TPCA, total pharmaceutical care activities; TIPM, total intra/inter professional activities, public health activities and maintenance of competence activities; TAS, total attitude score

Introduction

Practice of pharmacy that responds to the needs of the people who use the pharmacists' services to provide optimal, evidence-based care. The practice gives importance in improving the healthcare outcomes and quality of life of the patients. Health is a wide concept which can contain a vast selection of interpretation from practical to moral and philosophical. Health most probably stands as the base of a person's lifeline. The most quoted definition of health was formulated in the Constitution of WHO in the year 1946. The definition implicates a very positive state of being of any person; more like a short-stated guideline of life. *"Health is a state of complete physical, mental and social well-being, not merely the absence of disease or infirmity"*.[1] Community pharmacy or widely known as retail pharmacy or drug store is a branch of pharmacy practice. They supply medicines in accordance with a prescription or, when legally permitted, over-the-counter, without a prescription. The professional activities of the pharmacists includes ensuring an accurate supply of appropriate products, counseling patients at the time of dispensing, providing drug information to healthcare professionals, patients and/or public, and participation in health-promotion programs. They maintain links with other health professionals in primary health care.[2] Pharmacists are put at the primary access of contact in the human services framework because of their easy availability or approachability. Among the healthcare professionals in any typical healthcare set-up, community pharmacists are the most accessible. These days, pharmacists are attempting to move far from drug-oriented approach towards a more patient-focused approach (pharmaceutical care practice) with the goal of accomplishing better outcomes in pharmacotherapy.[3] This has been a long-term mission worked out by the pharmacists all over the world for the past three decades. Progressively, the pharmacist's responsibility is to guarantee patient's drug therapy is suitably demonstrated, well accessible, secured, conceivable and helpful for the patient. By assuming direct liability for individual patient's healthcare related necessities, pharmacists can make an individual commitment to the outcome of drug therapy and patients' satisfaction. This whole extent of patient-focused administrations has been depicted as

pharmaceutical care, an insurgency in community pharmacy rehearse by maintaining their health and advocate the utilization of reasonable drug therapy to upgrade patients' quality of life.[4] As a professional, pharmacists have the expertise to professionally work in pharmacy, thus their essential duty is conveying a professional work for their client, e.g. patients.[5] Be that as it may, the case may be diverse for community pharmacists where the professional side is occasionally clashing with business. Professionalism comes from both knowledge and experience in the form of lifetime learning and part of their daily routine.[6] A study by Phokeo et al.,[7] in Toronto, Canada, studied the community pharmacists' attitudes and professional interactions with users of psychiatric medication revealed, pharmacists can influence patients' perception of their mental illness. This statement clearly depicts the role of a pharmacist in a professional setting.[7,8] Community pharmacists should be able to perform according to the professional ethics of Good Pharmacy Practice (GPP), as their actions are directly mirrored in the health of their patients. As the four main elements of GPP says, involving in: activities associated with promotion of good health, avoidance of ill health and the achievement of health objectives; activities associated with the supply and use of medicines and items for the administration of medicine or otherwise related to treatment.[9] A study by Austin et al.,[10] revealed, pparticipants expressed ambivalence towards continuous professional development (CPD) and were concerned about their lack of skills in self-identification of learning needs and vehicles by which this could be addressed. Participants also agreed that workplace learning is pivotal, yet under emphasized component of CPD, and that peer-support is vital in adopting a CPD paradigm.[10] A study carried out in Tasmania, Australia by Peterson et al.,[11] to understand that dispensing errors are a major concern among the community pharmacists.[11] High prescription volumes, pharmacist fatigue and overwork seem to be contributing factors to this problem. Zero error tolerance is suggested as the solution to overcome this issue. Thus the problems exist and the need for research is warranted to find ways to improve the attitude of community pharmacists towards their professional practice. Consequently, this study was conducted to assess their attitudes towards professional practice among two regions (zones) which will make way for future studies for addressing them.

Outcome measures

The main outcome measures were: to identify the differences in attitude among the community pharmacists of two study regions of Malaysia regarding their professional practice; to evaluate the association of socio-demographic characteristics and attitude towards professional practice among respondents and to compare the correlations between the total attitude scores of the two study population regarding their professional practice.

Methods and materials

Study design and location (site): A comparative cross sectional study, conducted in two different geographical zones, one in Kualamuda district and the other in Penang island, Malaysia.

Target study population and study period: Registered pharmacists and pprovisionally Registered Pharmacists (PRP) working in community pharmacy setting. The study was conducted between September, 2017 and March, 2018.

Designing and development of the questionnaire

The questionnaire was adapted from previous literatures. Some questions was modified and changed according to the need of the present study. The self-administered questionnaire consists of three parts other than the socio-demographics data which are Managerial and Dispensing Activities (MDA), Pharmaceutical Care Activities (PCA) and Inter/Intra Professional, Public Health and Maintenance of Competence Activities (IPM).[12–14]

Validation of the questionnaire The questionnaire prepared consisted of three sections other than demographic details, which included questions regarding community pharmacists' attitude towards professional practice. The questionnaire was face, content, construct validated and reliability tested (Cronbach's alpha coefficient value=0.931) for our previous study and was used without modification for the present study.[15]

Modality of obtaining response: The community pharmacists were explained with the objective of the study verbally and the informed consent form was signed before distributing the survey questionnaires. The average time of 15 minutes was required to complete the questionnaire and the completed questionnaires were retrieved and compiled for data entry and analysis.

Sample size calculation

The total number of community pharmacists in Malaysia is approximately 3094.[16] The community pharmacies in Kedah and Penang are around 330.[17] The pilot study conducted utilized this figure as the prevalence of community pharmacies from which the sample size was drawn. The sample size was calculated using an automated on-line software programme, Raosoft sample size calculator.[18] The estimated sample size was calculated at 95% confidence interval, 5% margin of error with 50% response distribution and the sample size required was 184. A 10% margin for drop-outs (18) was added to the sample size derived to overcome any errors and increase the reliability of the results and conclusion. The final sample size was rounded off to 200. This software used Cohen's statistical power analysis method to calculate the required sample size for the given significance level and margin of error.[19]

Attitude score grading scale: The scoring grades attributed to each domain and overall, were based on the original Bloom's cut off points, assessment was made for attitude categories as negative (<60%), neutral (60-79%) or positive (≥80%).[20–22]

Ethical considerations: The research proposal along with the study instruments and informed consent form was submitted to the Institutional Review Board (IRB), AIMST University Human Ethical Committee and the ethical clearance obtained before initiation of the study. Informed consent forms were obtained from the participants explaining the aims and objectives of the study before the survey was carried out.

Statistical analyses of data

The survey data was tabulated using Microsoft Excel workbook and analysed using Statistical Package for Social Sciences 'SPSS version-23' (IBM SPSS Statistical software) for windows. The demographic characteristics (categorical variables) of the participants were illustrated using descriptive statistics for median and IQR. The categorical variables were analysed using frequency and percentage distribution and p value computed using Pearson's Chi Square test. A p value of <.05 was considered significant. For inferential statistics, Mann-Whitney test was used for comparing the differences between two different set of data's. All percentage are displayed in the text or in parentheses are with no decimal places as per APA reporting guideline recommendation.[23]

Results

Response rate

The responses of the respondents for the survey conducted in regions of either zones, a total of 350 questionnaires were distributed to randomly selected pharmacists in the survey areas. However, only 300 sets of valid questionnaires were collected back from the respondents. Thus, there was an 85% response rate from zone 1 and 87% response rate from zone 2 region of the selected pharmacies surveyed.

Demographic data: The socio-demographic characteristics of both the study zones are summarized in Table 1.

Table 1 Demographic characteristic of the study participants

Variable	Zone 1 (N=213) N (%)	Zone 2 (N=87) N (%)
Age In Years		
21-30	45 (21)	21 (25)
31-40	82 (39)	34 (39)
41-50	56 (26)	23 (26)
51-60	25 (12)	7 (8)
>60	5 (2)	2 (2)
Gender		
Male	106 (50)	42 (48)
Female	107 (50)	45 (52)
Professional Experience in Years		
5-Jan	46 (22)	21 (24)
10-Jun	45 (20)	18 (20)
15-Nov	49 (23)	20 (23)
16-20	31 (15)	11 (13)
>20	42 (20)	17 (20)

Frequency and percentages distribution of the study subjects

A total number of 300 community pharmacists participated in the study. Among the 300 participants, 213 participants were from zone 1 and the rest 87 participants are of zone 2. The median age of participants from zone 1 was 38 years (IQR=15) while the median age for participants from zone 2 was 37 years (IQR=15). From the data obtained, the maximum percentage of pharmacists is seen in the age group of 31-40 years for both zones (39%). These similarities were found to be coincidental. There were no significantt association observed among age distribution (X^2 (4)=1.05; p=.902). Among gender, 148 (49%) were male and 152 (51%) were female participants. In zone 1 there was an equal percentage seen for both male and female participants with 50% each, while participants of zone 2 have a higher number of female participants (52%) compared to males (48%). There were no significantt association observed among gender distribution (X^2 (1)=.055; p=.815). The median years of experience of zone 1 was 12 years (IQR=14) whereas, for zone 2 was 12 years (IQR=12). There were no significantt association observed among years of experience (X^2 (4)=.346; p=.987).

Comparison of Attitude scores with dependant variables

In this study, the attitude score of all three domains in dependent variables (TMDA, TPCA and TIPM) were cross-analyzed with the independent demographic variables individually (Tables 2−4).

Comparison of attitude scores towards total managerial and dispensing activities

Cross tabulation of attitude score with TMDA and age category, the highest positive attitude score for zone-1 was seen in the age 41-50 years (66%), whereas in zone-2 was>60 year (100%) however, 51-60 years scored 86%. Both regions have a lowest percentage for negative score among 31-40 years (3% and 9%) respectively. Among the gender category, females scored a higher positive attitude score (63%) in zone-1 when compared to 66% in zone-2 and the males have the highest positive score of 69%. For negative score, both zones have a lower negative attitude score of 1% and 2% by females. As for attitude score based on experience, the highest positive score is with experience of 16-20 years (74%) in zone-1 and >20 years (71%) in zone-2. The lowest negative attitude score with 0-5 years experience or >20 years (0%) in both zones. There was no significance observed among all three variables (Table 3).

Table 2 Comparison of attitude scores towards total managerial and dispensing activities

Variables	N (%)	TMDA – Zone 1			*p value	N (%)	TMDA – Zone 2			*p value
	N - 213	-ve	Neu	+ve		N - 87	-ve	Neu	+ve	
Age in Years										
21-30	45 (21)	0 (0)	16 (36)	29 (64)		21 (24)	0 (0)	7 (33)	14 (67)	
31-40	82 (39)	3 (3)	35 (43)	44 (54)		34 (39)	3 (9)	15 (44)	16 (47)	
41-50	56 (26)	1 (2)	18 (32)	37 (66)	0.761	23 (26)	1 (4)	7 (30)	15 (66)	0.462
51-60	25 (12)	0 (0)	9 (36)	16 (64)		7 (8)	0 (0)	1 (14)	6 (86)	
>60	5 (2)	0 (0)	2 (40)	3 (60)		2 (2)	0 (0)	0 (0)	2 (100)	
Gender										
Male	106 (50)	3 (3)	41 (39)	62 (58)	0.538	42 (48)	3 (7)	10 (24)	29 (69)	0.095
Female	107 (50)	1 (1)	39 (36)	67 (63)		45 (52)	1 (2)	20 (44)	24 (54)	

Table Continued....

Variables	N (%)	TMDA – Zone 1			*p value	N (%)	TMDA – Zone 2			*p value
	N - 213	-ve	Neu	+ve		N - 87	-ve	Neu	+ve	
Years of Experience										
0-5	46 (22)	0 (0)	16 (35)	30 (65)		21 (24)	0 (0)	7 (33)	14 (67)	
10-Jun	45 (21)	1 (2)	21 (47)	23 (51)		18 (21)	1 (6)	7 (39)	10 (55)	
15-Nov	49 (23)	2 (4)	17 (35)	30 (61)	0.345	20 (23)	2 (10)	8 (40)	10 (50)	0.76
16-20	31 (15)	1 (3)	7 (23)	23 (74)		11 (13)	1 (9)	3 (27)	7 (64)	
>20	42 (20)	0 (0)	19 (45)	23 (55)		17 (20)	0 (0)	5 (29)	12 (71)	

TMDA, total managerial and dispensing activities; *Chi Square test – *p* value < .05 is significant

Table 3 Comparison of attitude scores towards total pharmaceutical care activities between zones

Variables	N (%)	TPCA – Zone-1			*p value	N (%)	TPCA – Zone-2			*p value
	N - 213	-ve	Neu	+ve		N - 87	-ve	Neu	+ve	
Age in Years										
21-30	45(21)	4 (9)	26 (58)	15 (33)		21 (24)	2 (10)	10 (48)	9 (42)	
31-40	82(39)	18 (22)	36 (44)	28 (34)		34 (39)	7 (21)	18 (53)	9 (26)	
41-50	56(26)	8 (14)	23 (41)	25 (45)	0.388	23 (26)	4 (17)	10 (43)	9 (40)	0.927
51-60	25(12)	5 (20)	13 (52)	7 (28)		7 (8)	1 (14)	4 (57)	2 (29)	
>60	5(2)	1 (20)	1 (20)	3 (60)		2 (2)	0 (0)	1 (50)	1 (50)	
Gender										
Male	106(50)	15 (14)	47 (44)	44 (42)	0.282	42 (48)	7 (17)	17 (40)	18 (43)	0.225
Female	107(50)	21 (20)	52 (49)	34 (31)		45 (52)	7 (16)	26 (58)	12 (26)	
Years of Experience										
0-5	46 (22)	6 (9)	26 (57)	14 (34)		21 (24)	2 (10)	11 (52)	8 (38)	
10-Jun	45 (21)	8 (18)	19 (42)	18 (40)		18 (21)	4 (22)	7 (39)	7 (39)	
15-Nov	49 (23)	8 (16)	22 (45)	19 (39)	0.83	20 (23)	3 (15)	11 (55)	6 (30)	0.852
16-20	31 (15)	6 (19)	16 (52)	9 (29)		11 (13)	3 (27)	6 (55)	2 (18)	
>20	42 (20)	8 (19)	16 (38)	18 (43)		17 (20)	2 (12)	8 (47)	7 (41)	

TPCA, total pharmaceutical care activities; *Chi Square test, *p* value < .05 is significant

Table 4 Comparison of attitude scores with dependant (TIMP) variables and independent variables

Variables	N (%)	TIPM – Zone 1			*p value	N (%)	TIPM – Zone 2			*p value
	N - 213	-ve	Neu	+ve		N - 87	-ve	Neu	+ve	
Age in Years										
21-30	45 (21)	3 (7)	19 (42)	23 (51)		21 (24)	1 (5)	8 (38)	12 (57)	
31-40	82 (39)	12 (15)	32 (39)	38 (46)		34 (39)	7 (21)	9 (26)	18 (53)	
41-50	56 (26)	8 (14)	19 (34)	29 (52)	0.09	23 (26)	4 (17)	7 (30)	12 (53)	0.699
51-60	25 (12)	9 (36)	7 (28)	9 (36)		7 (8)	1 (14)	2 (29)	4 (57)	
>60	5 (2)	2 (40)	2 (40)	1 (20)		2 (2)	1 (50)	1 (50)	0 (0)	
Gender										
Male	106 (50)	16 (15)	39 (37)	51 (48)	0.921	42 (48)	4 (10)	11 (26)	27 (64)	0.091
Female	107 (50)	18 (17)	40 (37)	49 (46)		45 (52)	10 (22)	16 (36)	19 (42)	

Table Continued....

Variables	N (%)	TIPM – Zone 1			*p value	N (%)	TIPM – Zone 2			*p value
	N - 213	-ve	Neu	+ve		N - 87	-ve	Neu	+ve	
Years of Experience										
0-5	46 (22)	4 (9)	20 (43)	22 (48)		21 (24)	1 (5)	8 (38)	12 (57)	
10-Jun	45 (21)	6 (13)	20 (44)	19 (43)		18 (21)	5 (28)	6 (33)	7 (39)	
15-Nov	49 (23)	7 (14)	14 (29)	28 (57)	0.062	20 (23)	3 (15)	4 (20)	13 (65)	0.653
16-20	31 (15)	4 (13)	15 (48)	12 (39)		11 (13)	2 (18)	4 (36)	5 (46)	
>20	42 (20)	13 (31)	10 (24)	19 (45)		17 (20)	3 (18)	5 (29)	9 (53)	

TIPM, total intra/inter professional public health and maintenance of competence activities; *Chi Square test, $p < .05$ is significant

Comparison of Attitude scores with Dependant (TPCA) and Independent Demographic Variable

Cross tabulation of the attitude score with TPCA and age category showed, the highest positive attitude score for both zones>60 years (60% and 50%), whereas the lowest negative score (9%) was among 21-30 years and (0%)>60 years in zone 2 (Table 3). Among the gender category, males scored a higher positive attitude score (42% and 43%) in either zones when compared to 14% and 16% negative attitude scores respectively by females. As for attitude score based on experience, the highest positive score was among>20 years (43% and 41%) respectively in both zones. The lowest negative score was seen with 16-20 years experience (15%) in zone-1 and 0-5 years (0%) in zone-2. There was no significance observed among all three variables.

Comparison of attitude scores with dependant (TIPM) and independent variable

Cross tabulation of the attitude score with TIPM and age category showed the highest positive attitude score in the age category of 41-50 years (52%) in zone-1 and 21-30 years and 51-60 years (57%) among zone-2 respondents, whereas the lowest score (7%) and (5%) were among 21-30 years in zone-2 (Table 4). Among the gender category, males scored a higher positive attitude score (48% and 64%) in either zones when compared to 15% and 10% negative attitude respectively in both zones by males. As for attitude score based on experience is considered, the highest positive score was with experience 11-15 years (57%) in zone-1 and>20 years (41%) in zone-2 respectively. The lowest negative attitude score was seen in 0-5 years experience (9% and 5%) respectively in both zones. There was no significance observed ($p>.05$) among all three variables (Table 5).

Comparison of Total Attitude Scores (TAS) among demographic variables

Cross tabulation of the attitude score among the age category, the highest percentage of positive attitude score was among 21-30 years (60%) zone-1, whereas, among zone-2, 51-60 years (71%). Both regions have a lowest negative scores showing 0% for zone-1 among 51-60 years and>60 years while zone-2 showing 0% for 21-30 years and>51 years. (Table 5) As for gender category, males have a higher positive score (54%) in zone-1 and 65% in zone-2. For negative attitude score, both zones shows a lower percentage of 2% in males. As for attitude score against the years of experience, it shows that the highest positive score was observed with experience of 0-5 years (61%) in zone-1 and 66% in zone-2. The lowest negative score was shown with experience of 6-10 years (2%) and 11-15 years (2%) respectively (Table 5).

Table 5 Distribution of total attitude scores (tas) among demographic variable

Variables	N (%)	TAS – Zone 1			*p value	N (%)	TAS – Zone 2			*p value
	N - 213	-ve	Neu	+ve		N - 87	-ve	Neu	+ve	
Age in Years										
21-30	45 (21)	1 (2)	17 (38)	27 (60)		21 (24)	0 (0)	7 (33)	14 (67)	
31-40	82 (39)	4 (5)	40 (49)	38 (46)		34 (39)	4 (12)	15 (44)	15 (44)	
41-50	56 (26)	3 (5)	21 (38)	32 (57)	0.616	23 (26)	1 (4)	8 (35)	14 (61)	0.604
51-60	25 (12)	0 (0)	14 (56)	11 (44)		7 (8)	0 (0)	2 (29)	5 (71)	
>60	5 (2)	0 (0)	3(60)	2 (40)		2 (2)	0 (0)	1 (50)	1 (50)	
Gender										
Male	106 (50)	2 (2)	47 (44)	57 (54)	0.341	42 (48)	1 (2)	14 (33)	27 (65)	0.227
Female	107 (50)	6 (6)	48 (45)	53 (49)		45 (52)	4 (9)	19 (42)	22 (49)	
Years of Experience										
0-5	46 (22)	2 (4)	16 (35)	28 (61)		21 (24)	1 (5)	6 (29)	14 (66)	
10-Jun	45 (21)	1 (2)	24 (53)	20 (45)		18 (21)	1 (6)	9 (50)	8 (44)	
15-Nov	49 (23)	1 (2)	23 (47)	25 (51)	0.804	20 (23)	1 (5)	10 (50)	9 (45)	0.366
16-20	31 (15)	2 (6)	14 (45)	15 (49)		11 (13)	2 (18)	2 (18)	7 (64)	
>20	42 (20)	2 (5)	18 (43)	22 (52)		17 (20)	0 (0)	6 (35)	11 (65)	

TAS, total attitude score *Chi Square test, $p < .05$ is significant

Comparison of attitude scores between the three domains:

The criteria evaluated in this study are the total scores of the major domains namely total managerial and dispensing activities, total pharmaceutical care activities and intra/inter professional, public health and maintenance of competence activities. The comparison between the total attitudes scores along with Chi-square significance of their attitude to the three domains are illustrated in Table 6. For TMDA, both zone-1 and zone-2 respondents showed a positive attitude of 61%, followed by neutral attitude (37%) in zone-1 and 34% in zone-2 and the lowest negative attitude score of 2% and 5% respectively in either zones. The Pearson Chi square significance observed for zone-1 was X^2 (213) = .960; $p < .001$ while the significance observed for zone-2 was X^2 (87) = .948; $p < .001$. There is a strong significant differences in attitude scores among managerial & dispensing activities. In TPCA, both zone-1 and zone-2 respondents showed an overall neutral attitude scores with 46% and 49% respectively, followed by positive scores of 37% and 35%. Both the regions showed negative score of 17% and 16%. The Pearson Chi Square significance observed for zone-1 was X^2 (213) = .975; $p < .001$ whereas, for zone-2 was X^2 (87) = .970; $p < .001$. There was a significant difference between attitude scores and pharmaceutical care activities. In TIPM, both zone-1 and zone-2 respondents showed an overall positive attitude score with 47% and 53% respectively, followed by neutral scores (37% and 31%). Both the regions showed a negative attitude score of 16%. The Pearson Chi Square significance observed for zone-1 was X^2 (213) = .952; $p < .001$ whereas, zone-2 was X^2 (87) = .930; $p < .001$. A strong significant difference in attitude scores was observed towards TIPM (Table 6).

Table 6 Comparison of attitude scores between the three domains of two different zones

Attitude Scores	Zone 1 (N = 213)				Zone 2 (N = 87)			
	TMDA	TPCA	TIPM	TAS	TMDA	TPCA	TIPM	TAS
Negative	4 (2)	36 (17)	34 (16)	8 (4)	4 (5)	14 (16)	14 (16)	5 (6)
Neutral	80 (37)	99 (46)	79 (37)	95 (45)	30 (34)	43 (49)	27 (31)	33 (38)
Positive	129 (61)	78 (37)	100 (47)	110 (51)	53 (61)	30 (35)	46 (53)	49 (56)
*p Value	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001

TMDA,total managerial and dispensing activities; TPCA, total pharmaceutical care activities; TIPM, total intra/inter professional activities, public health activities and maintenance of competence activities; TAS, total attitude score; *Chi-Square Test, $p < .05$ is statistically significant

Comparison of the total attitude scores

The overall analysis of the total attitude scores shows that both, zone 1 and zone 2 respondents showed an overall positive attitude score (51% and 56%), followed by neutral attitude (45% and 38%). Both the regions showed a very low percentage for the negative attitude score (4% and 6%). The Pearson Chi Square significance observed for zone 1 was found to be X^2 (213) = .969; $p < .001$ while the Pearson Chi Square significance observed for zone 2 was found to be X^2 (87) = .951; $p < .001$. It is observed that there is a strong significance in pharmacist's attitudes towards professional practice.

Correlation between Attitude Scores and dependent variables of two zones

The Spearman's rank-order correlation test was run between total attitude score and the two zones to identify the correlations between the two zones. The test showed a significantly strong positive correlation. Table 8 depicts the attitude score correlation between each dependent variable domains for the total population of two zones or regions (N=300) (Table 7). When TMDA is compared with the attitude scores of other dependent variables, it is observed that it has a higher association with TAS followed by TIPM and TPCA. The TMDA is strongly correlated to TAS with r (300) = .811, $p < .001$. When comparing the Spearman's rank-order test for the attitude score of TPCA, it is observed that TPCA attitude score shows a significant strong positive correlation with the score of TAS followed by TIPM and TMDA. TPCA is strongly correlated to TAS with r (300) = .864, $p < .001$. Next, the correlation coefficient of TIPM is compared with the other attitude scores and it is observed that TIPM attitude score has a significant strong positive correlation with the score of TAS followed by TPCA and TMDA. TIPM is strongly correlated to TAS with r (300) = .880, $p < .001$. Overall it can be seen that TAS has a good positive correlation with all 3 domains of attitude score especially with TIPM followed by TPCA and TMDA with r (300) = .880, $p < .001$, r (300) = .864, $p < .001$ and r (300) = .811, $p < .001$ respectively (Table 7).

Table 7 Correlation between attitude scores and dependent variables of two zones

Variables (N=300)	TMDA	TPCA	TIPM	TAS
TMDA	1	.509**	.566**	.811**
TPCA	.509**	1	.725**	.864**
TIPM	.566**	.725**	1	.880**
TAS	.811**	.864**	.880**	1

**Spearmans rho Correlation is significant at the 0.01 level (2-tailed)

Discussion

The differences of the community pharmacists' attitude towards their professional practice, which is positive, neutral or negative according to different zones (areas) of the study. There were altogether 300 community pharmacists who participated in this study, where 213 were from zone-1 and 87 were from zone-2. The construct of the questionnaire contained a total of 37 items classified under three major domains namely, Managerial and Dispensing Activities (MDA), Pharmaceutical Care Activities (PCA), and Intra/Inter Professional Activities / Public Health Activities and Maintenance of Competence Activities (IPM). For a more convenient comprehension of the questionnaire, the MDA and PCA have been further classified into relevant sub-domains such as MDA into (i) managerial activities, (ii) dispensing activities and IPM into (i) intra/inter professional activities, (ii) public health activities, (iii) maintenance of competence activities. For the demographic data, there are three variables included which are age, gender and years of experience apart from the location

categorised into zones. Age in years was classified into five ranges. The population of community pharmacists according to their age in the study areas, were discretely distributed and most of the respondents fell between 31 to 40 years old where the percentage of respondents in either zones were 39%. This indicates that most community pharmacists have gained their experience and knowledge in their professional practice. As for gender, the respondents in zone-1 were equally distributed while zone-2 were slightly female dominated. The range of professional experience were highest upto five years among zone-1 (22%) and 24% from zone-2. This shows that the data could have been mostly collected from the younger group of pharmacists especially those who were undergoing their PRP. Although there are many more experienced pharmacists, some are less likely wanting to participate in this study. This phenomenon was also reported by Oprah *et al*., (2005) and noted the attitude ratings varied with the levels of professional experience, pharmacists having less experience showing more positive attitude.[24] The TMDA domain identified a high percentage of positive attitude among respondents of zone-1 (66%) and zone-2 (100%). The neutral attitude score was equally distributed and negative attitude results were least noted. The results regarding community pharmacists attitude towards total managerial and dispensing activities shows most of the community pharmacists are playing good role in ensuring pharmacy is well equipped with: medicines with standard quality, appropriate storage conditions, appropriate environment within pharmacy both in terms of staff and facilities, private area for patient counselling and pharmacy makes a good profit. A study conducted by Alamin et al.[25] reported antibiotic dispensing for common cold symptoms in clinic and community pharmacy were more compared to antibiotic dispensing in this study only when it is absolutely necessary.[25] According to Swathy et al.[26] the respondents assigned relatively high percentage to activities related to pharmacy management and dispensing indicating that they feel relatively comfortable and competent.[26,27] The results depict the pharmacists' professionalism through dispensing medication only with a prescription, assessing whether a prescription is legally valid, assessing the pharmaceutical and pharmacological aspects of the prescription (appropriate dose, dosage forms, frequency, etc.), assessing the appropriateness of the medication (checking for indications, contraindications, interactions, etc.), assessing that the medication is most economically available for the patient, providing the patient with necessary information regarding the medications (route of administration, frequency, possible side effects) to the patient and ensuring that the patient has understood all the information provided.

In the study by Dunlop et al.[28] the attitude of community pharmacists towards the practices in the pharmaceutical care activities is almost the same as that of our study.[28] The results showed most of the respondents had an equal distribution of positive and neutral score and further, gender and professional experience are not associated with attitude of pharmacist towards pharmaceutical care activities. Our earlier study also revealed similar results with good positive score regarding pharmaceutical care activities.[15] Further, age, gender and professional experience were not associated with pharmacist attitude towards Inter/intra professional activities, Public Health Activities and Maintenance of Competence Activity (IPM). Besides, to show their attitude towards professional practice, a high number of the respondents from our results showed that they regularly participated in high quality continuous professional development (CPD) programs. This result can be supported by the article written by Power et al.[29] who also discussed and showed that community pharmacists appear to be the sector requiring most support to increase not only their motivation to CPD but also their confidence and ability in participation.[29] In addition, this study result show a positive attitude of community pharmacists in engaging themselves in health screening activities. McElnay et al.[30] also had studied about this situation. The author found that 93% of the pharmacist had played a significant role in health education.[30] Furthermore, the health screening services were also highly supported by 91% of the respondents. In another study by Ogochukwu et al.[32] found, even if the respondents have a positive outlook on practice of public health, the results obtained on knowledge and practice of the public health were not as expected and non-satisfactory.[31–33]

Conclusion

Majority of the respondents were having a mixed attitude score towards the total managerial, dispensing and maintenance of competence activities. It is important that pharmacists should establish a professional relationship with doctors. Continuing education and training programs on professional practice would be one significant approach in equipping community pharmacists with updated knowledge, skills and behavior needed to expand their scope of practice, providing better quality pharmaceutical care and improving public health outcomes. Therefore, by having a positive attitude toward their profession, community pharmacists can help to improve the quality of life of their patients customers. Team building practices could be done for both the doctors and pharmacists to improve their relationship, as a strategy to focus on the changes of working practices between professionals'.

Study limitations

In spite of taking adequate care to follow the scientifically valid methods of representative samples, selection bias cannot be ruled out entirely as only a small proportion of the total target population was studied. Further, there were no comparison group with which we could have compared our study outcomes. Lack of interest and cooperation were noticed among some respondents, as some of them were preoccupied with their tasks. The study participants may not have been truthful all the time in their responses in apprehension of hurting the sentiments of the interviewers. However, all attempts were made to minimize such errors as much as possible through appropriate research design and methodology.

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Disclosure

The authors declare no conflicts of interest in this work.

Supplementary publications

The preliminary studies of this research article has been published earlier under the title: "Community Pharmacists Attitude Towards Professional Practice in Penang, Malaysia.[15]

Conflict of interest

Authors declare that there is no conflict of interest.

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