



An Exploratory Study of Consumers' Social Behavior towards Role of Malaysian Community Pharmacists in Providing Healthcare

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Authors' contributions

This work was carried out in collaboration among all authors. Author AHMAA conceptualized the research under supervision of authors MIMI and MAH. Author AHMAA conducted the data collection and performed the analysis. Authors MIMI, MAH and SP performed literature review. Author AHMAA wrote the initial version of the manuscript. Authors MIMI, MAH and SP edited the manuscript and rewrote few sections of the manuscript. Author SP wrote the abstract. All authors read and approved the final manuscript.

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ABSTRACT

Aims: Consumers' awareness, perceptions, expectations and experiences are integral components of their satisfaction towards the quality of care provided by community pharmacists. This study aims to assess consumers' awareness, perceptions, expectations and experiences about the role of Malaysian community pharmacists in providing healthcare.

Study Design: Cross-sectional study.

Place of Study: Penang state in the north of Malaysia.

Methodology: A survey was carried out by conveniently selecting the consumers patronizing the community pharmacies. A pretested and validated survey tool with different domains (Cronbach's alpha ranged from 0.577 to 0.774) was used. Descriptive and inferential statistics (Chi-Square, Mann-Whitney and Kruskal-Wallis tests) were used for analyzing the data using SPSS program, Version 26.

Results: Of the total 424 questionnaires distributed, 195 (46%) were returned and usable. The median age of the consumers was 30 (IQR = 28-38). Majority of them were female, Chinese, living in urban area and having a bachelor degree. The mean awareness score was 8.39 (\pm 2.00), mean perception score was 2.95 (\pm 0.83), mean expectation score was 3.70 (\pm 0.13), and mean experience score was 3.17 (\pm 0.97). Trusting a pharmacist's advice about medicines was significantly associated with the consumer's age ($p = 0.030$). age of the consumers was a significant determinant in their perception of community pharmacists suggestions about the use of certain prescription medicines to patients and physicians ($p = .001$ and $p = 0.014$, successively). The strongly anticipated that community pharmacists should monitor responses to drug therapy and be more concerned with the patient rather than being profit-oriented (medians = 5 and 4, respectively).

Conclusion: The consumers in this study were aware of the role of community pharmacists in community pharmacies and healthcare settings. They also reported high perception, expectation and positive experience with the community pharmacists.

Keywords: Community pharmacy; consumer satisfaction; extended services; Malaysia.

LIST OF ABBREVIATIONS

CP: Community pharmacist; DSAP: Discipline of Social and Administrative Pharmacy; GP: General practitioner; IPS: Institute of Post Graduate Studies; KR: Kuder-Richardson; OTC: Over-the-counter; USM: University Sains Malaysia

1. INTRODUCTION

The increasing contribution of pharmacists to public health will require changes in both pharmacist and consumer behaviors. Pharmacists are in a unique position to improve medication safety and they have the time and expertise to manage chronic conditions of the patients [1]. Many consumers have never been provided with public health services by their pharmacists and do not expect them to be an offer. Consumers consider a pharmacist to be a suitable public health counsellor but have ambivalent opinions on the involvement of pharmacists in this field. Agreement with this role seems to be high among those who had experience with pharmaceutical public health [2]. The doctor-pharmacist relationship is crucial for consumer or patient satisfaction. Community pharmacists (CPs) can undertake a more active role in providing healthcare by creating partnerships with doctors so that patients can consult a pharmacist if they find it impossible to visit the doctor. In addition, governments should

encourage pharmacists to be involved in healthcare and should promote their role in patient education so that the public will have a chance to communicate with these professionals [3].

Generally, consumers accept community pharmacists as health educators but there are few barriers that hinder this task [4]. General Practitioners (GPs) and the public are similar in their negative perceptions of the pharmacist's role in managing specific minor symptoms [5]. In a study conducted, four important factors were found to influence consumer satisfaction with the pharmacy and pharmacists in Malaysia [6]. These factors are convenient timing, over-the-counter (OTC) medicine availability and the diversity of products, pricing and attitudes towards the pharmacy and pharmacist. It was found that elderly and unemployed groups have a significant influence on this satisfaction. Overall, they are underutilized [6].

There has been a growing need for community pharmacists around the world to have a greater professional role in the delivery of primary care for patients [1]. Pharmacists always occupy the position of the most trusted professionals, and they have a high ranking when people are asked to rate them [7]. The public's understanding of community pharmacists' role in healthcare provision can assist in rendering consumers more aware of the abilities of CPs in improving care [8]. In the literature, there are few studies

that highlight consumer perspectives towards community pharmacists' role as healthcare providers in Malaysia.

This study was conducted to evaluate the consumer awareness of CPs in the provision of healthcare, consumer perceptions of CPs in providing healthcare, consumer expectations of CPs in healthcare provision, and to evaluate consumer experiences with CPs during healthcare provision.

2. MATERIALS AND METHODS

2.1 Study Design

This study adopted a cross-sectional design using a questionnaire to determine Malaysian consumers' awareness, perceptions, expectations, and experience of the role of CPs in providing healthcare.

2.2 Study Population and Sample Size

Due to financial constraints, this study was restricted to Penang State. As noted earlier, Penang occupies an area of 1,048 km² and has a population of 1.5 million with a population density of 1,500/km². The sample size was calculated using the same confidence interval approach developed by Cochran as follows:

$$\text{Equation 1 : } n_0 = \frac{Z^2 pq}{e^2}$$

In making finite population corrections for proportions, the sample size (n_0) was adjusted using the second equation, where n_0 is the consumer sample size and N is the population size.

$$\text{Equation 2 : } n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} = n = \frac{385}{1 + \frac{(385 - 1)}{1500000}} = 385$$

Due to the lack of population database and sampling frame, a convenient sampling method was applied to recruit the consumers. A sample of 385 was calculated with the addition of 10% for drop-outs. The total sample was 428 respondents (i.e. $(385 \times 100)/90 = 428$) who were selected according to the ease of data collection from pharmacy outlets by five data collectors (undergraduate pharmacy students) who were recruited and trained to collect the data for a one-week period. Respondents under 21 years old were excluded.

2.3 Development and Validation of the Questionnaire

This questionnaire was developed after broadly reviewing an extensive range of literature and modified according to the Malaysian consumer context [9,10,11,12]. The questionnaire consisted of 36 questions divided into four sections, namely consumer awareness, perceptions, expectations, experiences with the pharmacist's role in healthcare provision, and demographic characteristics (see Appendix 1: Survey questionnaire). The first section contained eleven questions grouped under the heading of consumer awareness of the CP's role in providing healthcare. This section was structured to include dichotomous questions with 'yes' or 'no' answers. The second section included nine items grouped under the heading of consumer perceptions of the CP's role. The third section consisted of nine items headed by consumer expectations and experiences with the CP's role. All the questions in the second and third sections were answered using a 4-point Likert scale, with strongly disagree = 1, disagree = 2, agree = 3 and strongly agree = 4. The fourth section included six demographic questions pertaining to patient gender, age, ethnic background, locality, education, and frequency of seeking information.

Supervisors, ethics expert and postgraduate students in the Discipline of Social and Administrative Pharmacy (DSAP) at the School of Pharmaceutical Sciences, Universiti Sains Malaysia (USM) were asked to assess the content validity of this questionnaire. These individuals provided their general judgments by classifying and highlighting the questions according to their relevance and significance to the general aim of the study. The questionnaire was translated into the Malay language by the School of Languages, USM and again assessed for content validity by the same individuals in DSAP. To assess their face validity, 30 questionnaires were distributed by hand to 30 non-pharmacy Malaysian students in USM. All the students responded positively, and the questionnaires were collected after being answered fully, without making any comments. All of the students answered all the questions within 10 to 15 minutes and affirmed the clarity and simplicity of all the items. The questionnaire was then translated back into English by two experts from the School of Education and the Institute of Post Graduate Studies (IPS). Later, it was also revised by the supervisors. No

significant variations were found between the back-translated and the original versions.

The coefficient alpha (i.e., Cronbach's alpha) was estimated for each of the three scales that had more than two categories in each scale. The highest coefficient (0.774) was found for the scale of consumer expectations towards the CP role in healthcare provision. The remaining two scales (perceptions and experiences) resulted in reliability estimates of 0.765 and 0.562, respectively. For dichotomous data (awareness), the coefficient alpha was 0.577. This result is equivalent to the Kuder-Richardson 20 (KR20) coefficient. For dichotomously scored items, KR20, and to some extent a computationally convenient approximation denoted KR21 (note that there were no computers in those days), gained notable fame, but they were gradually pushed aside as a misleading alpha [13].

2.4 Data Analysis

A descriptive analysis was conducted using SPSS for Windows version 26 (SPSS Inc. SPSS for Windows, Version 26.0. Chicago, SPSS Inc.). The frequencies, percentages, means \pm standard deviation (*sd*) and median with interquartile range (IQR) values were reported.

Chi-Square test was used to determine the significance of differences between the consumer demographic characteristics (gender, age, ethnic background, locality, level of education and frequency of seeking information from community pharmacy) and dependent variables (consumer awareness, perceptions, expectations of a CP's role and consumer experiences with this role).

Mann-Whitney test was performed to look at the differences in the average scores for consumer awareness, perceptions, expectations of CP's role and GP's experiences with these roles based on the consumer demographic characteristics as sorted by gender. Kruskal-Wallis test was also used to determine the differences in the average scores for consumer awareness, perceptions, expectations and experiences of the CPs' roles among groups of consumers as sorted by age, ethnic background, locality, level of education and frequency of seeking information from the community pharmacy. Post hoc analyses using the Mann-Whitney test were further applied to determine where the differences occurred. All the tests were run at an alpha level of 0.05.

3. RESULTS AND DISCUSSION

3.1 Demographic Characteristics of Consumers

Of the total 428 questionnaires distributed by the members of the data collection team to consumers in Penang, 237 were returned, of which 42 questionnaires were not fully completed and were rejected. The total remaining useful number of questionnaires was 195, for a response rate of 46%. This response rate was adequate and found to be within the range quoted by researchers for self-administered questionnaires, namely from 5% to 70% [14]. All the demographic characteristics of the respondents are illustrated in Table 1.

3.2 Consumer Awareness of CPs' Roles According to Consumer's Demographic Characteristics

Table 2 shows the results of descriptive and inferential analyses on consumers' awareness of CP's roles in providing healthcare. The results from the inferential analysis show that there were only two significant associations noticed in this part. Obtaining medicines without a prescription from a community pharmacy was found to be significantly associated with the consumer's locality of residence ($p= 0.032$). Trusting a pharmacist's advice about medicines was significantly associated with the consumer's age ($p= 0.030$).

3.3 Consumer Awareness of CPs' Roles According to Consumers' Demographic Characteristics

The total average scores for consumer awareness of the CPs' roles and interpretations of the differences that emerged have been added up for the eleven items. The value of the mean awareness score was 8.39 (± 2.00) and the median score was 9.00 (IQR = 7.0–10.0). The minimum and maximum expected values were 0–11 and the midpoint was 5.5. A value above the midpoint was found to be a high awareness value. A Mann-Whitney test was performed to look at the differences in the average scores for consumer awareness of the CPs' roles according to a consumer demographic characteristic (gender). The Kruskal-Wallis test was also used to determine the differences in the average score for consumers awareness of the CPs' roles among groups of consumers as sorted by age,

locality, and frequency of seeking information (FSI), ethnic background and level of education (Table 3).

3.4 Consumer Perceptions of CPs' Roles According to Consumers' Demographic Characteristics

As shown in Table 4, from the descriptive analysis, six of the median values equal 4, indicating that the consumers agree in their perceptions of the CPs' traditional role of providing patient education and suggesting the use of nonprescription medications to patients.

Table 5 shows that the age of the consumers was a significant determinant in their perception of CP suggestions about the use of certain prescription medicines to patients and physicians ($p = .001$ and $p = 0.014$, respectively).

3.5 Consumer Perceptions of CPs' Roles in Terms of their Demographic Characteristics

The total average score for consumers' perceptions of the CPs' roles and interpretations of the associations that emerged were totaled for the nine items. The value of the mean perceptions score was 2.95 (± 0.83), and the median score was 3.00 (IQR = 2.22–3.67). The minimum and maximum expected values were (1–4), and the midpoint was 2.5; values above the midpoint were found to be high awareness values. Significant differences were found between the average score for the consumer perceptions of the CPs' roles and the consumer's age ($p = 0.005$), locality ($p = 0.011$), FSI ($p = 0.042$) and ethnic background ($p = 0.026$), as shown in Table 6.

Table 1. Consumers demographic characteristics

Demographic characteristics	Frequencies (n = 195)	(%)
Age Median = 30 (IQR = 28-38)		
≤ 35	135	68.7
36-45	33	17.4
> 45	27	13.8
Gender		
Male	90	46.2
Female	105	53.8
Ethnic background		
Malay	61	31.3
Chinese	104	53.3
Indian	29	14.9
Other	1	0.5
Locality		
City area	142	72.8
Suburb	33	16.9
Rural area	20	10.3
Education		
No formal education	3	1.5
Primary school	3	1.5
Secondary school	37	19.0
Diploma	31	15.9
Undergraduate	90	46.2
Postgraduate	31	15.9
Frequency of seeking health information		
Frequent seeking	109	55.9
Occasional seeking	73	37.4
Never	13	6.7

Table 2. Consumer’s awareness of CPs’ roles base on consumer’s demographic characteristics

Item No.	Frequency (N = 195)		P-value*			P-value**			SI
	Yes (%)	No (%)	Gender	Age	Ethnicity	Locality	Education		
1.	143 (73.3)	52 (26.7)	0.748	0.420	0.072	0.656	0.818	0.182	
2.	137 (70.3)	58 (29.7)	0.639	0.394	0.062	0.622	0.314	0.541	
3.	109 (55.9)	86 (44.1)	0.313	0.079	0.068	0.079	0.404	0.988	
4.	131 (67.2)	64 (32.8)	0.126	0.417	0.831	0.032	0.236	0.113	
5.	170 (87.2)	25 (12.8)	0.668	0.450	0.114	0.187	0.070	0.695	
6.	169 (86.7)	26 (13.3)	0.408	0.160	0.704	0.859	0.453	0.173	
7.	170 (87.2)	25 (12.8)	1.000	0.030	0.560	0.283	0.677	0.437	
8.	160 (82.1)	35 (17.9)	0.350	0.774	0.391	0.331	0.065	0.536	
9.	150 (76.9)	45 (23.1)	0.497	0.487	0.085	0.314	0.824	0.322	
10.	145 (74.4)	50 (25.6)	0.411	0.153	0.326	0.078	0.130	0.620	
11.	153 (78.5)	42 (21.5)	0.056	0.172	0.906	0.329	0.141	0.056	

Note. *Fisher’s Exact Test, **Chi- Square Test, Significance: $p < .05$. FSI=Frequency of seeking information

1. Do you know the role of the pharmacist in the community pharmacy and healthcare setting?
2. When you go to a pharmacy, do you always find a pharmacist working?
3. When you go to a private clinic, do you find a pharmacist working?
4. Can you obtain medicines without a prescription from a community pharmacy?
5. Do you know that a pharmacist can advise you regarding your medicine?
6. Would you feel comfortable talking to a pharmacist regarding your minor illness?
7. Have you ever asked a pharmacist for advice on medicines?
8. Do you trust your pharmacist’s advice about your medicine?
9. Would you trust your pharmacist’s advice on other health issues besides medicines?
10. Are you satisfied with the services provided by the community pharmacies?
11. Are you satisfied with the steps taken by the government to regulate the services provided by community pharmacies e.g., blood pressure monitoring, glucose and cholesterol levels assessments?

3.6 Consumer Expectations and Experiences of CPs’ Roles

Contrary to the results for GPs, Tables 7 and 8 indicate that consumers have high levels of expectation for the CP as a healthcare provider. They expect CPs to take personal responsibility for resolving any drug-related problems they discover or to design drug therapy treatment plans, to be knowledgeable drug therapy experts and to educate them about the safe and appropriate use of medications (median = 4). They also strongly anticipate that CPs will monitor responses to drug therapy and be more concerned with the patient rather than being profit-oriented (medians = 5 and 4, respectively).

This study was conducted to explore the consumers’ awareness, perceptions, expectations and experiences with the community pharmacists’ services. In summary, the study illustrated that the consumers were satisfactorily aware about the roles of community

pharmacists in the country. The consumers also have high levels of perception, expectations and experiences toward pharmacists.

3.6.1 Consumer awareness of CPs’ role in healthcare provision

Changes in the professional roles of the pharmacist such as the implementation of pharmaceutical care have resulted in a concentration of responsibilities within the pharmacist-patient collaborative relationship. If pharmacists and patients have the same opinion on the communicative relationship, then the usefulness and results of this relationship will be optimal [15]. Here, the role of the pharmacy institutions and academics comes into play in propagating community consumer awareness of the roles and value of the pharmacist in guaranteeing optimal therapeutic outcomes [16]. More than half of the consumers in this study were aware of the role of CPs in community pharmacies and healthcare settings, and they indicated this awareness by identifying the

presence of the pharmacists during their visits to community pharmacies. Unfortunately, some consumers believed that personnel i.e. non-healthcare professionals who engage in

dispensing tasks in GP clinics are pharmacists. This result is consistent with the finding of a study that identified 77.4% of the personnel who worked in medical clinics as pharmacists [17].

Table 3. Consumers' awareness of CP's roles according to consumers' demographic characteristics

Factor	Group	N	Mean Rank	Median (IQR)	p-value
Gender*	Male	90	95.19	9.0 (7.0-10.0)	0.514
	Female	105	100.41	9.0 (8.0-10.0)	
Age**	≤ 35	135	92.07	8.0 (7.0-10.0)	0.071
	36-45	33	114.94	9.0 (8.0-10.0)	
	≥ 46	27	106.96	9.0 (8.0-10.0)	
Locality**	City Area	142	95.30	8.0 (7.0-10.0)	0.381
	Suburb	33	100.23	9.0 (7.0-10.0)	
	Rural Area	20	113.48	9.0 (8.0-10.0)	
FSI**	Frequently Seeking	109	106.89	9.0 (8.0-10.0)	0.022
	Occasional Seeking	73	83.81	8.0 (6.5-9.5)	
	Never	13	103.19	9.0 (8.0-9.5)	
Ethnic**	Malay	61	105.76	9.0 (8.0-10.0)	0.004
	Chinese	104	85.79	8.0 (7.0-10.0)	
	Indian	29	123.71	10.0 (8.0-11.0)	
	Other	1	149.00	10.0 (10.0-10.0)	
Education**	No Formal Education	3	99.83	9.0 (8.0-9.0)	0.390
	Primary School	3	52.50	7.0 (7.0-8.0)	
	Secondary School	37	98.95	9.0 (7.0-10.0)	
	Diploma	31	91.73	8.0 (8.0-9.0)	
	Undergraduate	90	95.63	9.0 (7.0-10.0)	
	Postgraduate	31	114.26	9.0 (8.0-10.0)	

Note. * Mann-Whitney test; ** Kruskal-Wallis test was conducted at $\alpha = .05$

Table 4. Descriptive analysis of consumers' perceptions of CPs roles

No.	SDn (%)	Dn (%)	An (%)	SAn (%)	Median (IQR)	Mean (± SD)
1.	36 (18.5)	38 (19.5)	50 (25.6)	71 (36.4)	4.00 (2-5)	3.38 (± 1.570)
2.	41 (21.0)	35 (17.9)	62 (31.8)	57 (29.2)	4.00 (2-5)	3.30 (± 1.558)
3.	42 (21.5)	84 (43.1)	52 (26.7)	17 (8.7)	2.00 (2-4)	2.58 (± 1.319)
4.	34 (17.4)	77 (39.5)	66 (33.8)	18 (9.2)	2.00 (2-4)	2.78 (± 1.327)
5.	72 (36.9)	86 (44.1)	25 (12.8)	12 (6.2)	2.00 (1-2)	2.07 (± 1.199)
6.	24 (12.3)	68 (34.9)	78 (40.0)	25 (12.8)	4.00 (2-4)	3.06 (± 1.326)
7.	22 (11.3)	62 (31.8)	76 (39.0)	35 (17.9)	4.00 (2-4)	3.21 (± 1.358)
8.	32 (16.4)	60(30.8)	65 (33.3)	38 (19.5)	4.00 (2-4)	3.09 (± 1.442)
9.	35 (17.9)	60 (30.8)	62 (31.8)	38 (19.5)	4.00 (2-4)	3.04 (± 1.460)

Note. SD = Strongly disagree, D = Disagree, A = Agree, SA = Strongly agree

1. Providing patient education
2. Suggesting the use of non-prescription medications to patients
3. Suggesting the use of certain prescription medicines to patients
4. Suggesting use of certain prescription medicines to physicians
5. Diagnosing and treating minor illnesses
6. Identifying and preventing prescription errors
7. Designing and regulating medication regimens for patients
8. Monitoring outcomes of these regimens
9. Checking and preventing drug related problems

Table 5. Consumer’s perceptions of the CPs’ roles according to the consumers’ demographic characteristics

No.	P-value*					
	Gender	Age	Ethnicity	Locality	Education	FSI
1.	0.352	0.068	0.511	0.538	0.684	0.179
2.	0.305	0.084	0.058	0.107	0.938	0.898
3.	0.119	0.001	0.280	0.129	0.650	0.351
4.	0.415	0.014	0.018	0.143	0.410	0.132
5.	0.252	0.087	0.402	0.015	0.682	0.037
6.	0.117	<0.001	0.273	0.607	0.089	0.210
7.	0.510	0.001	0.614	0.099	0.313	0.190
8.	0.157	0.006	0.068	0.021	0.612	0.580
9.	0.959	0.002	0.042	0.002	0.818	0.053

Note. * Chi-Square, Significance: (p < .05). FSI = Frequency of seeking information.

1. Providing patients education
2. Suggesting the use of non-prescription medicines to patients
3. Suggesting the use of certain prescription medicines to patients
4. Suggesting the use of certain prescription medicines to physicians
5. Diagnosing and treating minor illnesses
6. Identifying and preventing prescription errors
7. Designing and regulating medication regimens for patients
8. Monitoring the outcomes of these regimens
9. Checking and preventing drug-related problems

Table 6. Average scores of consumers’ perceptions of CPs according to consumers’ demographic characteristics

Factor	Group	N	Mean Rank	Median (IQR)	P-value
Gender*	Male	90	91.79	2.9 (2.0-3.5)	0.155
	Female	105	103.32	3.1 (2.3-3.7)	
Age**	≤ 35	135	105.39	3.1 (2.3-3.8)	0.005
	36-45	33	93.06	3.0 (2.1-3.6)	
	>45	27	67.07	2.3 (2.0-2.9)	
Locality **	City Area	142	105.38	3.1 (2.3-3.7)	0.011
	Suburb	33	79.80	2.6 (2.1-3.2)	
	Rural Area	20	75.62	2.7 (2.0-3.1)	
FSI **	Frequently Seeking	109	106.15	3.2 (2.3-3.7)	0.042
	Occasional Seeking	73	96.61	2.9 (2.3-3.6)	
	Never	13	63.92	2.2 (1.9-2.9)	
Ethnic **	Malay	61	83.85	2.8 (2.1-3.4)	0.026
	Chinese	104	106.92	3.1 (2.4-3.8)	
	Indian	29	99.02	3.2 (2.0-3.7)	
Education **	No Formal Education	3	82.33	2.5 (1.2-4.1)	0.859
	Primary School	3	66.33	1.9 (1.8-3.8)	
	Secondary School	37	105.61	3.1 (2.3-3.8)	
	Diploma	31	95.68	2.9 (2.1-3.7)	
	Undergraduate	90	97.79	3.1 (2.2-3.6)	
	Postgraduate	31	96.42	3.0 (2.3-3.6)	

People must be aware of the need to treat OTC medicines with the same sense that they treat prescribed medicines since most pharmaceutical products can cause adverse events with low to moderate severities. The benefits of increasing the circulation OTC medicines include increased ease for patients, greater control of minor

illnesses and reduced national medicine expenditures. Health providers should also focus on the obvious criteria of these OTC products and their evident safety [18]. Our respondents indicated that they can obtain medicines from pharmacies without a prescription, they trust pharmacists to advise them regarding the use of

medicines and other health issues and they feel comfortable when talking to a pharmacist regarding minor illnesses. Obtaining medicines without a prescription from a community pharmacy is influenced by the consumer's locality of residence in this study. According to the locality of residence, consumers who live in the Penang city area were exceeding those from the suburbs and rural areas in obtaining medicines without a prescription from community pharmacies. This behavior may be due to the scarcity of private community pharmacies in rural areas where healthcare services are primarily delivered by the public sector.

Unless the healthcare system changes the way that it promotes trust in CPs, the public will not be expected to trust pharmacists to offer unfamiliar services that are perceived to have high risk. Public trust in this regard will be achieved by enhancing the pharmacist-patient relationship and by GPs supporting the pharmacists who are providing these services [19]. Although the GPs in this study did not support the CPs in providing these services, consumers are satisfied with the services provided by the community pharmacies and the steps taken by the government to regulate extended services such as the health screening

Table 7. Descriptive analysis of consumers' expectations of CPs' role in healthcare provision

No.	Responses					
	SD n (%)	D n (%)	A n (%)	SA n (%)	Median (IQR)	Mean (± SD)
1.	23 (11.8)	33 (15.9)	36 (18.5)	103 (52.8)	5.00 (2-5)	3.71 (±1.563)
2.	30 (15.4)	54 (27.7)	34 (17.4)	77 (39.5)	4.00 (2-5)	3.56 (±1.625)
3.	14 (7.2)	33 (16.9)	43 (22.1)	105 (53.8)	4.00 (2-5)	3.67 (±1.549)
4.	31 (15.9)	22 (11.3)	37 (19.0)	105 (58.3)	5.00 (2-5)	3.92 (±1.504)
5.	29 (14.9)	30 (15.4)	58 (29.7)	78 (40.7)	4.00 (2-5)	3.65 (±1.497)

Note. SD = Strongly disagree, D = Disagree, A = Agree, SA = Strongly agree

1. I expect pharmacists to take personal responsibility to solve any drug-related problem.
2. I expect pharmacists to be knowledgeable drug therapy experts.
3. I expect pharmacists to educate me on the safe and appropriate use of medicine.
4. I expect pharmacists to monitor responses to drug therapy.
5. I expect pharmacists to be more concerned about patients.

Table 8. Descriptive analysis of consumers' experiences with CPs in healthcare provision

No.	Responses					
	SD n (%)	D n (%)	A n (%)	SA n (%)	Median (IQR)	Mean (± SD)
1.	31 (15.9)	24 (12.3)	19 (9.7)	121 (62.1)	5.00 (2-5)	3.90 (± 1.596)
2.	28 (14.4)	26 (13.3)	32 (16.4)	109 (55.9)	5.00 (2-5)	3.86 (± 1.542)
3.	54 (27.7)	24 (12.3)	85 (43.6)	32 (16.4)	4.00 (1-4)	3.09 (± 1.526)
4.	123 (63.1)	37 (19.0)	18 (9.2)	17 (8.7)	1.00 (1-2)	1.82 (± 1.563)

Note. SD = Strongly disagree, D = Disagree, A = Agree, SA = Strongly agree

1. Pharmacists are a reliable source of drug information.
2. Pharmacists are important professionals in healthcare.
3. Pharmacists always counsel me regarding the safe and appropriate use of medicines.
4. Pharmacists appear reluctant to take responsibility for resolving any drug related-problem

services provided by the community pharmacies, such as blood pressure monitoring and glucose and cholesterol level assessments.

The awareness of our respondents is significantly associated with the consumer age as an important determinant in accepting a pharmacist's advice about medicines. Middle-aged consumers and older ones indicate more awareness of the advisory role of CPs regarding medicines than did younger consumers. This result is consistent with the findings from a study conducted in the Palestinian West Bank, in which older consumers (over 40 years old) were more likely to easily explain their opinions about asking a pharmacist for advice in comparison to younger consumers [20]. This result may be due to the older consumers visiting the same pharmacy frequently and thus establishing a good relationship with the CP, more than the younger group [21]. The ethnic background of consumers and their frequency in seeking information from the community pharmacy are the primary factors influencing consumer awareness of the CP's roles in providing healthcare.

3.6.2 Consumer perceptions of CPs' role in providing healthcare

When studying the expansion of professional roles in healthcare, it is imperative to think about consumer perceptions and the impact of consumerism on the demand for health services [22]. Understanding how patients perceive and evaluate healthcare services should occur prior to measuring their satisfaction with these services [23]. The professional role of the pharmacist will not be fully used unless it is fully understood and perceived by the public. There is a scarcity of studies about consumer perceptions and their needs from CPs in Malaysia. One study consumer preferred to go to clinics and hospitals for minor illnesses and screening tests. Our respondents disagree in their perceptions of CPs' roles, which they believe to pertain to physicians only, such as suggesting the use of certain prescription medicines to patients, suggesting the use of certain prescription medicines to physicians, and diagnosing and treating minor illnesses [17]. This finding was also consistent with the findings of a study conducted in Malta, where the respondents preferred to consult a doctor or treat themselves instead of consulting a pharmacist for their minor illnesses [24]. Although some pharmacists can provide these services, perhaps due to the lack of awareness of most consumers about the availability of the

service, they prefer to visit a clinic or a hospital [17]. In Thailand, a country neighboring Malaysia, the situation is quite different in that consumers agree in their perception of the pharmacist's role in consultation activities, which are considered to be a vital part for the success of the pharmacy trade in that country [25]. On the other hand, a study conducted in Saudi Arabia found out that consumers perceived that there is lack of commitment from community pharmacists to dispense medications with prescriptions, and they do not give adequate counseling about medications. The professional performance in general is below expectation [26].

In the Malaysian study although the vast majority had heard the term "pharmacist", some consumers believed that pharmacists were working on farms, and the majority believed that pharmacists work in doctors' clinics [17]. In addition, the majority sought advice about the use of medicines from doctors and few went to pharmacists for this purpose. At present, a great improvement in consumer perceptions of pharmacists has taken place. Consumers in this study agreed in their perceptions of the CPs' roles regarding the educational and traditional roles of providing patient education and suggesting the use of nonprescription medications to patients. Certain clinical roles of CPs such as identifying and preventing prescription errors, designing and regulating medication regimens for patients, monitoring the outcomes of these regimens, and checking or preventing drug-related problems were also agreed upon by consumers. Trust in CPs was found to increase with age, and this is because the elderly are more extensive users of community pharmacies [27]. In the present study, consumer age was found to be a determinant in perceiving CPs as having a clinical role in providing healthcare. The majority of older respondents disagreed about the ability of CPs to perform these roles, more than middle-aged and young individuals. This finding may be attributed to the fact that in the past, pharmacists were perceived negatively by consumers, and older people now recall that past and stand as witnesses for the present era by still having the same perceptions towards pharmacists.

In India, rural residents have higher perceptions of pharmacists than urban inhabitants [28]. In this study, consumer perceptions of CPs' roles in monitoring drug regimens and checking and preventing drug-related problems are correlated with the locality. The majority of the city

inhabitants agreed that CPs monitor and prevent drug-related problems, more than those residing in the suburbs and rural areas. This finding may be attributed to the fact that there are no pharmacies and pharmacists in the rural areas of Malaysia, and nurses instead used to dispense medicines to patients [29]. Consumer FSI behavior is considered to be another determinant of their perceptions of the CP conducting extended pharmacy roles such as diagnosing and treating minor illnesses. Ethnic background was found to play an important role in tailoring consumer perceptions that the CP would suggest the use of certain prescription medicines to physicians and assist in checking and preventing drug-related problems. The age, locality, ethnic background of consumers and FSI from CPs are the primary factors influencing consumer perceptions of the CPs' roles in providing healthcare.

3.6.3 Consumer expectations of CPs and experience in healthcare provision

In the present study, unlike GPs, consumers have high levels of expectations of the CP as a healthcare provider. They expect CPs to take personal responsibility for resolving any drug-related problems they discover and to design any drug therapy treatment plans. CPs are considered to be knowledgeable drug therapy experts who are able to educate patients on the safe and appropriate use of medications. They also strongly anticipated that CPs will monitor responses to drug therapy and be more concerned with patients rather than being profit-oriented. In one study, consumers were interviewed had high expectations on community pharmacists to suggest the right medicines and advise them on the safe and effective use of medicines and recommend medicines with affordable price. The consumer's previous experiences with community pharmacists were not satisfactory [30].

Pharmacists should know the reliability of information, its accessibility and their abilities to evaluate the literature to assist patients and providers [31]. In their experiences with CPs, the consumers in this study also differed from the GP respondents in that they highly considered CPs as a reliable source of general drug information and as important professionals in healthcare provision. They also agreed that CPs always counsel them regarding the safe and appropriate use of medicines, and they denied the reversed statement that "Pharmacists appear reluctant to

take personal responsibility for assisting them." In general, consumer expectations of the CPs in healthcare matched their experiences.

Locality is an important determinant for consumer expectations of CPs taking personal responsibility for solving any drug-related problem, with CPs being a reliable source of general drug information and knowledgeable drug therapy experts who are more concerned about patients than being profit-oriented. The level of education of the consumer and his or her locality of residence also had important impacts on consumers' experiences with the CP, especially urban citizens who utilized more educational and pharmaceutical services, to view the CP as an important healthcare provider and a counsellor of patients regarding the safe and appropriate use of medicines. Consumers who utilized the healthcare system expected to experience the highest quality of care services from confident and experienced providers [32].

4. CONCLUSIONS

Study concluded Malaysian consumers were aware of the role of CPs in healthcare settings. Their opinions towards the pharmacy and pharmacists have progressed considerably as reported by this study. It was found that general public trust pharmacists and are satisfied with the services provided, such as advising them regarding the use of medicines and other health related issues. Malaysian CPs, with their high trust from consumers, have an opportunity to prove their contribution in healthcare provision and improve their attitudes, practices and behaviors to achieve their goals apart from dispensing medication.

5. LIMITATIONS OF THE STUDY

The response rate (46%) of the study was low and it was study only in one state, hence the findings may or may not able to be generalized to the population. Secondly, due to the nature of the study, there is potential of social desirability bias i.e. there is tendency of the respondents to provide responses in a way to be more socially acceptable to the researchers. Moreover, this study followed convenient sampling, a non-random method and hence remains as a limitation.

In many countries, community pharmacies are more accessible to the general population. More evidence-based research related to the

community pharmacists' role and contribution to public health needs to be carried out. Outcomes research also need to be done to focus on the effectiveness of community pharmacists' activities and practices versus general practitioners. From another perspective, research and practice model need be established to study the effectiveness of collaborative care between general practitioners and community pharmacists in disease management and outpatient patient care.

AVAILABILITY OF DATA AND MATERIALS

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

CONSENT AND ETHICAL APPROVAL

Ethical approval was obtained from the Joint Ethics Committee of the School of Pharmaceutical Sciences, USM-Hospital Lam Wah Ee on Clinical Studies. A verbal consent was approved by the committee as this is a survey design. According to the committee, "the procedures detailed in the protocol do not violate medical ethics and that the study design is in accordance to the requirement of such study". Furthermore, the participants were provided assurance that responses would be kept confidential and used only for research purposes.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX 1: SURVEY QUESTIONNAIRE

Survey questionnaire on Awareness, Perceptions, Expectations and Experience of Consumers towards Community Pharmacists' Role as Healthcare Providers in Malaysia

SECTION A: Consumer's awareness of community pharmacist role

Please indicate (☑) your awareness regarding pharmacist's role

Consumer Awareness	Yes	No
1. Do you know the role of the pharmacist in community pharmacy and healthcare setting?		
1. When you go to a pharmacy, do you always find a pharmacist working?		
2. When you go to a private clinic, do you find a pharmacist working?		
3. Can you get medicines without prescription from a community pharmacy?		
4. Do you know that pharmacist can advise you regarding your medicine?		
5. Would you feel comfortable talking to a pharmacist regarding your minor illness?		
6. Have you ever asked a pharmacist for advice on medicines?		
7. Do you trust your pharmacist's advice about your medicine?		
8. Would you trust your pharmacist's advice on other health issues besides medicines?		
9. Are you satisfied with the services provided by the community pharmacies?		
10. Are you satisfied with the steps taken by government to regulate the services provided by the community pharmacies e.g. blood pressure monitoring, glucose and cholesterol levels assessments		

SECTION B: Consumer's perceptions of community pharmacist role

Please indicate (☑) your perception regarding pharmacist's role

(SD = Strongly disagree, D =Disagree, A= Agree, SA= Strongly agree)

Consumer Perception	SD	DA	A	SA
1. Providing patient education				
2. Suggesting the use of non-prescription Medications to patients				
3. Suggesting the use of certain prescription medicines to patients				
4. Suggesting use of certain prescription medicines to physician				
5. Diagnosing and treating minor illnesses				
6. Identifying and preventing prescription errors				
7. Designing and regulating medication regimens for patients				
8. Monitoring outcomes of these regimens				
9. Checking and preventing drug related problems				

SECTION C: Consumer’s expectation of community pharmacist role

Please indicate (☑) your expectations from pharmacists

(SD =Strongly disagree, D =Disagree, A= Agree, SA= Strongly agree)

Consumer’s expectation	SD	DA	A	SA
1. I expect pharmacist to take personal responsibility to solve any drug-related problem				
2. I expect pharmacist to be a knowledgeable drug therapy expert				
3. I expect pharmacist to educate me on safe and appropriate use of medicine				
4. I expect pharmacist to monitor responses to drug therapy				
5. I expect pharmacist to be more concerned about patient				

SECTION D: Consumer’s experience with community pharmacist role

Please indicate your (☑) experience with pharmacists

(SD =Strongly disagree, D =Disagree, A= Agree, SA= Strongly agree)

Consumer’s experience	SD	DA	A	SA
21. In my experience pharmacists are reliable source of drug information				
22. In my experience pharmacists are important professional in healthcare				
23. In my experience pharmacist always counsel me regarding safe and appropriate use of medicines				
24. In my experience pharmacists appear reluctant to take personal responsibility for resolving any drug related-problem				

SECTION E: Demographic and general information of a consumer

- Age _____ years
- Gender Male Female
- Ethnic Background: Malay Chinese Indian Other (please specify)
- Locality (residential area): City area Suburb Rural area
- Education: No formal education Primary School Secondary School Diploma Undergraduate Postgraduate
- Frequency of seeking health related information from community pharmacy: Frequently seeking Occasional seeking Never

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