



**MINISTRY OF HEALTH MALAYSIA
PHARMACEUTICAL SERVICES PROGRAMME**

PHARMACY RESEARCH REPORTS

Volume 6 • Issue 1 • May 2023

PHARMACY RESEARCH REPORTS

Volume 6 • Issue 1 • May 2023

The Pharmacy Research Reports is a peer-reviewed journal published by the Pharmaceutical Services Programme, Ministry of Health Malaysia (MOH). This is an International Standard Serial Number (ISSN) registered publication with the National Bibliography Centre, National Library of Malaysia. This document contains compilation of peer-reviewed original scientific research articles of pharmacy related research conducted in the MOH or by MOH pharmacists and pharmacy personnel. All research included in this report were registered with the National Medical Research Register (NMRR) and ethics approvals had been obtained from the Medical Research and Ethics Committee (MREC). The opinions expressed in all articles are the authors' own and do not necessarily reflect the view of the Pharmaceutical Services Programme, Ministry of Health Malaysia.

May 2023

© Pharmaceutical Services Programme, Ministry of Health Malaysia



No. Siri Penerbitan KKM
MOH/S/FAR/86.23(RR)-e

No. Pendaftaran Dokumen Program Perkhidmatan Farmasi
D-RR-103

Editorial Address:

Editor in Chief

Pharmacy Research Reports

Pharmacy Policy and Strategic Planning Division

Pharmaceutical Services Programme

Ministry of Health Malaysia

Lot 36, Jalan Prof Diraja Ungku Aziz, 46200 Petaling Jaya, Selangor, Malaysia

Tel : (603) 7841 3200

Email : rndfarmasi@moh.gov.my

Website : <https://www.pharmacy.gov.my> / <https://research.pharmacy.gov.my>

PHARMACY RESEARCH REPORTS

Volume 6 • Issue 1 • May 2023

EDITORIAL BOARD

Advisor

Mdm. Siti Aisah Bahari
&
MOH Pharmacy Research and Development (R&D) Committee

Editor in Chief

Dr. Abdul Haniff Mohd Yahaya

Reviews Editor

Ho See Wan

Dr. Nor Ilham Ainaa Muhsin

Secretariat

Tan Yi Huan

MOH PHARMACY RESEARCH AND DEVELOPMENT (R&D) COMMITTEE 2021-2023

Chairperson

Mdm. Siti Aisah Bahari
Director of Pharmacy Policy and Strategic Planning Division

Secretary

Dr. Abdul Haniff Mohd Yahaya
Deputy Director, Pharmacy Policy and Strategic Planning Division

Committee Members

Mr. Manzatul Azrul Azrie Sulaiman
Pharmacy Enforcement Division

Dr. Evelyn Loh Yun Xi
National Pharmaceutical Regulatory Agency

Mdm. Datcayani Ramadoo
Pharmacy Board Malaysia

Mdm. Norazila Abd. Ghani
Hospital Jitra, Kedah

Dr Dang Chee Chean
Hospital Melaka

Dr. Mastura Ahmad
Hospital Tengku Ampuan Afzan, Pahang

Mr. Gobi Hariyanayagam Gunasekaran
Hospital Seri Manjung, Perak

Dr. Shamala Balan
Hospital Tengku Ampuan Rahimah Klang, Selangor

Mr. Jerry Liew Ee Siung
Hospital Queen Elizabeth, Sabah

Ms. Wong Hui Meng
Hospital Labuan

Dr. Rahela Ambaras Khan
Hospital Kuala Lumpur

Dr. Nur Liyana Zainal Bahrin
Pharmacy Practice and Development Division

Ms. Nur Ain A Rashid
Pharmacy Policy and Strategic Planning Division

Mdm. Zahrina Abdul Kadir
Johor State Health Department

Mdm. Hasnah Ibrahim
Hospital Tengku Anis, Pasir Puteh, Kelantan

Mdm. Nurrul Salwa Saleh
Hospital Tuanku Ampuan Najihah, Negeri Sembilan

Mr. Teoh Chee Jia
Hospital Seberang Jaya, Penang

Mdm. Soo Pei Pei
Perlis State Health Department

Ms. Mazlina Mukhtar
Hospital Sultanah Nur Zahirah, Terengganu

Dr. Samuel Ting Chuo Yew
Sarawak State Health Department

Dr. Navin Kumar Loganadan
Hospital Putrajaya, WP Kuala Lumpur & Putrajaya

Mr. Muhammad Fakhurrazi Ahmad Fadzi
National Cancer Institute

Secretariat

Mdm. Chan Pui Lim
Pharmacy Policy and Strategic Planning Division

Ms. Ho See Wan
Pharmacy Policy and Strategic Planning Division

Mdm. Azzy Iyzati Ahmad Shanizza
Pharmacy Policy and Strategic Planning Division

Mr. Mohd Azli Fakri Abdul Aziz
Pharmacy Policy and Strategic Planning Division

Ms. Mary Chok Chiew Fong
Pharmacy Policy and Strategic Planning Division

Dr. Nor Ilham Ainaa Muhsin
Pharmacy Policy and Strategic Planning Division

Mdm. Siti Nur Su'aidah Nasarudin
Pharmacy Policy and Strategic Planning Division

Ms. Tan Yi Huan
Pharmacy Policy and Strategic Planning Division

PHARMACY RESEARCH REPORTS

Volume 6 • Issue 1 • May 2023

ACKNOWLEDGEMENT

The Editorial Board of the Pharmacy Research Reports wishes to express our deepest appreciation to the reviewers for their valuable time and efforts in reviewing the manuscripts.

List of Reviewers:

Dr. Shamala Balan

Ms. Chan Pui Lim

Ms. Ho See Wan

Dr. Nor Ilham Ainaa Muhsin

Ms. Tan Yi Huan

PHARMACY RESEARCH REPORTS

Volume 6 • Issue 1 • May 2023

CONTENTS

	<i>page</i>
1. Publics' Perceptions and Satisfactions Regarding the Role and Services Provided By Pharmacists at Outpatient Pharmacy Department (OPD) In District Hospital	<u>1</u>
<i>Sri Devaki Prashna A/P Krishnan, Tey Yan Teng, Lim Jia Jia, Nazariza Munjiyat @ Esa</i>	
2. A Qualitative Exploration of Facilitators and Barriers towards Refill Prescription via Pharmacy Appointment Card System (PACS) among Outpatients in Hospital Tuanku Ampuan Najihah (HTAN)	<u>10</u>
<i>Nishakaran Pushpa Rajah, Nurul Salwa Saleh, Khairul Hazriq Mohd Khomsar, Nurul Liyana Muhamad Rizal, Ummul Syuhaida Mohd Nor</i>	

Publics' Perceptions and Satisfactions Regarding the Role and Services Provided by Pharmacists at Outpatient Pharmacy Department (OPD) in a District Hospital

Sri Devaki Prashna A/P Krishnan¹, Tey Yan Teng¹, Lim Jia Jia¹, Nazariza Munjiyat @ Esa¹

¹ Hospital Tangkak, Johor, Ministry of Health Malaysia

Abstract

Introduction: The public may not be aware of pharmacists' roles other than dispensing medicines. Understanding patients' satisfaction can help to improve the delivery and quality of health services.

Objective: This study aimed to evaluate the public's perceptions and satisfaction regarding the role of pharmacists and the services provided by pharmacists at OPD (Outpatient Pharmacy Department) in the district hospital.

Methods: This is a cross-sectional study conducted at outpatient pharmacy Hospital Tangkak during the period 1 Feb 2022 – 31 March 2022. The data regarding the publics' demographics, perceptions and satisfaction regarding the role of pharmacists and the pharmacy services provided were collected by using a self-administered questionnaire which consisted of three section. Mann-Whitney U test and Kruskal-Wallis tests were used to assess the relationship between demographic characteristics and median of perception, satisfaction and total score.

Results: We received 350 filled questionnaires in total. The median perception score is 40 (IQR, 6) and the median satisfaction score is 40 (IQR, 10) out of a maximum of 50, which is a good result. The median overall score based on all of the questions' replies (both perception and satisfaction) was 82 (IQR, 12) out of a possible maximum score of 100, which demonstrates a good result. The participants' perceptions vary significantly by age group, whereas satisfaction was unaffected by demographic characteristics.

Conclusion: The public attending outpatient pharmacy Hospital Tangkak has good perceptions and good satisfaction towards the pharmacists' roles and services. More efforts are required to educate the public regarding the pharmacists' role. Effective pharmacist services should be maintained, and limitations should be addressed to preserve and improve public satisfaction.

Keywords: Public's perception, public's satisfaction, outpatient pharmacy, district hospital

NMRR ID: NMRR-21-02229-CBG

Corresponding Author: Tey Yan Teng

Pharmacy Department, Hospital Tangkak, Jalan Hospital, 84900 Tangkak, Johor, Malaysia.

Email: teyyanteng@gmail.com

Introduction

Pharmacists' role in the healthcare system is crucial and undeniable. They are the bridge between doctors and patients who counsel and advice patients to maximise the desired effects of the drugs and minimise the side effects of the drugs (1). Pharmacists' proficiency in knowledge of medicines makes him/her a reliable healthcare service provider (2). They are the experts in medications' side effects and the way to use the medications if compared with the doctors (1). A pharmacist assesses and provides opinions on the best treatment choice for patients instead of merely acting as a dispenser (3). However, many publics perceived that pharmacist was only responsible to supply medications and follow doctors' directions (4). They have almost an even split opinion on who should be the first responder to drug-related questions between physician and pharmacist (5). Also, the public may not be aware of pharmacists' other roles besides dispensing medicines. Therefore, it is crucial to understand the publics' perceptions on pharmacists' roles and identify the pharmacists' roles that the publics are unfamiliar with. Efforts are required to make the roles of pharmacist irreplaceable in healthcare.

On the other hand, the public's satisfaction with the pharmacists' services is greatly affected by the environment they are served. There are multiple factors that might affect the satisfaction towards the pharmacists' services. The overcrowded waiting areas and language used during the service and the way the pharmacist takes the health condition and medication history are the common issues faced by the public (6). Understanding patients' satisfaction can help to improve the delivery and quality of health services.

There is a gap in understanding each other between the public and pharmacists that might affect the quality of services provided by pharmacists and the health-related outcomes of the patients. The objective of this study was to assess the public's perceptions and satisfaction regarding the role and services provided by pharmacists at outpatient pharmacy Hospital Tangkak, and to determine the factors associated with their perceptions and satisfaction. In addition, we wanted to assess the public's frequency of visits to the pharmacy and determine the main reasons for the public to visit the pharmacy. By obtaining these data, the pharmacists can identify the parts that can be improved in the future. This can enhance the public's confidence in pharmacists, improve the current healthcare system and provide more benefits to the public attending the outpatient pharmacy at Hospital Tangkak.

Method

This was a questionnaire-based, cross-sectional study conducted from 1 February 2022 to 31 March 2022 at outpatient pharmacy at Hospital Tangkak. The respondents in this study were all the public attending during that period. Based on the sample size calculation, the minimum sample size required for this study was 384. This figure was arrived at by having a 95% confidence level, a standard deviation of 0.5, and a confidence interval (margin of error) of $\pm 5\%$. The selected respondents had to be 18 years of age or older, with the ability to read and communicate in Malay, English or Chinese. The populations excluded from this study were elderly aged more than 75 years old, non-functioning mental illness and severely ill public. To reduce bias, healthcare professionals and students from any medical/health-related field were also excluded.

The questionnaire was adapted from a cross-sectional study conducted by Jose et al. in the Sultanate of Oman and a cross-sectional study conducted by Cheah et al. in Sabah, Malaysia (4, 7). Permission to use the variables in this questionnaire was obtained from the original authors of the related journals. The variables were modified to adapt to our facility and the questionnaire was then content validated by five experts who had more than five years of experience in pharmacy practice. The questionnaire was also translated into Malay and pre-tested among 10 respondents for clarity, relevance, acceptability and time for completion prior to the actual study. Following pre-testing, revision and slight modifications to the questionnaire were performed. It was later compared against the original questionnaire to ensure the translation's accuracy. A pilot test was conducted to examine the validity of each question. To improve the internal consistency, five questions were omitted from Section B (Q1, Q2, Q3, Q4 and Q13), making the final questionnaire with 20 items. There were 10 questions on perception and 10 questions on satisfaction. The Cronbach's Alpha obtained was 0.812 which was greater than 0.8 and was considered very reasonable and a good goal, indicating strong and good reliability.

The structured questionnaire consisted of three sections. Section A (six items) collected the demographic characteristics of participants, Section B (ten items) assessed the public's perception towards the roles of pharmacists, and Section C (ten items) assessed the public's satisfaction on the services provided by the pharmacists. The frequency of visiting and the main reason for the public to visit the outpatient pharmacy was also tabulated. Each item in Section B (Perception) was scored on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) whereas each item in Section C (Satisfaction) was scored on a five-point Likert scale ranging from 1 (very not satisfied) to 5 (very satisfied).

The convenience sampling (non-probability) method was applied. The participants who fulfilled the inclusion and exclusion criteria were randomly selected and consent was obtained from the participants in the waiting area. The participants were given the choice to choose their preferred language questionnaire to answer. The questionnaires were self-administered by the participants and participants took an average of 15 minutes to complete the questions. For each item, the minimum and maximum scores were 1 and 5 respectively. The total marks per section were 50 each. Accordingly, the median perception and satisfaction scores for the participants were estimated. Additionally, the median total score based on responses to both perception and satisfaction was estimated with a maximum possible score of 100. Based on literature, the responses were further classified into good (score $\geq 80\%$), moderate (60% - 80%) and poor ($\leq 60\%$). The

total scores of the participants were tested against the demographic factors to evaluate any differences in the scores depending on gender, age group, race and education level.

The data analysis was done using SPSS version 24. Demographic characteristics of the respondents, the number of visits to pharmacy in the last six months, the reason for visiting the pharmacy, the public's perception of the role of pharmacists and the public's satisfaction with pharmacy services in the outpatient pharmacy Hospital Tangkak were analysed descriptively either in frequency (n) and percentage (%) or median with interquartile range (IQR). Mann-Whitney U test and Kruskal-Wallis tests were used for continuous variables and non-parametric data depending on the number of comparative groups. The p value of <0.05 was considered to be statistically significant.

This study was conducted in compliance with the ethical principles outlined in the Declaration of Helsinki and the Malaysian Good Clinical Practice Guideline (GCP). This study was approved by the Medical Research and Ethics Committee (MREC) of the Ministry of Health (MOH) of Malaysia and registered in the National Medical Research Registry (NMRR) under registration number NMRR ID-21-02229-CBG.

Results

In this study, only 350 visitors were approached instead of 384 due to worsening Covid-19 cases in Malaysia during the data collection period. The response rate was 100 %. The demographic characteristics of the participants were displayed in Table 1. The majority (37.4%) were 31-45 years old. The demographic information showed that female respondents were slightly more in numbers as compared to their male counterparts. Of the respondents, 70.3%, 19.4% and 10.3% were Malay, Chinese and Indian respectively. Almost half of the respondents had a secondary level of education (49.5%). Only 0.6% had no education.

Table 1: Demographic characteristics of the participants (n= 350)

Characteristics	n (%)
Gender	
Male	158 (39.3)
Female	192 (60.7)
Races	
Malay	246 (70.3)
Chinese	68 (19.4)
Indian	36 (10.3)
Others	0 (0)
Age group (year)	
18-30	89 (25.4)
31-45	131 (37.4)
46-60	89 (25.4)
61-75	41 (11.7)
Education level	
No education	2 (0.6)
Pre-school ^a	3 (0.9)
Primary ^b	30 (8.6)
Secondary ^c	177 (50.6)
Post-secondary ^d	82 (23.4)
Tertiary ^e	56 (16.0)

^a Kindergarten and equivalent; ^b Year 1 to Year 6 and equivalent; ^c Form 1 to Form 5 and equivalent; ^d Form 6, Matriculation, Diploma and equivalent; ^e Degree and above.

Among the 350 respondents who answered the questionnaire, majority of them (37.4%) had visited the outpatient pharmacy two to three times in the last six months. The main reason for attending the outpatient pharmacy as indicated in Table 2 was to collect medications (84%). The other purposes (2.3%) were returning unused medications, drug enquiries, delivering foods and beverages to workers and cleaning purposes.

Table 2: The number of visits to the OPD pharmacy in the last six months and the reasons (n= 350)

Questions	n (%)
Number of visits to the pharmacy in the last 6 months	
1	115 (32.9)
2-3	131 (37.4)
4-5	55 (15.7)
6-10	33 (9.4)
More than 10	16 (4.6)
Reasons for attending pharmacy*	
For medication collection	284 (84)
Counselling on devices and disease management	8 (2.3)
Pharmacy exhibition/booth	2 (0.6)
Discharged from ward	25 (7.1)
Accompanying family members to obtain medication	88 (25.1)
Others	8 (2.3)

* Respondents were allowed to choose more than one response.

Table 3 and 4 presented the respondents' perception towards the roles of pharmacists and satisfaction on the services provided by pharmacists at the outpatient pharmacy Hospital Tangkak. For the purposes of explanation, the responses of strongly disagree and disagree was merged as 'disagree', whereas responses of strongly agree and agree was merged as 'agree' (Table 3). The responses of very not satisfied and not satisfied was merged as 'not satisfied', whereas responses of very satisfied and satisfied was merged as 'satisfied' for the purposes of explanation (Table 4).

The statistic presented that 65.8% of the respondents perceived that pharmacist knows more about their medicine and its side effects and how to use it than doctor. The majority of respondents (94.6%) mentioned that pharmacist should check their prescriptions for accuracy in terms of drug name, dose, any problem in taking the medications together, etc. before dispensing the medication. 304 out of 350 respondents agreed and strongly agreed that pharmacist is responsible to counsel and reassess the proper technique to handle devices such as inhaler and insulin pen, and majority of the respondents (92.9%) considered the pharmacists as an expert in matters related to drugs. Almost 90% of the respondents perceived that pharmacists as an integral part of the health care system like physicians and nurses.

Table 4 summarised the response to satisfaction related questions. The statistics showed that vast majority of the respondents were satisfied with the services provided. Over 90% of the respondents expressed good satisfactions overall. Among the respondents, 94% of respondents satisfied with the pharmacists' attitude at the counter, their response on drug related questions enquired and the language used during communication. Whereas, 91.5% of them satisfied with the amount of time spend by pharmacist with each patient. The pharmacists' knowledge demonstrated when answering enquires also received good feedback from the respondents, where 92.9% of respondents showed good satisfaction.

The relationship between the demographics of participants and the relationship with median perception, satisfaction and total score are summarised in Table 5. The median perception score and median satisfaction score are 40 (IQR, 6) and 40 (IQR, 10) out of a maximum score of 50 respectively. The median total score based on the responses to all the questions (both perception and satisfaction) was 82 (IQR, 12) out of a possible maximum score of 100, which demonstrates a good score. The median total score and median satisfaction score were found not to be significantly based on the demographics of the participants (gender, race, age group and education level) and the number of visits to pharmacy. In term of median perception score, it was found to be significantly different between age groups ($p=0.013$), but not with other demographics and the number of visits.

Table 3: Respondents' perception towards the roles of pharmacists (n= 350)

No.	Items	n (%)		
		Disagree	Neutral	Agree
1	My pharmacist knows more about my medicine and its side effects and how to use it than my doctor.	48 (13.7%)	72 (20.6%)	230 (65.8%)
2	Pharmacist should check my prescriptions for accuracy in terms of drug name, dose, any problem in taking the medications together, etc. before dispensing the medication.	8 (2.30%)	11 (3.1%)	331 (94.6%)
3	Pharmacists are allowed to intervene and to modify prescriptions.	73 (20.8%)	73 (20.9%)	204 (58.20%)
4	Pharmacists ask about the history of previous drug allergy, disease details, etc. before dispensing the medications.	19 (5.4%)	40 (11.4%)	291 (83.2%)
5	Pharmacists ask about the use of other medications and traditional herbs to avoid unwanted interaction.	29 (8.3%)	53 (15.1%)	268 (76.5%)
6	Pharmacists always explain the dose, frequency, indication and time of administration of medications clearly and understandable.	6 (1.7%)	32 (9.1%)	312 (89.1%)
7	Pharmacists responsible to counsel and reassess the proper technique to handle devices such as inhaler and insulin pen.	10 (2.8%)	36 (10.3%)	304 (86.9%)
8	Pharmacists provide information related to proper storage of medications.	10 (2.8%)	27 (7.7%)	313 (89.4%)
9	I consider the pharmacists as an expert in matters related to drugs	6 (1.7%)	19 (5.4%)	325 (92.9%)
10	Pharmacists as an integral part of the health care system like physicians and nurses	9 (2.5%)	28 (8.0%)	313 (89.4%)

Note: The responses of strongly disagree and disagree was merged as 'disagree', whereas responses of strongly agree and agree was merged as 'agree' for the purposes of explanation.

Table 4: Respondents' satisfaction on the services provided by the pharmacists (n= 350)

No.	Items	n (%)		
		Not satisfied	Neutral	Satisfied
1	I am satisfied with clean and comfortable environment in the pharmacy.	5 (1.4%)	23 (6.6%)	322 (92%)
2	I am satisfied with the pharmacist's attitudes which are polite, friendly and comfortable to approach.	4 (1.1%)	18 (5.1%)	328 (93.8%)
3	I am satisfied with the pharmacists who are patient enough and listen to what I have to say.	5 (1.5%)	25 (7.1%)	320 (91.4%)
4	I am satisfied with the medications with clear drug label and instructions provided by pharmacists.	4 (1.2%)	23 (6.6%)	323 (92.3%)
5	I am satisfied with the level of knowledge that pharmacists demonstrate in drug related problems.	4 (1.2%)	21 (6.0%)	325 (92.9%)
6	I am satisfied by the amount of time spend by my pharmacist with each patient.	7 (2%)	23 (6.6%)	320 (91.5%)
7	I am satisfied with the kind of response pharmacists provide on questions related to drugs.	4 (1.2%)	17 (4.9%)	329 (94%)
8	I am satisfied with the language used by the pharmacist in discussing drug related matters.	5 (1.5%)	16 (4.6%)	329 (94%)
9	I am satisfied with the relationship that the pharmacist tries to maintain with the patients.	5 (1.4%)	23 (6.6%)	322 (92%)
10	I am satisfied with the privacy maintained by pharmacist while discussing with patients and dispensing medications.	6 (1.8%)	24 (6.9%)	320 (91.4%)

Note: The responses of very not satisfied and not satisfied was merged as 'not satisfied', whereas responses of very satisfied and satisfied was merged as 'satisfied' for the purposes of explanation.

Table 5: Demographics of participants and relationship with median perception, satisfaction and total score

Characteristics	Median perception score (IQR)	P-value	Median satisfaction score (IQR)	P-value	Median total score (IQR)	P-value
Gender						
Male	40 (6)	0.682 ^a	41 (9)	0.789 ^a	82 (12)	0.996 ^a
Female	40 (6)		40 (10)		82 (13)	
Races						
Malay	40 (6)	0.104 ^b	41 (10)	0.942 ^b	81 (12)	0.285 ^b
Chinese	40 (6)		40 (10)		82 (11)	
Indian	41 (9)		42 (10)		87 (11)	
Others	-		-		-	
Age (year)						
18-30	39 (7)	0.013^{b*}	40 (8)	0.144 ^b	80 (15)	0.090 ^b
31-45	40 (6)		41 (5)		84 (8)	
46-60	40 (6)		41 (5)		83 (9)	
61-75	40 (5)		42 (5)		82 (8)	
Education level						
No education	26 (-)	0.203 ^b	27 (-)	0.243 ^b	53 (-)	0.224 ^b
Pre-school	38 (-)		40 (-)		78 (-)	
Primary	40 (5)		40 (10)		85 (11)	
Secondary	40 (5)		41 (10)		82 (13)	
Post-secondary	40 (8)		40 (8)		81 (12)	
Tertiary	40 (6)		44 (9)		86 (12)	
Number of visits to pharmacy in the past 6 months						
1	40 (6)	0.221 ^b	40 (7)	0.154 ^b	80 (12)	0.128 ^b
2-3	40 (6)		41 (5)		82 (12)	
4-5	40 (6)		40 (9)		83 (12)	
6-10	40 (6)		44 (10)		88 (13)	
More than 10	42 (14)		47 (10)		86 (19)	

^a Mann–Whitney test, n= 350; ^b Kruskal–Wallis test, n=350

* Statistically significant at p<0.05.

Discussion

Pharmacists play a significant role in healthcare delivery because of their experience and proximity to patients (2). There are several studies conducted in Malaysia which are related to pharmacists' roles and services (3, 4, 8). This was the first study conducted among the general population at the outpatient pharmacy of a district hospital in Tangkak, Johor to provide insight into the ways how the public look at the roles of pharmacist and also further assess their satisfaction towards the services provided here. There are four wards with a total of 72 beds in Hospital Tangkak. The number of patients who visits the pharmacy counter is around 100 patients per day.

From this study, the majority of the respondents (37.4%) had visited outpatient pharmacy Hospital Tangkak for about two to three times in the past six months, followed by 32.9 % of respondents that visited outpatient pharmacy for only once. This finding was different from Jose et al study which showed the majority of the respondents (34.6%) had visited to pharmacy more than 10 times last year (7). However, this comparison might be invalid since Jose et al study was conducted before COVID-19 pandemic. The number of visits to the hospital had been reduced as hospital is one of the high-risk areas. Besides, the low number of visits to the outpatient pharmacy at Hospital Tangkak can be explained as some of the publics might self-medicate by visiting the community pharmacy for minor illnesses such as headache, fever and cold. Respondents might believe the pharmacist is an expert in providing treatments for minor ailments, and think that if the condition is not serious enough to contact a physician, they will seek help from the community pharmacist (7).

The main reason for most respondents attending outpatient pharmacy Hospital Tangkak was to collect medications (n=284, 84%). Our finding was similar to Cheah et al study that demonstrated a vast number of the respondents (76.3%) visited pharmacy for medication collection (4). However, this cannot be used to compare since the respondents in Cheah et al study attend both public and also private pharmacy. Interestingly, only 0.6% (n=2) of the respondents in our research attended the pharmacy for pharmacy booth and exhibition. This could be owing to a shortage of exhibitions, as there have only been two in the last six months due to the COVID-19 pandemic. At the same time, due to a lack of publicity, the participants were unaware of the pharmacy department's activities, or perhaps due to an insufficient publicity approach to attract the participants' attention to the booth.

A total of 350 participants responded to the questionnaire provided. Overall, the participants showed good perception with a median perception score of 40 out of a possible maximum score of 50. When comparing the responsibility between pharmacists and doctors, this study showed that most of the participants perceived pharmacist knows more about medicine, its side effects and its usage. In addition, participants who attended OPD also considered pharmacists as a drug expert. This positive outcome was also demonstrated by other studies (4, 7, 9, 10), which showed that majority of the participants perceived pharmacists as drug experts. The participants agreed, based on the responses, that pharmacists should be completely involved in medication management, from screening prescriptions to confirming correctness in terms of the drug name, dose, and drug-related concerns to dispensing medications to the public. Aside from that, the respondents believed that pharmacists provide important information on how to utilize medical devices like an insulin pen and an inhaler. The situation may differ for the pharmacists working in community settings. In a study conducted in Poland, the role of pharmacists is poorly understood and is frequently perceived as a retailer or dispenser of pharmaceutical product rather than a health and illness advisor (11). Similar public perceptions towards community pharmacists were also found in other studies (5, 12).

Patient satisfaction is a frequently used metric for assessing healthcare quality and finding areas for improvement. Overall, the participants expressed high satisfaction with all of the items in the questionnaire, according to our research. Almost all of the respondents (94%) were satisfied with the pharmacist's language when discussing drug-related issues. They are able to comprehend the information given by pharmacists. Even if there is a language barrier, pharmacists will make every attempt to offer patients the most accurate information possible in layman's terms. Communication skill is one of the top four pharmacist qualities that most respondents desired, especially in community settings (5). From our study, there is a minority of the population who are dissatisfied with the language used. Some non-Malay publics had difficulty understanding the language used during dispensing and the labels on the medicines. By training the pharmacists regarding the common basic Mandarin phrases used and providing label in Mandarin, the language barrier can be reduced. This is comparable to Jose et al study, which indicated that many pharmacists work in Oman's health sector, particularly in community pharmacies with the majority hailing from non-Arabic speaking nations (7). This could have an impact on their fluency when communicating with patients, as well as the patient's satisfaction. However, the general public in the Sultanate of Oman also showed great satisfaction towards the pharmacist's communication there (7).

Long waiting time in OPD is often the major reason for patients' complaints or dissatisfaction about their experiences of visit. Overall, the majority of respondents in this study were satisfied with the waiting time. According to the Client Charter for OPD at public hospitals, pharmacists are responsible for ensuring that the public who visit OPD receive medications within 30 minutes (13). Pharmaceutical Services Division is offering the VAS as a strive to enhance the quality of public services (14). VAS such as *Kad Temu Janji* (KTJ), *Sistem Pendispensan Ubat Bersepadu* (SPUB) and *Ubat Melalui Pos* (UMP) are provided by outpatient pharmacy at Hospital Tangkak. After a considerable rise in VAS utilisation, the percentage of prescriptions served within 30 minutes improved from 83.2% to 90.3%, according to a study conducted at Hospital Queen Elizabeth in Sabah (15). If there is a pharmaceutical care concern with the prescription, such as an incomplete prescription, an inappropriate regimen, or medications that are not available, the pharmacists will intervene after consulting with the doctor. This extended waiting time resulting from the consultation with doctor could be one of the factors contributing to some respondents' displeasure (2%) with the waiting time.

The median perception score did differ significantly ($p=0.013$) based on the age of the respondents. Respondents with ages ranged 31-45 years old, 46-60 years old and 61-75 years old provide the equal highest score (42 out of 50), whereas age ranged 18-30 years old provided the lowest score (40 out of 50). However, this outcome was different from Qatar's study where the median perception score is not associated with age, but associated with employment status and the number of visits to pharmacy (5). Due to inadequate evidence to support our findings, further study on identifying factors has been encouraged.

For our investigation, there were certain limitations. The study was undertaken during the COVID-19 epidemic, which resulted in a paucity of the sample, making the results insignificant. In addition, this study was conducted in a small district hospital in Johor only. As a result, the respondents' impressions of pharmacists' roles may not represent the general public's perceptions of pharmacists in Malaysia's district hospitals. More than 85% of our responders have a secondary or higher degree of education. Due to the

lack of respondents with a low level of education, we were unable to examine their perspectives and satisfactions, and hence could not compare them across education levels.

For future studies, it is recommended that larger samples should be recruited from multiple district hospitals in Malaysia to represent the general public's perspectives and satisfaction. Pharmacists collaborate with other healthcare practitioners to deliver high-quality services for the public's health, and their contributions to the healthcare system cannot be overstated. A study can be undertaken to find out how the other healthcare providers feel about pharmacists and how satisfied they are with them. As a result, it is possible to identify pharmacists' limitations and improve their services.

Conclusion

This study yielded some information about the public's perceptions of pharmacists' roles and satisfaction with the services given by pharmacists at OPD HTGK. Overall, the public had a positive impression of pharmacists' roles, with the majority of people seeing pharmacists as drug experts and agreeing that pharmacists' knowledge of pharmaceuticals is superior to that of other healthcare providers. The public reacted positively to the pharmacists' services, with the majority of the public rating 'satisfied' or 'very satisfied' for all of the items accessed. As a result, effective pharmacist services should be maintained, and limitations should be addressed in order to preserve and improve public satisfaction.

Acknowledgement

The authors would like to thank the Director General of Health Malaysia for his permission to publish this paper and Mr. Muhamad Nazir Akmal bin Rahman for his excellent guidance, unwavering support, and patience throughout this research. The authors would like to express gratitude to all respondents. This study would not have been possible without their generous assistance and support. They would also like to express their gratitude to their relatives. It would be impossible to complete this study without their unwavering support and encouragement.

Conflict of Interest Statement

The authors declared no potential conflict of interest. This study was not funded by any organisation.

References

1. Sinha H. Role of pharmacists in retailing of drugs. *Journal of Advanced Pharmaceutical Technology & Research* [Internet]. 2014 [cited 12 March 2022];5(3):107. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4131399/>
2. Rayes I, Hassali M, Abduelkarem A. A qualitative study exploring public perceptions on the role of community pharmacists in Dubai. *Pharmacy Practice (Internet)* [Internet]. 2014 [cited 12 March 2022];12(1):00-00. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3955864/>
3. Saw P, Nissen L, Freeman C, Wong P, Mak V. Health care consumers' perspectives on pharmacist integration into private general practitioner clinics in Malaysia: a qualitative study. *Patient Preference and Adherence* [Internet]. 2015 [cited 12 March 2022];467. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4372008/>
4. Cheah M. Public Perception of the Role of Pharmacists and Willingness to Pay for Pharmacist-provided Dispensing Services: A Cross-sectional Pilot Study in the State of Sabah, Malaysia. *Malaysian Journal of Pharmaceutical Sciences* [Internet]. 2018 [cited 12 March 2022];16(1):1-21. Available from: http://web.usm.my/mjps/mjps16012018/mjps16012018_1.pdf
5. El Hajj M, Mansoor H, El Salem S. Public's attitudes towards community pharmacy in Qatar: a pilot study. *Patient Preference and Adherence* [Internet]. 2011 [cited 12 March 2022];5(PMC3176180):405–422. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3176180/>
6. Hasan S, Sulieman H, Stewart K, Chapman C, Hasan M, Kong D. Assessing patient satisfaction with community pharmacy in the UAE using a newly-validated tool. *Research in Social and Administrative Pharmacy* [Internet]. 2013 [cited 12 March 2022];9(6):841-850. Available from: <https://pubmed.ncbi.nlm.nih.gov/23116921/>
7. Jose J, Al Shukili M, Jimmy B. Public's perception and satisfaction on the roles and services provided by pharmacists – Cross sectional survey in Sultanate of Oman. *Saudi Pharmaceutical Journal* [Internet]. 2015 [cited 12 March 2022];23(6):635-641. Available from: <https://www.sciencedirect.com/science/article/pii/S1319016415000419>

8. Shafie A, Hassali M, Azhar S, See O. Separation of prescribing and dispensing in Malaysia: A summary of arguments. *Research in Social and Administrative Pharmacy* [Internet]. 2012 [cited 12 March 2022];8(3):258-262. Available from: <https://pubmed.ncbi.nlm.nih.gov/21824823/>
9. Hadafi M. MyUBAT - Privasi [Internet]. *Pharmacy.gov.my*. 2020 [cited 12 March 2022]. Available from: <https://www.pharmacy.gov.my/myubat/privasi.html>
10. Eades C, Ferguson J, O'Carroll R. Public health in community pharmacy: A systematic review of pharmacist and consumer views. *BMC Public Health* [Internet]. 2011 [cited 12 March 2022];11(1). Available from: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-11-582>
11. Majchrowska A, Bogusz R, Nowakowska L, Pawlikowski J, Piątkowski W, Wiechetek M. Public Perception of the Range of Roles Played by Professional Pharmacists. *International Journal of Environmental Research and Public Health* [Internet]. 2019 [cited 12 March 2022];16(15):2787. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6695868/>
12. Gidman W, Ward P, McGregor L. Understanding public trust in services provided by community pharmacists relative to those provided by general practitioners: a qualitative study. *BMJ Open* [Internet]. 2012 [cited 12 March 2022];2(3):e000939. Available from: <https://bmjopen.bmj.com/content/2/3/e000939.short>
13. Portal Rasmi Kementerian Kesihatan Malaysia [Internet]. *Moh.gov.my*. 2020 [cited 12 March 2022]. Available from: <https://www.moh.gov.my/index.php/pages/view/1604>
14. Value Added Service Of Dispensing Medicines - PORTAL MyHEALTH [Internet]. PORTAL MyHEALTH. 2022 [cited 12 March 2022]. Available from: <http://www.myhealth.gov.my/en/value-added-service-of-dispensing-medicines/>
15. Loh B, Wah K, Teo C, Khairuddin N, Fairuz F, Liew J. Impact of value added services on patient waiting time at the ambulatory pharmacy Queen Elizabeth Hospital. *Pharmacy Practice* [Internet]. 2017 [cited 12 March 2022];15(1):846-846. Available from: https://www.researchgate.net/publication/315719854_Impact_of_value_added_services_on_patient_waiting_time_at_the_ambulatory_pharmacy_Queen_Elizabeth_Hospital

A Qualitative Exploration of Facilitators and Barriers towards Refill Prescription via Pharmacy Appointment Card System (PACS) among Outpatients in Hospital Tuanku Ampuan Najihah (HTAN)

Nishakaran Pushpa Rajah¹, Nurul Salwa Saleh¹, Khairul Hazriq Mohd Khomsar¹, Nurul Liyana Muhamad Rizal², Ummul Syuhaida Mohd Nor³

¹ Hospital Tuanku Ampuan Najihah, Negeri Sembilan, Ministry of Health Malaysia

² Klinik Kesihatan Kuarters Kuala Lumpur International Airport (KLIA), Negeri Sembilan, Ministry of Health Malaysia

³ Klinik Kesihatan Johol, Negeri Sembilan, Ministry of Health Malaysia

Abstract

Introduction: Value-added Services (VAS) were adopted and implemented by the Ministry of Health Malaysia facilities to shorten medication refills waiting time in the pharmacies. The Pharmacy Appointment Card System (PACS) was one of the VAS offered by Hospital Tuanku Ampuan Najihah (HTAN). Understanding patient's perception towards PACS can help to further optimise the service.

Objective: This study aimed to explore the facilitators and barriers of outpatients towards utilising the PACS service for prescription refills.

Method: Face to face, semi-structured interviews with 18 outpatients who were using PACS were conducted. Respondents were asked about their views, perceived advantages and disadvantages of PACS, and facilitators and barriers in utilising PACS. Thematic content analysis was used to identify insights from the gathered data.

Results: Identified themes included 'Attitude towards using PACS', 'Knowledge and awareness' and 'Expectations'. Although there were room for improvement in terms of efficiency, respondents would still like to continue using PACS, citing it as being age-friendly, convenient and stress reducing. Respondents with logistical issues claimed that logistics remained a barrier to prescription refills, despite being subscribed to PACS. Low level of awareness on the service and lack of explanation could have resulted in patients' confusion in the prescription refill process using PACS. Expectations on PACS included the allocation of a dedicated PACS counter, a personal reminder message and the presence of highly trained staffs.

Conclusion: Respondents were satisfied with PACS. Improvements in efficiency and service awareness could improve the adoption of PACS among patients.

Keywords: value-added services, pharmacy appointment card, outpatient pharmacy, facilitators, barriers

NMRR ID: NMRR-20-1113-54408

Corresponding Author: Nishakaran Pushpa Rajah

Pharmacy Department, Hospital Tuanku Ampuan Najihah, Jalan Melang, Negeri Sembilan.

Email: nishakaran50@gmail.com

Introduction

Value added services (VAS) refers to services provided as supplemental services that support core product of an organization. VAS for medicines dispensing have been implemented in the some countries such as Taiwan, Australia and the United States of America. These include drive-through pharmacy service, one-stop-shop, forward dispensing, e-prescribing, chronic illness card, prescription reminder systems, pick up and home delivery services and mail order pharmacy services (1-6). These services have been proven to greatly enhance patient's satisfaction by improving waiting time, total cost, and the efficiency of service.

In 2011, Ministry of Health Malaysia (MOH) aimed to solve medication non-compliance and wastage problems by implementing a policy in which the prescriptions would be refilled by monthly basis (7). However, this had resulted in the increased patient load and waiting time in the outpatient pharmacies. Since improving patient's waiting time affect their satisfaction of the service, patient's waiting time has

become a measurable performance indicator under MOH in which at least 95% of prescriptions must be filled and dispensed within 30 minutes (8). To reduce the waiting lines in pharmacy, the Pharmaceutical Services Programme (PSP), MOH introduced various pharmacy value added services such as Drive Through Pharmacy, Medicines by Post (UMP), Pharmacy Appointment of pharmacist irreplaceable in healthcare. The public's satisfaction with the pharmacists' services is greatly affected by the environment they are served. There are multifactor that might affect the satisfaction towards the pharmacists' Card System (PACS), Locker4U, SMS and Collect (S&C), Email and Collect (E&C), Telephone and Collect (T&C), and Fax and Collect (F&C) (7-10).

In Hospital Tuanku Ampuan Najihah (HTAN) in the state of Negeri Sembilan, Malaysia, only PACS and UMP services are offered by its Pharmacy Department. The number of HTAN PACS users doubled from 2017 to 2019. In 2019, these users represent 70% of the total appointment system users in HTAN. Despite the availability of numerous studies detailing patient's satisfaction on VAS (1,7-8), there were limited studies regarding patient's perception specifically towards PACS. Since PACS was a popular VAS choice among patients refilling their prescriptions in HTAN, understanding patients' perceptions towards the service was important to provide crucial information to further optimise the delivery of PACS. Therefore, this study aimed to explore the facilitators and barriers of outpatients towards utilising the PACS service for prescription refills.

Method

This is a qualitative study designed to gain an understanding of the facilitators and barriers to refilling prescription via PACS among the outpatients in HTAN. A qualitative study designed was used as some information could be hidden or could not have been quantitatively discovered. This study was conducted from December 2019 to October 2020, in which data collection were from July 2020 until September 2020.

Malaysians, or their representatives, who refill prescription via PACS were approached for the study. Participants who have language barriers were excluded. Purposive sampling was chosen to identify participants with chronic diseases since this sampling method enables the researcher to gather precise and better insights out of a small specific interest group. The face-to-face interviews were conducted in the counselling room of HTAN's Outpatient Pharmacy. All interviewees were briefed about the study before the interviews and debriefed at the end of the session. Written consent was obtained from the respondents prior to the interview.

A semi-structured interview guide (Appendix) was adapted from a similar study conducted in Hawaii and Northern California (11). Probing questions were asked in between the conversations to clarify the meaning of responses and to gain further insights of the topic being discussed. The interview questions asked respondents about their views, perceived advantages and disadvantages of PACS compared to traditional counter service, and the facilitators and barriers towards utilising PACS. The guide was first piloted with two patients and then modifications were made to improve the clarity and length of the questions. The pilot data analysis showed that the interview questions were sufficient and appropriately phrased to answer research questions and to minimise validity threats. The data collected during pilot interviews were not included in the final data analysis.

The duration of interviews varied between 30 and 60 minutes. The process of selection of candidates and interview were continued until data saturation. Data saturation was achieved at the 17th interview, but the interviews were carried on until the 18th interview to ensure there were no emergence of new themes. All interviews were audio-recorded and transcribed verbatim by two researchers (NLMR and USMN) who were both fluent in English and Malay languages. They are the native speakers of the Malay language and have been proficiently using the English language for at least 7 years. Researchers minimise bias by taking notes about participant's comments and their own thoughts during the interview. Besides writing memos as soon as the interview ends, researchers also develop and constantly edit their subjectivity statement to engage reflexivity.

The rigor of the analysis was maintained by another two researchers, who checked all transcriptions against the original voice recordings. Data were coded, analysed, checked and clarified for data analysis and representation. Emerging themes served as important variables to differentiate facilitators and barriers towards PACS. Sticky notes were used for thematic analysis. Discrepancies were discussed, and a final decision was made after mutual agreement among the researchers.

The study was approved by the MOH Medical Research and Ethics Committee and registered with the National Medical Research Registry (NMRR) with the registration number NMRR-20-1113-54408.

Results

A total of 18 outpatients were recruited in this study. Table 1 summarised their demographic details. During the analysis of the responses, three major themes were identified. These include 'Attitude towards using PACS', 'Knowledge and awareness' and 'Expectations'. Figure 1 showed the Theory of Planned Behaviour (TPB) framework, which illustrated the emerged themes.

Table 1: Demographic details of respondents

Variables	n	(%)
Gender		
Male	13	72.2
Female	5	27.8
Race		
Malay	11	61.1
Chinese	5	27.8
Indian	2	11.1

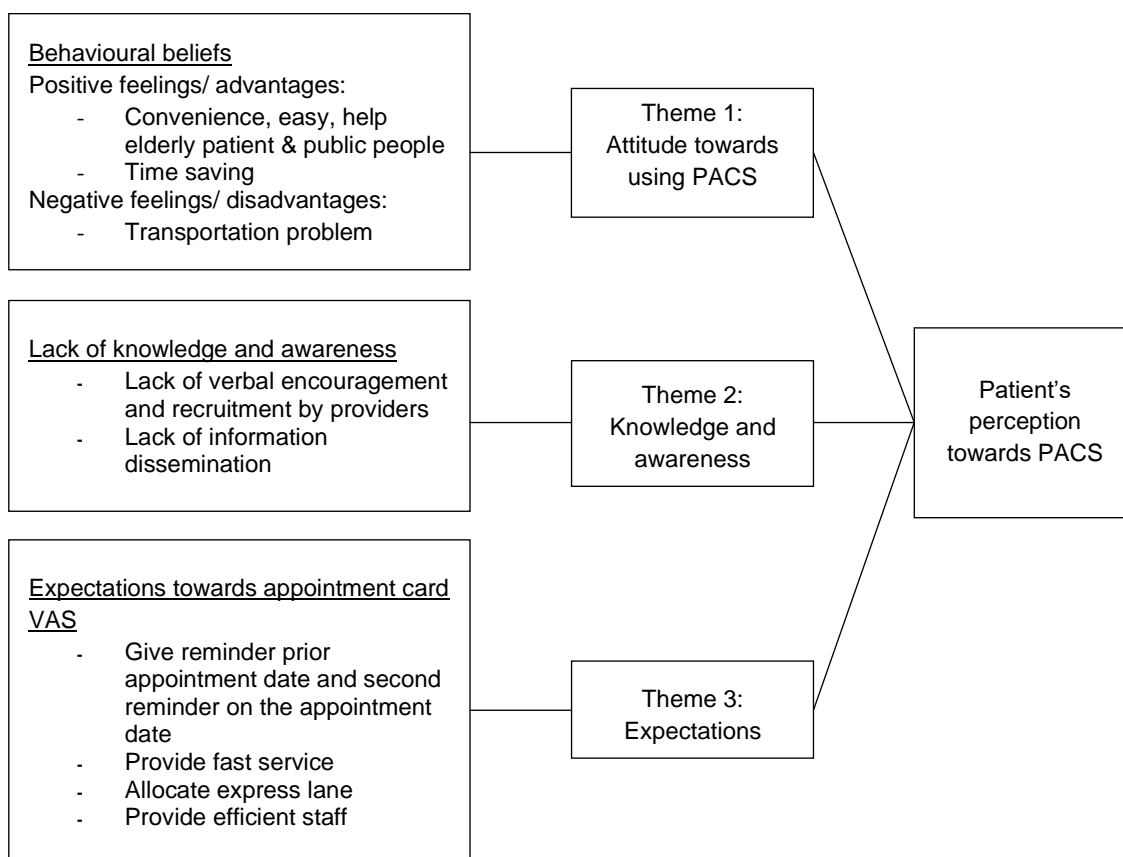


Figure 1: The extended theory of planned behaviour framework to understand patient's perception towards Pharmacy Appointment Card System (PACS)

Theme 1: Attitude towards using PACS

Convenience, age-friendly and time saving were the most common advantages that encouraged respondents to use PACS.

"Firstly...the advantage is...what we called it? Save time... from my observation...Secondly in term of the staffs, it ease the burden of the staffs because the medications.... they already prepared earlier." (R7)

"Because... when we come to pharmacy to collect the medications... since the medications had been prepared, so we don't have to wait for a longer period." (R11)

"Let's say we have that appointment card VAS, it will be easier. Such as, when we want to refill the medications, the date is there for us to refer." (R12)

"From my understanding, when we have the appointment card VAS, meaning that....the filling process is faster. It means that, when we come to collect the medications, they already prepared compared before using this service." (R17)

In addition, Respondent 2 explained that PACS were allocated for geriatrics and able to shorten waiting time for them while Respondent 16 was really appreciative of this service and told the interviewer that she believed that PACS was able to reduce patient's stress due to long waiting period.

Nevertheless, most of the respondents complained that they were not able to collect their medication refills according to the given dates. This was due to logistical issues as many of them did not have their own transport to go to collect their monthly medications.

"Yes, sometimes I did collect the medications later than the appointment date. I don't have a car to go to hospital... I go with my friend..." (R6)

Theme 2: Knowledge and awareness

Respondents were asked to describe their understanding and general views about PACS monthly medication refills. Some respondents claim that they did not understand this service. This decreased their compliance towards the timely medication collection. In addition, the lack of verbal encouragement and recruitment by the pharmacy staffs were highlighted by the respondents. When pharmacy staffs did not give a clear explanation about PACS, the patients may not understand what benefits they could gain from this service.

"Yes... the pharmacist gave it, simply gave the card to me." (R11)

"Yes... the staff said, this....need to keep it and when refill the medications next month can use this card... I don't know the advantages of this card...the staff did not tell me anything." (R8)

Besides that, the lack of communication between household members could reduce the appreciation towards PACS. This can be seen as some of the respondents claimed that they did not know anything about the service because they were not the ones who received the appointment cards. The respondents may not be the one who were physically present when the other family members received the appointment cards and had not told them about it. They just brought the prescription which had been attached with the appointment card without knowing it's function. The lack of knowledge and awareness about the benefits, procedures and type of VAS services could negatively affect the adoption outcome.

"My husband receive it at the first place.... I don't know anything about the card. (R16)

I don't know anything. My husband was with our child during receiving that appointment card VAS....suddenly I found that card." (R18)

A few respondents claimed that, it was their first experience collecting the medications using PACS. Due to the lack of explanation regarding the procedures, they were confused on how PACS was implemented and how to refer to the appointment date for drugs collection in the card.

“Like today, I collected the medications later than the actual appointment date because it was my first time using this card, I felt like quite awkward using it... other than because of forgot the date, busy of working cause me claimed my medications late.” (R18)

Theme 3: Expectations

There were several respondents who shared their opinions on possible service improvements. For example, the allocation of a sole express counter and lane dedicated for PACS patients only.

“If possible, please allocate an express lane.... Which give medications for express number only.” (R15)

Several respondents expected a reminder message because they always forget the next date for prescription refills. They cite age, busy with work and many other appointments as reasons for this request. Some of the respondents claimed that they have received a medication refill reminder in the past, but no longer received any lately. They hope that the next collection date reminder will be re-implemented.

“This service needs to be improved. Last time, about three days before the appointment date to collect the medications, the date was written on the mobile phone....they sent a message regarding the date to collect the medications. Nowadays...nowadays, they don't send the message anymore.” (R12)

“Yes...I only have problem regarding the date. Sometimes, they did not send the message, therefore I forgot to claim my medications. Because I have a lot of appointments... yes... I have a lot in my mind. Because, in a month, twice or thrice I need to send my child for his appointment, then my appointment, next my child's appointment back..... Thus, sometimes I forgot to collect my monthly medications since I still have them.... if the medications finished, then it triggered me to refer the card, then I noticed the date to collect the medications already passed.” (R13)

“The thing that can be improved is using SMS to remind the next collection date of monthly medications.... But need to use my phone number since my husband's phone number is rarely used.” (R18)

Suggested improvements toward this service also involved pharmacy staffs. Respondent 14 suggested that the screening counter staff need to be aware of express numbers and normal queue numbers should not be given instead. Some respondents expected to have more efficient pharmacy staffs as Respondent 1 complained that there was one time that the pharmacist misplaced his prescription and that situation consumed his time.

“I am telling the truth, there was one time, I already took this prescription slip and the pharmacist can misplace the slip. Then, I showed him my queue number and he went to find my prescription slip. I asked him how come it be like that.” (R1)

“I want to complaint that your service should be faster, your staffs... need to be monitored... this service looks like normal service.” (R10)

Medication refills during the peak hours can take a very long time despite having an appointment card. Many respondents expressed disappointment at this as service speed was improved only when there are less queue in the waiting area. Hence, Respondent 2 felt that the objective of PACS to shorten waiting time was not successful.

“Like that brother said... it called as express service but it is just the same. Hmm...sometimes need to wait longer... Either express or normal service, they are same ... still need to wait longer...” (R1)

“It was about half an hour.... Urm... the longest waiting time, I thought about an hour.” (R10)

“Yes....till today, I felt the same. The waiting time still the same even after receiving the card....it is not too long like half an hour.” (R13)

“Yes it is...sometimes, I got the medications late sometimes I got them faster. It depends on the quantity of patients at that time. If there are many patients, I got the medications late, if there are less patients, it will be faster.” (R14)

Although expressing dissatisfaction with the quality of PACS service, most respondents would like to continue using the appointment card. This was due to the chance that they would be able to get their medications faster. Respondents were hopeful for an improved system for the benefit of all appointment card holders.

Discussion

The themes attitude, knowledge and awareness and expectation emerged when this study tried to explore the facilitators and barriers towards using the Appointment Card VAS namely PACS. The perceived advantages of using PACS were easy, quick and elderly friendly. Similar results were shared by a group in Malaysia and Jordan, where they reported that VAS was expected to accelerate medicine collection time, alleviate queuing trouble, and ease the patients' experience as well improving patient satisfaction (1,12-14). Some of these studies also agreed that VAS provided a flexible way for the senior citizens to refill their prescriptions (12,14). A study conducted in Abu Dhabi demonstrated a decrease in the average waiting time for patients when a fast track dispensing window was implemented (15). However, it was not feasible to directly compare the extent of improvement in waiting time between these studies due to the variations in dispensing workflow and study methods. Furthermore, the parameters used to measure patient waiting time differed among other studies. Nonetheless, our study findings provide valuable insights into how the introduction of VAS influenced patient waiting time for medication dispensing in our hospital. Although a specific lane currently exists for appointment card holders, due to the extremely high numbers of elderly patient, the benefit of quick refills has not been realised. Reengineering the prescription-filling process, as such mentioned by Chou et al. may reduce these patient's waiting time (16).

The disadvantages of using PACS perceived by interviewees are negative feelings towards using PACS. The lack of awareness and knowledge regarding the benefits and implementation of VAS impeded adoption. However, agreeing with Chou et al., we concur that, awareness is not the only factor that facilitates or hinders adoption (16). Shah et al. found a relationship between transportation and accessibility and the quality of health services (17). Patients living in rural areas and villages often face challenges and barriers when it comes to accessing transportation to reach the nearest healthcare centres. Our study also found that as some patients claimed that transportation was an issue since they do not own private vehicles to fetch their monthly medications. Elderly with mobility issues tend to prefer staying at home due to the increased risk of fall and injury when going out and walking alone in public. Lack of awareness or knowledge negatively affected the perception because patients would feel doubtful and lack of confidence about the new systems (18). Since many respondents did not know about the existence of VAS, the current recruitment and promotional activities should be reviewed to accurately target the expected population.

Expectations towards VAS including receiving reminders prior to medicine collection appointment dates, provide faster service, allocation of express lane, and availability of efficient staffs. Insufficient staffing of pharmacists can lead to a backlog of prescriptions awaiting dispensed (3). While it may seem intuitive that having more dispensing counters would reduce patient waiting time, a study found that an increased number of dispensing counters was actually associated with longer patient waiting time (7). This could be due to the interior layout of the outpatient pharmacy where pharmacy staff had to travel greater distances to dispense prescriptions when there were more operating counters. Additionally, a higher number of dispensing counters resulted in the dispersion of manpower across the outpatient pharmacy causing the pharmacists to spend more time on non-productive activities. Patient waiting time was also influenced by the volume of prescriptions and refill requests. The workload increased without a corresponding increase in pharmacy staff causing the outpatient pharmacy to exceed its capacity. To address this bottleneck, further research is needed to determine the ideal ratio of pharmacy technicians to prescriptions. Failure to address this issue will compromise patient care and contribute to overcrowding.

Self-report data may be susceptible to bias. However, it was acknowledged that this qualitative study, being exploratory in nature, served as an effective means to gather preliminary information. There is a possibility of selection bias since those who chose to refill their medications through PACS and agreed to participate in this study might have been more inclined to be adherent to their medications. In addition, those who did not attend to their appointment were not captured in this study. Recall bias could also undermine the quality of the data. Researcher bias might occur as there are two people conducting the interviews. Moreover, behavioural change does not always be determined by predictors of intention and a comprehensive large-scale study is required to validate these findings. This aspect also serves as a potential limitation of the current study.

Conclusion

The themes of attitude, knowledge and awareness, and expectations dominated patient's perception towards utilising PACS for medication refills. Although respondents were generally satisfied with PACS, improvements in efficiency and service awareness would further boost the adoption rate and satisfaction. These findings may serve as crucial variables of interest in future studies. Guideline to further improve patient-oriented services can be developed using the themes observed in this study.

Acknowledgement

The authors would like to thank the Director General of Health Malaysia for his permission to publish this paper. The authors would also like to express gratitude to all respondents for their time and contributions.

Conflict of Interest statement

No potential conflicts of interest with reference to the authorship, research and / or publication of this article was declared by the authors. This study received no funding.

References

1. Lin YF, Lin YM, Sheng LH, Chien HY, Chang TJ, Zheng CM, Lu HP. First drive-through pharmacy services in Taiwan. *J Chin Med Assoc.* 2013;76(1):37–41. doi: 10.1016/j.jcma.2012.10.001.
2. Bahadori M, Mohammadnejhad SM, Ravangard R, Teymourzadeh E. Using queuing theory and simulation model to optimize hospital pharmacy performance. *Iran Red Crescent Med J.* 2014;16(3):e16807. doi: 10.5812/ircmj.
3. Tan WS, Chua SL, Yong KW, Wu TS. Impact of pharmacy automation on patient waiting time: an application of computer simulation. *Ann Acad Med Singapore.* 2009;38(6):501–507.
4. Choon OH, Leng CW, Ai WJ, Chai TM. Evaluation of manpower scheduling strategies at outpatient pharmacy with discrete-event simulation. *OR Insight.* 2013;26(1):71–84. doi: 10.1057/ori.2012.9.
5. Fernando TJ, Nguyen DD, Baraff LJ. Effect of electronically delivered prescriptions on compliance and pharmacy wait time among emergency department patients. *Acad Emerg Med.* 2012;19(1):102–105. doi: 10.1111/j.1553-2712.2011.01249.x.
6. Pierce R, Rogers E, Sharp M, Musulin M. Outpatient pharmacy redesign to improve work flow, waiting time, and patient satisfaction. *Am J Hosp Pharm.* 1990;47(2):351–356.
7. Loh BC, Wah KF, Teo CA, Khairuddin NM, Fairuz FB, Liew JE. Impact of value added services on patient waiting time at the ambulatory pharmacy Queen Elizabeth Hospital. *Pharmacy Practice (Granada).* 2017 Mar;15(1).
8. Lau BT, Nurul-Nadiah-Auni AR, Ng SY, Wong SN. Satisfaction of patients receiving value added-services compared to traditional counter service for prescription refills in Malaysia. *Pharmacy Practice (Granada).* 2018 Mar;16(1).
9. Tan CL, Hassali MA, Saleem F, Shafie AA, Aljadhey H, Gan VB. Development, test-retest reliability and validity of the Pharmacy Value-Added Services Questionnaire (PVASQ). *Pharmacy practice.* 2015 Apr;13(3).
10. Christine LHT, Mohamed AH, Fahad S, Asrul AS, Hisham A, Vincent BYG. Building intentions with the theory of planned behaviour: a qualitative assessment of salient beliefs about pharmacy value added services in Malaysia, 2015 Aug.
11. Schmittiel, J.A., Marshall, C.J., Wiley, D. et al. Opportunities to encourage mail order pharmacy delivery service use for diabetes prescriptions: a qualitative study. *BMC Health Serv Res* 19, 422 (2019).
12. Hoay, Christine Tan & Hassali, Mohamed & Saleem, Fahad & Shafie, Asrul & Aljadhey, Hisham & Gan, Buntara. (2015). Building intentions with the theory of planned behaviour: A qualitative assessment of

- salient beliefs about pharmacy value added services in Malaysia. Health expectations : an international journal of public participation in health care and health policy. 19. 10.1111/hex.12416.
13. Che Noriah, O., Mohamad Izani, O., Roza, D., Suraya, S., Nordini, H., Roz Azinur, C., 2010. Customer's satisfaction on the implementation of drive-through pharmacy in Penang General Hospital, Penang, Malaysia—pilot study. *Eur. J. Pub. Health* 20, 245–287.
 14. Rana Abu Farha, Khawla Abu Hammour, Eman Alefishat, Hiba Alsaheed, Sajida Alma'aiah, Drive-thru pharmacy service: Assessments of awareness, perception and barriers among pharmacists in Jordan, *Saudi Pharmaceutical Journal*, Volume 25, Issue 8, 2017, Pages 1231-1236, ISSN 1319-0164
 15. Shaat M. Improving pharmacy dispensing performance through time management. [Masters thesis] Royal College of Surgeons in Ireland, 2011.
 16. Chou YC, Chen BY, Tang YY, Qiu ZJ, Wu MF, Wang SC, Lin HS, Chuang WC. Prescription-filling process reengineering of an outpatient pharmacy. *J Med Syst.* 2012;36(2):893-902.
 17. Shah, R., Rehfuess, E. A., Paudel, D., Maskey, M. K., & Delius, M. (2018). Barriers and facilitators to institutional delivery in rural areas of Chitwan district, Nepal: a qualitative study. *Reproductive health*, 15(1), 110.
 18. Francis JJ, Eccles MP, Johnston M et al. Constructing questionnaires based on the theory of planned behaviour. *A Manual for Health Services Researchers*, 2004.

Appendix

Interview Guide

1. How did you know about appointment card VAS? What do you understand about appointment card VAS?
Bagaimanakah anda tahu tentang servis tambahan kad temu janji ini? Apakah yang anda faham mengenai servis ini?
2. How would you describe your recent experience refilling a prescription via this appointment card VAS? Did you encounter any problem by using this service?
Bolehkah anda kongsikan pengalaman terkini menggunakan servis ini? Pernahkah anda menghadapi sebarang masalah menggunakan servis ini?
3. What are the advantages and disadvantages using appointment card VAS?
Apakah kelebihan dan kekurangan servis tambahan kad temu janji ini?
4. Have you ever or late to take appointment card VAS medicines? If YES, can you share with us the reasons?
Pernahkah anda tidak atau terlambat mengambil ubat melalui servis ini? Jika YA, bolehkah anda kongsikan sebab-sebabnya?
5. Once a year VAS prescription slip expires, what would be the reason(s) for renewing of or what would be the reason(s) not to renew?
Setelah preskripsi VAS anda telah tamat tempoh, apakah sebab-sebab untuk anda memperbahurui-nya atau sebaliknya?
6. Do you use both appointment card VAS and the normal service? Why do you use both services or a part of them?
Adakah anda menggunakan kedua-dua servis tambahan kad temu janji ini dan pengambilan ubat di kaunter secara biasa? Boleh kongsikan mengapa menggunakan kedua-duanya sekali atau hanya salah satu?
7. Have you encounter any difficulties in refilling a prescription at the normal counter services? Can you share the problem(s)?
Pernahkah anda mengalami sebarang masalah semasa mengambil ubat di kaunter secara biasa? Boleh kongsikan masalah itu?
8. Overall, on a scale from 1 to 10 – 1 being “Very unsatisfactory” and 10 being “Very satisfactory”, can you please rate this appointment card VAS service according to the level of convenience that you feel?
Secara keseluruhannya, menggunakan skala 1 hingga 10, 1 bermaksud “Sangat tidak memuaskan” dan 10 bermaksud “sangat memuaskan”, bolehkah anda menilai servis ini mengikut tahap kepuasan anda?
9. How do you think appointment card VAS service can be further improved?
Bagaimanakah servis ini dapat ditingkatkan?
10. How do you think the effect of appointment card VAS service on your medication compliance?
Bagaimana servis ini mengimpak tahap kepatuhan anda terhadap ubat?

11. Any additional comments?
Ada apa-apa komen tambahan?

eISSN 2637-1332



9 772637 133000