Pharmacy Value-Added Services: Experience in a Malaysian Public Hospital

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ABSTRACT

The Pharmacy value-added services (PVAS) has been implemented in Malaysian public hospitals to facilitate the collection of follow-up medications. In specific, PVAS include Integrated Drug Dispensing System, Medicine by Post, Drive-Through Pharmacy, and many more. While past studies examined the satisfaction towards PVAS and its impact on patients' waiting time, little explored the awareness and the experience of patients towards each type of PVAS. This study aims to explore the patient's awareness on PVAS, adoption of PVAS, their satisfaction towards PVAS, and willingness to adopt PVAS. This was a cross-sectional study conducted in January 2020. We invited the eligible patients or their family members to participate in the study. Respondents recruited at the Outpatient Pharmacy Department of Miri Hospital using convenient sampling. A questionnaire in the Malay language was developed and content validated to gather information on the demographic data, awareness on PVAS, adoption of PVAS, satisfaction towards PVAS, and willingness to adopt PVAS. A list of PVAS was included for the respondents to select the types they were aware of and used before. Results were presented as frequencies, percentages, mean and standard deviation. A total of 398 respondents participated in the study. Majority of the respondents (70.1%) were aware that PVAS offered in Miri Hospital. However, about a third of the respondents (31.4%) had experience using PVAS. The most commonly used PVAS was Appointment Card Dispensing System (49.6%) and that with the least usage was Local Partial Medication Supply Service (2.4%). The Drive-Through Pharmacy has the greatest satisfaction score, 4.40 (SD=0.70), whereas Call-and-Collect Service was the least satisfied, 3.88 (SD=0.91). Majority of the respondents (86.2%), specifically 95.8% of the experienced PVAS user and 90.1% of inexperienced group, were willing to adopt PVAS to collect their follow-up medications. The Drive-thru Pharmacy, which has the greatest awareness and satisfaction yet low usage, should be further promoted for greater adoption. Besides, such PVAS should be expanded to other healthcare facilities.

INTRODUCTION

Pharmacy value-added services (PVAS) is a nationwide, government-funded initiative introduced by the Pharmaceutical Services Division (PSD), Ministry of Health Malaysia (MOH) since 2003 [1]. In the Malaysian context, PVAS defined as a range of innovative and creative services provided by the pharmacy to optimise patient-oriented pharmaceutical care, through ensuring the continuity of medicines supply, reducing waiting time and travelling cost [1]. According to the National Survey on the Use of Medicines (NSUM) 2015, 30.3% of

Malaysians have chronic diseases that necessitate long term medication use [2]. In the government healthcare facilities, a policy under the Quality Use of Medicines (QUM) pharmacy practice guideline has been in place since 2011, where medications for prescriptions longer than one month will only be supplied monthly [3].

The successful implementation of the policy allowed monitoring of patient compliance, untoward effects of medications, reducing drug wastage and the risk of medication error caused by misuse of excessive medication supply by unintended individuals. However, these advantages come at the

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expense of increased patient load and waiting time at the outpatient pharmacy. Furthermore, transportation issues and the cost incurred from a repetitive visit to the outpatient pharmacy for monthly medication supply are factors that affect patient satisfaction [4]. In a study conducted in Taiwan showed that difficulty in finding a parking in the hospital was one of the reasons cited to failure to regular medicine refill [5]. Therefore, the introduction of PVAS aims to improve the healthcare accessibility and dispensing system by reducing waiting time, improving patient convenience and satisfaction, and ensuring continuity of medication supply.

In Malaysia, PVAS refers to a group of innovative services provided by over 500 government healthcare facilities [1]. Larger facilities may provide more types of PVAS whereas smaller facilities have at least one to two types of these services [1]. In this context, follow-up prescriptions are also known as refill prescriptions or partial supply prescriptions, and the terms used interchangeably. PVAS programmes include Integrated Drug Dispensing System (SPUB), Medicine by Post (UMP), Drive-Through Pharmacy, Appointment Card Dispensing System, Call-and-Collect Service, SMS-and-Collect Service, Fax-and-Collect Service, Email-and-Collect Service, Collect-Later Service, Local Partial Medication Supply Service (PPUSS) and Locker4U (1, 4). The following paragraph illustrates some of the most common types of PVAS.

SPUB enables medicines collection of patients' follow-up supply at any MOH health facility listed under the SPUB Directory throughout Malaysia. With the service, patients are able to select the facility, which is convenient and preferred for their medication collection [6]. UMP service engages the national courier service, Poslaju to deliver the medicine to the patients' preferred location with pre-determined postal charges [6]. Conversely, patients who prefer to self-collect their medicine, Drive-Through Pharmacy is the convenient alternative. The conventional waiting process at the pharmacy counters skipped and dispensing of the prepacked medication typically takes place at the dedicated Drive-Through counter or kiosk which does not require patients to exit their vehicles [1][6]. Both UMP and Drive-Through Pharmacy could help to ease the long waiting time and parking space constraints.

Other PVAS options include Call-and-Collect Service, SMS-and-Collect Service, Fax-and-Collect Service and Email-and-Collect Service, which require the patients' notification, for instance via making a phone call or sending a SMS, to inform pharmacy of the expected collection date, whereas the Collect-Later Service involves pre-notifying the pharmacy over the counter. In contrast, for Appointment Card Dispensing System, the pharmacy determines the collection date and prepares the refill medicine before the date. Meanwhile, Local Partial Medication Supply Service and Locker4U deliver the prepared medicine to a predetermined collection centre or place the

medicine in a locker, and allow the patients to collect at their convenience.

The Pharmaceutical Services Programme has actively organised campaigns to introduce and promote the adoption of PVAS. The key performance indicator for government facilities is 20% or more of the follow-up prescriptions dispensed via PVAS [7]. Despite the large monetary investment and human resources involvement, the adoption rate of PVAS was considerably low at its inception [1]. In 2013, PVAS employed in merely approximately 10% of 10 million follow-up prescriptions in the government healthcare facilities [1]. In the subsequent year, the number of prescriptions dispensed via PVAS has increased to 1.2 million, but it was still far from reaching the target (8). Besides the usual promotional activities, the government organised competitions and giving special awards to encourage active implementation among the facilities [9]. With continuous effort and promotion, PSD documented nearly 4 million follow-up prescriptions dispensed via PVAS in the country, amounting 22.29% of the total follow-up prescriptions in 2019 [7] [10]. However, there are opportunities for further improvement. Therefore, this study aims to explore the patient's awareness on PVAS, adoption of PVAS, their satisfaction towards PVAS, and willingness to adopt PVAS. Ultimately, this study aims to improve pharmacy service and patient care, which is in line with the objectives of PSD.

METHOD

Study Design and Participants

We conducted a single-centred, cross-sectional study in one of the major, government-subsidized hospital in Sarawak state of Malaysia. All patients or their family members, who aged 18 years and above, understood the Malay language, who collected their first or subsequent partial supply of chronic medications in Miri Hospital, were eligible for participation in the study. We excluded staff who assisted in collecting medication for daycare or home visit patients. Convenience sampling method applied to recruit respondents who met the eligibility criteria. This study is registered with National Medical Research Registry (NMRR-19-4193-49452) and was approved by Medical Research Ethics Committee, Ministry of Health, Malaysia.

We administered several close-ended questions to acquire information on respondents' demographics, their awareness on PVAS, adoption of PVAS, their satisfaction towards PVAS and willingness to adopt PVAS. The demographic data include age, gender, race, education level, monthly household income, and travelling duration from the house to the hospital. A list of PVAS included for the respondents to select the types they were aware of and used before. Respondents who used PVAS

before were required to rate their satisfaction level using a five-point Likert scale, which ranges from 1 (very dissatisfied) to 5 (very good). Besides, the open-ended questions allowed the respondents to express their opinion about PVAS and the reasons they are unwilling to adopt PVAS. In the current study, the monthly household income categorisation were: (i) low income group (B40) with monthly household income less than RM 4,850, (ii) mid income group (M40) with monthly household income between RM 4,850 and RM 10,959, and (iii) high income group (T20) with monthly household income of RM 10,960 or more (11). For the employment status, an employer refers to a person who hires employee to work, whereas the self-employed refers to a person who works for oneself. The questions were in the Malay language.

We invited the eligible respondents, obtained written informed consent and distributed the questionnaire over the pharmacy counter. The respondents returned the completed questionnaires during medication collection at the dispensing counter. It took approximately 10-15 minutes to complete the questionnaire.

The current study is part of a larger study which the minimum sample size was based on. Sample size calculation using the G*Power software version 3.1.9.4 showed that 395 respondents required to obtain a power of 80% at a type I error level of 0.05 [12]. The total number of respondents was raised to account for a 10% dropout and unusable data, hence the required sample size was 439 respondents.

Statistical Analysis

We conducted analysis using SPSS version 21. The demographic characteristics of respondents described as frequencies and percentages for categorical variables. Numerical variables, for example, age, was presented as mean and standard deviation (SD), or median and interquartile range (IQR) if non-normally distributed. The findings are descriptive in nature and no formal statistical hypothesis testing involved.

RESULT

Demographic Characteristics

A total of 440 questionnaires distributed, and 398 respondents completed and returned them, yielding a response rate of 90.45%. Table I summarises the demographic characteristics of the respondents. The age of respondents in this study ranged from 18 to 85 years old, with mean (SD) age of 42.48 (14.32) and they were predominantly female (57.3%). Most of the respondents were Chinese (30.4%), from the low-income group (B40).

Awareness on PVAS

Most respondents (70.1%) were aware of PVAS (Table II). Drive-Through Pharmacy and UMP were the most commonly known services among the 279 respondents who were aware of PVAS, with the percentage of 67.0% and 59.5% respectively (Table II). PPUSS was the least known (3.9%) among respondents who were aware of PVAS, followed by SPUB (12.5%).

Table I. Demographic Characteristics (n=398)

Variables	Mean (SD)
Age (years)	42.48 (14.32)
Travelling Duration to Hospital (minutes)	35.57 (34.28)

Variables	Number, n (%)
Gender	
Male	170 (42.7)
Female	228 (57.3)
Ethnicity	
Malay	78 (19.6)
Chinese	121 (30.4)
Iban	110 (27.6)
Kayan	20 (5.0)
Melanau	14 (3.5)
Others	53 (13.32)
Not reported	2 (0.5)
Education Level	
University	69 (17.3)
College	50 (12.6)
Vocational	28 (7.0)
Secondary School	194 (48.7)
Primary School	31 (7.8)
No Formal Education	22 (5.5)
Not reported	4 (1.0)
Employment Status	
Employer	13 (3.3)
Government Servant	54 (13.6)
Private Employee	102 (25.6)
Self-Employed	54 (13.6)
Unemployed	138 (34.7)
Retiree	33 (8.3)
Not reported	4 (1.0)
Household Income	
High Income (T40)	5 (1.3)
Medium Income (M40)	47 (11.8)
Low Income (B40)	325 (81.7)
Not reported	21 (5.3)

* Percentages may not total 100 because of rounding

Table II. Awareness and Adoption of types of PVAS services (n=398)

Types of PVAS	Awareness		Adoption	
	Aware	Unaware	Experienced	No Experience
SPUB	35 (12.5)	244 (87.5)	7 (5.6)	118 (94.4)
UMP	166 (59.5)	113 (40.5)	31 (24.8)	94 (75.2)
Call-and-Collect Service	93 (33.3)	186 (66.7)	28 (22.4)	97 (77.6)
Collect-Later Service	59 (21.1)	220 (78.9)	24 (19.2)	101 (80.8)
Drive-Through Pharmacy	187 (67.0)	92 (33.0)	11 (8.8)	114 (91.2)
Appointment Card Dispensing System	106 (38.0)	173 (62.0)	62 (49.6)	63 (50.4)
PPUSS	11 (3.9)	268 (96.1)	3 (2.4)	122 (97.6)
Medication Locker	2 (0.7)	277 (99.3)		
Others	1 (0.4)	278 (99.6)		

Adoption of PVAS

More than half of the respondents (68.3%) had no experience of using PVAS for the collection of their follow-up medication supply (Table II). Among the 125 PVAS users, the most commonly adopted PVAS was Appointment Card Dispensing System (49.6%) (Table II). UMP was the second most used PVAS (24.8%) among the PVAS users, whereas PPUSS was least adopted (2.4%).

Satisfaction Towards PVAS

Table III shows the satisfaction score of respondents who have experience using PVAS. Overall, respondents were satisfied with their experience. The mean (SD) satisfaction scores for Drive-Through Pharmacy, Collect-Later Service, and PPUSS are 4.40 (0.70), 4.38 (0.50), 4.33 (1.16) respectively. Nevertheless, there were 11 Drive-Through Pharmacy users only in this study. Among the three respondents who was PPUSS users, two of them rated the service as ‘very good’ and one of them is satisfied with the service.

Willingness to Adopt PVAS

A large percentage of respondents (86.2%) were willing to adopt PVAS while only 7.5% said no to the service. In particular, 95.8% of the experienced PVAS user and 90.1% of inexperienced group, respectively were willing to adopt PVAS to collect their follow-up medications. However, 7.5% (n=30) of the respondents were unwilling to adopt PVAS.

DISCUSSION

This study provides the essential information on the implementation of PVAS in a public hospital in Sarawak. In this study, majority of the respondents (70.1%) were aware of PVAS. This result contrasts the findings of Tan et al., which reported that a large number of patients were not aware of the existence and benefits of PVAS via face-to-face interview [13]. The improved awareness could be as a result from the active promotion over years. Patients’ awareness on PVAS and their

benefits is undeniably crucial in the adoption of this program. Lack of awareness is the important factor that impedes patients’ intention to use PVAS [13].

Drive-Through Pharmacy and UMP were the two most commonly known PVAS in this study. Although Drive-Through Pharmacy is newly launched in Miri Hospital, the public has high awareness compared to other PVAS. This could be possibly due to the effective promotion, including the local newspapers and social media platforms. On the other hand, UMP gained popularity during the COVID-19 lockdown implemented in March 2020 nationwide as it does not require travelling and physically present at the pharmacy, hence reducing social contact. Moreover, MOH and the national courier service worked to provide free shipping of medicine to patients’ home during the period to ensure the constant access to medical needs. Therefore, the awareness on the PVAS is higher. Medication Locker was the PVAS with least awareness among our respondents (0.4%). At the time of writing, the service is in the planning stage in our hospital. However, the service is available in some other government facilities [14] [15]. It is important to note that the service offered may differ from one facility to the other. Therefore, explanation is crucial to avoid misconception.

Among the PVAS users, we found Appointment Card Dispensing System as the most commonly used PVAS and that with the least usage is Local Partial Medication Supply Service. Despite the considerably high awareness among the

Table III. Satisfaction Towards PVAS

Satisfaction Score	Mean (SD)
SPUB n=7	4.29 (0.95)
UMP n=31	4.12 (0.95)
Call-and-Collect Service n=28	3.88 (0.91)
Collect-Later Service, n=24	4.38 (0.50)
Drive-Through Pharmacy, n=11	4.40 (0.70)
Appointment Card Dispensing System, n=62	4.16 (0.85)
PPUSS, n=3	4.33 (1.16)

respondents (70.1%), 31.4% of them adopted PVAS. Hence, there is a mismatch in the proportion of those who aware and those who adopt the service. This result reflects that awareness is not the sole factor that contributes to PVAS adoption.

In the open-ended question which explore refusal to adopt PVAS, one of the reasons cited was the poor understanding of the service. They refused to adopt PVAS as they did not fully understand how it works and were not given a proper introduction to this program. Some stated that they were familiar to the conventional over-the-counter collection method and would like to remain as such. Furthermore, another respondent quoted that he preferred self-collection. The reasons are similar to the belief that the sense of unfamiliarity and little control over patients' situation [1]. In another study, the researchers argued that the presence of pharmacist during the collection of medications may be essential and necessary to some patients, mainly when there is a concern of medication error or insufficient drug supply [13]. Patients may feel stressful and insecure especially when receiving different or unexpected medications via UMP and PPUSS when there is no pharmacist available for them to consult [13]. This could happen especially when there is a brand change. Therefore, this could hinder the adoption of the service.

In the current study, a small number of respondents thought that PVAS is not required as it was more convenient to self-collect their refilled medicine due to the short distance to hospital. Some cited that they were not ready to adopt the new service. One of the PVAS users revealed unpleasant experience from previous (UMP) use, in which he failed to receive his follow-up medications through PVAS. The finding is similar to one study which reported that the confidence and intention to use UMP may lower as the delay in delivery by the national courier service causes uncertainty and disappointment [13]. One of the respondents reported the absence of recipient during medicine delivery contributed to the refusal to adopt PVAS. It may be inconvenient to wait for the delivery as the delivery time is unknown. As discussed in a previous study, negative feelings or unpleasant experience with PVAS is one of the barriers that affect PVAS adoption and remains a significant challenge to overcome [13].

We also observed that Drive-Through Pharmacy has the greatest satisfaction score, 4.40 (SD=0.70), whereas Call-and-Collect Service is the least satisfied, 3.88 (SD=0.91). Although Call-and-Collect is one of the most popular PVAS among the respondents, the satisfaction score is the lowest. This could be due to the difficulty in telephone line engagement as frequently complained by many patients. Due to the limited phone line and high usage due to hectic daily works. Nonetheless, previous studies reported higher satisfaction score with PVAS in general when compared to conventional over the counter medication collection method [16] [17].

When commenting opinion on PVAS, most respondents gave positive notes on PVAS, acknowledging it as an excellent program. They acknowledged that PVAS smoothen their follow-up medication collection process as it is convenient, efficient, time-saving, and reduces their waiting time at the pharmacy counter. Some respondents commented that PVAS could reduce the risk of infectious disease transmission as they do not need to visit the hospital frequently. It could save the fuel cost for the respondents too.

Therefore, in this study, most respondents (86.2%) were willing to adopt PVAS. 95.8% of the experienced PVAS users and 90.1% of inexperienced respondents, respectively were willing to adopt PVAS to collect their follow-up medications. This could be translated into future adoption of PVAS if intention to adopt is successful instilled. Although constant promotion could be useful, Tan et al. postulated that the advantages of PVAS and how it works should be clearly conveyed to instill the intention to adopt these services [13]. Without a clear intention, PVAS adoption will be limited as intentions are the precursors of behaviour [13]. Hence, it is crucial for the promotional activities to enhance the understanding of the PVAS, besides increasing the awareness among patients. Therefore, the role of pharmacists is very much crucial in assisting patients in selecting the type of PVAS that suits their needs and provide help to overcome problems which arise during the PVAS adoption.

This study has some limitations. Firstly, this was a single-centre study, the local population characteristics and need may differ from another population. Hence generalisation of the results could be possible in a population which is similar to our study sample. In addition, the PVAS users in each subgroup was too small, therefore, not meaningful to perform inferences for their satisfaction scores. Further studies using stratified sampling method may be appropriate for direct comparison of satisfaction scores among types of PVAS.

CONCLUSION

This study suggested that most respondents were aware of PVAS with a total of 31.4% of the respondents were its users. Among the PVAS, Appointment Card Dispensing System service were the most used PVAS while Drive-Through Pharmacy and UMP were the most known PVAS. Respondents also indicated the highest satisfaction score for Drive-Through Pharmacy, and lowest for Call-and-Collect Service. Drive-thru Pharmacy has the greatest awareness and satisfaction yet low usage, hence there is a need to further promote the PVAS for greater adoption. Besides, such PVAS should also be expanded to other healthcare facilities.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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