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Perspectives of community pharmacists on extended pharmacy services and value-added services in Malaysia: a cross-sectional survey

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Abstract

Objective: This study aimed to investigate patterns of extended pharmacy services (EPS) provided by Malaysian community pharmacists and their willingness to provide value-added services (VAS) in addition to EPS. Additionally, this study examined the barriers to the effective implementation of these two services.

Method: A cross-sectional survey was conducted using a self-administered questionnaire among community pharmacists in Selangor and Kuala Lumpur. Convenience sampling was done, and descriptive statistics and correlation analysis were performed.

Results: Two hundred and thirty-six pharmacists participated. The most rendered EPS were nutritional supplements, hypertension management, and diabetic management, while chronic kidney disease management, smoking cessation, and mental health services were the least rendered. Pharmacists were willing to provide medication waste management and vaccination as VAS but were less inclined towards therapeutic drug monitoring and sterile compounding. Barriers included limited access to medical records of patients, lack of designated counselling areas, and concerns about remuneration. High sales pressure and busy workloads were additional barriers to providing VAS. Continuous professional development (CPD) positively influenced pharmacists' engagement in EPS and VAS.

Conclusions: This study highlights service provision trends and areas for improvement. Addressing identified barriers, such as enhancing access to patient records and establishing designated counselling areas, can improve service delivery. Remuneration models and workload management strategies should be considered to alleviate barriers related to sales pressure and time constraints. Promoting CPD opportunities is crucial for enhancing pharmacist engagement and optimizing EPS and VAS.

Keywords: decent work; economic growth; infrastructure; sustainability; gender equality; professional development

Introduction

Community pharmacists play a vital role in the healthcare system in Malaysia and provide accessible healthcare services to improve health outcomes in addition to mainstream hospitals and primary healthcare services [1]. There are more than 2500 community pharmacies in Malaysia [2] and they are easily accessible to the public [3]. This means that community pharmacists in Malaysia are in an ideal position to provide healthcare services to improve health outcomes. Over the years, the focus of the practice has shifted from dispensing medicines and health supplements to providing counselling, managing minor health issues, and conducting health screening [4]. In the Malaysian National Medicines Policy, all healthcare professionals including pharmacists have been encouraged to play a wider role in their practice, enhance patients' quality of life, and reduce the mortality rate due to medication use [5]. The Health Services Transformation Plan, suggested by the Ministry of Health, Malaysia, aimed to develop a talented health workforce, strengthen health policies and public organizational capacity, enhance health services delivery, intensify health collaboration with healthcare professionals, and inculcate corporate culture values [6].

There are two key pharmacy services such as extended pharmacist services (EPS) and value-added services (VAS) rendered in Malaysia. Rendering EPS is voluntary for community pharmacies and is not a standardized practice across Malaysia [7]. VAS was rendered only in pharmacies within public hospitals in Malaysia [8]. EPS are referred to as those services that are provided at pharmacies other than traditional services [9]. In Malaysia, although it is not a standardized practice, most community pharmacies are rendering EPS such as medication therapy management, chronic disease management, health screening, immunizations, patient counselling, lifestyle modifications for obesity management, smoking cessation, and preventive measures [10]. These services aimed to address the need to provide sustainable, high-quality pharmacy services in a complex and evolving healthcare setting to alleviate the burden on the healthcare system and improve patient outcomes. VAS in Malaysia was introduced to facilitate the collection of follow-up medications to improve patient

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access to medicines and reduce congestion at public hospitals [8]. The VAS such as Medicines by Post (Ubat Melalui Pos), Drive-through pharmacies, medicine lockers (Medibox), Appointment Card and other appointment-based systems where clients can directly contact the pharmacies in public hospitals using short message service are a few examples of services available in Malaysia [11, 12]. Nevertheless, the Pharmaceutical Services Division, Ministry of Health Malaysia, in its 'Pharmacy Programme Strategic Plan 2017–2020', addressed the need to revive sustainable, high-quality pharmacy services to meet the evolving healthcare needs of the population [13]. As VAS are not currently rendered by community pharmacists in Malaysia and rendering EPS is not a standardized practice across Malaysia, there is a need to know the various types of EPS currently rendered by the community pharmacists, and the types of VAS the community pharmacists would be willing to render (in addition to EPS) and what and why certain EPS and VAS face challenges and the factors associated with them. There are a few reports from Malaysia that provide some basic insights into the views and perceptions of Malaysian community pharmacists regarding EPS and VAS. These reports highlight the potential impact on patient care and healthcare outcomes [12, 14]. At the same time, there are reports on the challenges in offering such services [3, 15, 16].

Hence, this research aimed to investigate patterns of EPS provided by Malaysian community pharmacists, and their willingness to provide VAS in addition to EPS. Also, this study examined the barriers to the effective implementation of both these services. The study also focused on the associated factors that influence pharmacists' perspectives that may contribute to the development of evidence-based recommendations to enhance the implementation and utilization of EPS and VAS in Malaysia.

Ethical consideration

Ethical approval was obtained from the International Medical University Joint Committee on Research and Ethics, Kuala Lumpur, Malaysia.

Methods

Study design, setting, and participants

A cross-sectional survey was conducted among community pharmacists in Selangor state and Kuala Lumpur federal territory from September 2019 to January 2020. A sample size of 234 was calculated by using a Raosoft calculator to meet a statistically defined margin of 5% and a confidence level of 95%. A list of 943 community pharmacies in Selangor and Kuala Lumpur states was obtained from the official portal of the pharmaceutical services program, Ministry of Health Malaysia. Two hundred and seventy-four pharmacists were approached by a researcher as sampling more than the required size would allow to compensate for pharmacists not agreeing to participate in the study. Convenience sampling was used based on the geographical proximity of the pharmacies, and those pharmacies must be rendering EPS during the research period. If there were more than one pharmacist available at a pharmacy during the data collection, only one was selected as a participant based on their convenience. Participants were also informed that their enrolment was voluntary.

Study questionnaire

The study questionnaire was adapted from previous studies through an extensive literature review [14, 17, 18]. The questionnaire was in English and had seven domains. The first domain focused on the demographic profile. The second domain consisted of the types of EPS which were subcategorized into three groups, including counselling activities (12 items), disease management services (10 items), and health screening services (8 items). The third domain consisted of the types of VAS (14 items). Both the second and third domains (44 items) were scored by a 5-point Likert scale (1 = never, 2 = rarely, 3 = sometimes, 4 = often and 5 = always). The fourth domain of the questionnaire consisted of 17 items to obtain pharmacists' views on rendering EPS. The fifth domain consisted of six items to know community pharmacists' willingness to render VAS. The sixth domain consisted of 11 items to identify the barriers in rendering EPS and the seventh domain consisted of 26 items to identify the barriers if VAS is rendered. The fourth to seventh domains were all scored on a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree) [19, 20]. The questionnaire was paper based and the participants had to fill it out at the time they were approached. The questionnaire has been provided as Supplementary material.

Reliability and validity of the questionnaire

The questionnaire was pilot tested with 10 community pharmacists to ascertain internal consistency [21]. A reliability test was conducted using Cronbach's α test. A Cronbach's α value of more than 0.7 was considered reliable. The Cronbach's α scores for the second to sixth domains were 0.933, 0.938, 0.882, 0.925, and 0.851, respectively, which indicated satisfactory internal consistency of items within each domain.

Data analysis

All the data were entered into Microsoft Excel 2019. To minimize human error during the data entry, data validation parameters were set before the data were entered into the Excel sheet to ensure consistency and accuracy. Then, all the data were transferred to and analysed in Statistical Package for the Social Sciences (SPSS; version 21.0) software. Descriptive analyses such as the frequencies, percentages, median values, and interquartile range (IQR) were done [22]. Multiple correlation analyses were done using Spearman Rho to analyse the correlations between participants' demographic characteristics and their perspectives on rendering EPS and willingness to render VAS. All statistical tests were performed at the significance level of $P < .05$.

Results

Out of 274 pharmacists approached, 236 completed the survey (86.13% response rate). The socio-demographic profile of the respondents is summarized in Table 1. Respondents were female (n = 154, 65.3%), aged 210 (n = 167, 70.8%), Chinese ethnicity (n = 192, 81.4%), had <2 years of experience (n = 141, 59.7%), permanent employees (n = 112, 47.5%), worked in chain pharmacies (n = 140, 59.3%), from Selangor (n = 167, 70.8%), had bachelor's degrees (n = 221, 93.6%), and attended ≥3 continuous professional development (CPD) events/year (n = 101, 42.8%).

Table 1. Social demographic profile.

Characteristics	*n* (%)
Gender	
Male	82 (34.7)
Female	154 (65.3)
Age (in years)	
21–30	167 (70.8)
31–40	45 (19.1)
41–50	13 (5.5)
>50	11 (4.7)
Ethnicity	
Malay	34 (14.4)
Chinese	192 (81.4)
Indian	10 (4.2)
Years of experience	
Less than 3 years	53 (22.5)
At least 3 years	141 (59.7)
4–5 years	15 (6.4)
More than 5 years	27 (11.4)
Employment status	
Pharmacy owner	29 (12.3)
Permanent employee	112 (47.5)
Part-time employee/locum pharmacist	95 (40.3)
Type of pharmacy	
Independent	96 (40.7)
Chain	140 (59.3)
State	
Kuala Lumpur	69 (29.2)
Selangor	167 (70.8)
Educational qualification	
Bachelor's degree	221 (93.6)
Master's degree	15 (6.4)
Number of CPD events in a year	
Less than three events	73 (30.9)
At least three events	101 (42.8)
4–5 events	30 (12.7)
More than five events	32 (13.6)

The types of EPS currently provided by Malaysian Community pharmacists are represented in Table 2. The most rendered counselling services were for cough and cold (*n* = 172, 72.9%) and nutritional supplements (*n* = 156, 66.1%). Counselling on mental health (*n* = 10, 4.2%) and smoking cessation (*n* = 23, 9.7%) were the least rendered services. The most rendered disease management services were for hypertension (*n* = 123, 52.1%) and diabetes (*n* = 119, 50.4%). The least rendered disease management services were chronic kidney disease management (*n* = 15, 6.4%). In health screening, blood pressure test (*n* = 204, 86.4%) and blood glucose test (*n* = 199, 84.3%) services were most rendered. Anti-coagulation blood test (*n* = 3, 1.3%) and creatinine blood test (*n* = 4, 1.7%) services were the least rendered.

The types of VAS willing to be rendered by the community pharmacists are presented in Table 2. Medication waste management (*n* = 67, 28.4%) and vaccination (*n* = 55, 23.3%) were the services pharmacists were most willing to render in the community pharmacy. Therapeutic drug level monitoring (*n* = 2, 0.8%) and sterile compounding (*n* = 11, 4.7%) were the services pharmacists were least willing to render.

The community pharmacists' perspectives on currently rendered EPS are presented in Table 3. Community pharmacists had positive opinions of EPS. Most agreed that EPS encouraged them to work towards a patient-centred service. Most opined that customers/patients readily received EPS from them and appreciated their services. Most of the pharmacists agreed that EPS provided them with an opportunity to improve public health.

The community pharmacists' willingness to render VAS is presented in Table 4. Most were willing to render various VAS in their community pharmacy. However, the majority of them were concerned about their clinical knowledge in providing VAS. More than half were concerned about the lack of support and facilities to render VAS.

Barriers while rendering current EPS are shown in Table 5. The most prominent barriers are access to patient medical records, designated areas for counselling and remuneration for the EPS.

Barriers to rendering VAS are shown in Table 5. The majority of the community pharmacists perceived the lack of a standardized practice model for the provision of VAS, high pressure on pharmacists to generate sales, lack of access to patient medical record systems, and shortage of time due to busy workload as barriers to VAS. Community pharmacists felt that providing VAS would not impair their working relationships with general practitioners.

The correlation between the community pharmacists' demographic characteristics and perspectives on EPS and willingness to render VAS are presented in Table 6. There were negative correlations between community pharmacists' age and their willingness to provide VAS; community pharmacists' experience and their willingness to provide VAS. There was a positive correlation between CPD events attended by community pharmacists and their perspectives on rendering EPS as well as willingness to render VAS.

Discussion

This study explored services offered and challenges faced by Malaysian community pharmacists, highlighting a focus on common health concerns but a lack of mental health support and certain disease management, notably for chronic kidney disease and smoking cessation. While willingness existed for waste management and vaccinations, hesitancy prevailed for other specialized services. Barriers included data access, space, remuneration, and sales pressure, influenced by age, experience, and CPD attendance. Limitations include convenience sampling's selection bias, potential recall, and response biases from self-administered questionnaires, and regional focus limiting generalizability nationwide.

Many participating community pharmacists in this study were female with 2 years or less of experience, indicating limited exposure to EPS. The demographic, predominantly Chinese ethnicity, reflects the Malaysian pharmacy workforce's lack of diversity, as observed by Ong et al. [23]. Most worked in chain pharmacies that are prevalent in Malaysia [24] and were located in Selangor, sharing half of the country's community pharmacies with Kuala Lumpur [25]. In counselling, a focus on coughs, colds, and nutritional supplementation demonstrated pharmacists' responsiveness to prevalent

Table 2. Types of EPS rendered and VAS willing to be rendered by community pharmacists.

	Never, *n* (%)	Rarely, *n* (%)	Sometimes, *n* (%)	Often, *n* (%)	Always, *n* (%)	Median (IQR)
1. Counselling services						
a. Children's health	5 (2.1)	19 (8.1)	63 (26.7)	95 (40.3)	54 (22.9)	4 (3–4)
b. Contraception	4 (1.7)	19 (8.1)	64 (27.1)	92 (39.0)	57 (24.2)	4 (3–4)
c. Cough and cold	0 (0.0)	5 (2.1)	5 (2.1)	52 (22.9)	172 (72.9)	5 (4–5)
d. Drug misuse	17 (7.2)	63 (26.7)	96 (40.7)	37 (15.7)	23 (9.7)	3 (2–4)
e. Herbal and traditional medicines	7 (3.0)	29 (12.3)	69 (29.2)	68 (28.8)	63 (26.7)	4 (3–5)
f. Mental health	58 (24.6)	79 (33.5)	73 (30.9)	16 (6.8)	10 (4.2)	2(2–3)
g. Nutritional supplement	1 (4.0)	3 (1.3)	9 (3.8)	67 (28.4)	156 (66.1)	5 (4–5)
h. Oral health	8 (3.4)	22 (9.3)	72 (30.5)	92 (39.0)	42 (17.8)	4 (3–4)
i. Sexual health	14 (5.9)	48 (20.3)	100 (42.4)	51 (21.6)	23 (9.7)	3 (2–4)
j. Travel health	12 (5.1)	23 (9.7)	77 (32.6)	84 (35.6)	40 (16.9)	4 (3–4)
k. Smoking cessation	14 (5.9)	57 (24.2)	98 (41.5)	44 (18.6)	23 (9.7)	3 (2–4)
l. Weight management	10 (4.2)	35 (14.8)	80 (33.9)	77 (32.6)	34 (14.4)	3 (3–4)
2. Disease management services						
a. Chronic kidney disease management	33 (14.0)	70 (29.7)	84 (35.6)	34 (14.4)	15 (6.4)	3 (2–3)
b. Diabetic management	0 (0.0)	5 (2.1)	15 (6.4)	97 (41.1)	119 (50.4)	5 (4–5)
c. Head lice management	3 (1.3)	19 (8.1)	56 (23.7)	95 (40.3)	63 (26.7)	4 (3–5)
d. Hypertension management	1 (4.0)	4 (1.7)	14 (5.9)	94 (39.8)	123 (52.1)	5 (4–5)
e. Hyperlipidemia management	2 (8.0)	6 (2.5)	19 (8.1)	87 (36.9)	122 (51.7)	5 (4–5)
f. Osteoporosis management	7 (3.0)	25 (10.6)	69 (29.2)	83 (35.2)	52 (22.0)	4 (3–4)
g. Pain management	1 (0.4)	5 (2.1)	25 (10.6)	80 (33.9)	125 (53.0)	5 (4–5)
h. Respiratory management	2 (0.8)	11 (4.7)	65 (27.5)	103 (43.6)	55 (23.3)	4 (3–4)
i. Skin care management	0 (0.0)	2 (0.8)	30 (12.7)	79 (33.5)	125 (53.0)	5 (4–5)
j. Wound care management	4 (1.7)	14 (5.9)	59 (25.0)	99 (41.9)	60 (25.4)	4 (3–5)
3. Health screening services						
a. Anticoagulation blood test/international normalized ratio (INR)	182 (77.1)	33 (14.0)	16 (6.8)	2 (0.8)	3 (1.3)	1 (1–1)
b. Blood pressure test	0 (0.0)	0 (0.0)	5 (2.1)	27 (11.4)	204 (86.4)	5 (5–5)
c. Cholesterol test	14 (5.9)	7 (3.0)	19 (8.1)	47 (19.9)	149 (63.1)	5 (4–5)
d. Creatinine blood test	162 (68.6)	32 (13.6)	24 (10.2)	14 (5.9)	4 (1.7)	1 (1–2)
e. Glucose test	1 (0.4)	0 (0.0)	7 (3.0)	29 (12.3)	199 (84.3)	5 (5–5)
f. HbA1c test	110 (46.6)	29 (12.3)	44 (18.6)	26 (11.0)	27 (11.4)	2 (1–3)
g. Pregnancy test	80 (33.9)	29 (12.3)	42 (17.8)	38 (16.1)	47 (19.9)	3 (1–4)
h. Uric acid test	53 (22.5)	21 (8.9)	48 (20.3)	44 (18.6)	70 (29.7)	3 (2–5)
4. Pharmacy VAS (willing to be rendered by pharmacists)						
a. Medibox (medicine locker)	103 (43.6)	75 (31.8)	41 (17.4)	13 (5.5)	4 (1.7)	2 (1–2)
b. Discharge service from hospital setting	78 (33.1)	57 (24.2)	64 (27.1)	32 (13.6)	5 (2.1)	2 (1–3)
c. Therapeutic drug monitoring	167 (70.8)	40 (16.9)	19 (8.1)	8 (3.4)	2 (0.8)	1 (1–2)
d. SMS Take&Go	49 (20.8)	59 (25.0)	61 (25.8)	43 (18.2)	24 (10.2)	3 (2–4)
e. Medication wastage management	8 (3.4)	16 (6.8)	56 (23.7)	89 (37.7)	67 (28.4)	4 (3–5)
f. Drive-through pharmacy	72 (30.5)	42 (17.8)	58 (24.6)	45 (19.1)	19 (8.1)	3 (1–4)
g. Medicine through post	106 (44.9)	47 (19.9)	44 (18.6)	26 (11.0)	13 (5.5)	2 (1–3)
h. Medicine use review	26 (11.0)	23 (9.7)	74 (31.4)	69 (29.2)	44 (18.6)	3 (3–4)
i. Vaccination	19 (8.1)	12 (5.1)	68 (28.8)	82 (34.7)	55 (23.3)	4 (3–4)
j. Pharmacist-led patient self-management service	40 (16.9)	37 (15.7)	64 (27.1)	62 (26.3)	33 (14.0)	3 (2–4)
k. Pill cutting service	39 (16.5)	26 (11.0)	54 (22.9)	56 (23.7)	61 (25.8)	3 (2–5)
l. Pill packing	71 (30.1)	28 (11.9)	48 (20.3)	43 (18.2)	46 (19.5)	3 (1–4)
m. Sterile compounding	154 (65.3)	26 (11.0)	26 (11.0)	19 (8.1)	11 (4.7)	1 (1–2)
n. Telemedicine	135 (57.2)	37 (15.7)	33 (14.0)	20 (8.5)	11 (4.7)	1 (1–3)

Table 3. Community pharmacist's perspectives in rendering EPS.

Statements	Strongly disagreed, *n* (%)	Disagree, *n* (%)	Neutral, *n* (%)	Agree, *n* (%)	Strongly agree, *n* (%)	Median (IQR)
1. Customers/patients were ready to receive EPS by community pharmacists	1 (0.4)	1 (0.4)	16 (6.8)	106 (44.9)	112 (47.5)	4 (4–5)
2. Customers/patients appreciated the provision of EPS by community pharmacists	1 (0.4)	2 (0.8)	21 (8.9)	97 (41.1)	115 (48.7)	4 (4–5)
3. EPS encouraged community pharmacists to work toward patient-oriented service	1 (0.4)	3 (1.3)	12 (5.1)	102 (43.2)	118 (50.0)	5 (4–5)
4. EPS encouraged community pharmacists to work side-by-side with GPs to review medication outcome	2 (0.8)	2 (0.8)	22 (9.3)	102 (43.2)	108 (45.8)	4 (4–5)
5. EPS encouraged community pharmacists to refer customers/patients back to respective GPs	1 (0.4)	2 (0.8)	33 (14.0)	101 (42.8)	99 (41.9)	4 (4–5)
6. EPS encouraged community pharmacists to determine the drug-related problems	1 (0.4)	2 (0.8)	16 (6.8)	100 (42.4)	117 (49.6)	4 (4–5)
7. EPS encouraged community pharmacists to practice rationale medication use	1 (0.4)	1 (0.4)	12 (5.1)	109 (46.2)	113 (47.9)	4 (4–5)
8. EPS encouraged community pharmacists to perform medication recordings	1 (0.4)	4 (1.7)	26 (11.0)	106 (44.9)	99 (41.9)	4 (4–5)
9. EPS provided the opportunity for community pharmacists to fully utilize their professional knowledge and skills	1 (0.4)	1 (0.4)	14 (5.9)	100 (42.4)	120 (50.8)	5 (4–5)
10. EPS encouraged community pharmacists to treat minor ailments	1 (0.4)	6 (2.5)	21 (8.9)	90 (38.1)	118 (50.0)	4 (4–5)
11. EPS helped community pharmacists avoid hierarchy issues with GPs	3 (1.3)	12 (5.1)	61 (25.8)	76 (32.2)	84 (35.6)	4 (3–5)
12. EPS provided the opportunity for pharmacists to improve public health	1 (0.4)	2 (0.8)	11 (4.7)	99 (41.9)	123 (52.1)	5 (4–5)
13. EPS encouraged community pharmacists to be updated	4 (1.7)	25 (10.6)	54 (22.9)	79 (33.5)	74 (31.4)	3 (3–5)
14. EPS encouraged community pharmacists to attend CPD	0 (0.0)	4 (1.7)	12 (5.1)	89 (37.7)	131 (55.5)	5 (4–5)
15. EPS encouraged to use the time efficiently	97 (41.1)	55 (23.3)	32 (13.6)	28 (11.9)	24 (10.2)	2 (1–3)
16. EPS improved the superior image of pharmacy practice	0 (0.0)	12 (5.1)	51 (21.6)	101 (42.8)	72 (30.5)	4 (3–5)
17. EPS should be provided continuously	2 (0.8)	6 (2.5)	42 (17.8)	102 (43.2)	84 (35.6)	4 (4–5)

Table 4. Community pharmacist's willingness to render VAS.

Statements	Strongly disagree, *n* (%)	Disagree, *n* (%)	Neutral, *n* (%)	Agree, *n* (%)	Strongly agree, *n* (%)	Median (IQR)
1. I have enough clinical knowledge to provide VAS	87 (36.9)	88 (37.3)	30 (12.7)	26 (11.0)	5 (2.1)	2 (1–3)
2. I have enough clinical experiences to provide VAS	87 (36.9)	77 (32.6)	43 (18.2)	25 (10.6)	4 (1.7)	2 (1–3)
3. My pharmacy has the facility to provide VAS	32 (13.6)	87 (36.9)	49 (20.8)	61 (25.8)	7 (3.0)	2 (1–3)
4. All community pharmacies should be providing VAS	3 (1.3)	5 (2.1)	65 (27.5)	110 (46.6)	53 (22.5)	4 (3–4)
5. I have sufficient support to provide VAS in my pharmacy	34 (14.4)	89 (37.7)	77 (32.6)	31 (13.1)	5 (2.1)	2 (1–3)
6. I am willing to provide VAS in my pharmacy	3 (1.3)	17 (7.2)	70 (29.7)	96 (40.7)	50 (21.2)	4 (3–4)

health issues [14, 26]. However, mental health services were the least provided, possibly due to patients' unawareness or such patients prefer alternative professionals. Addressing pharmacists' potential lack of mental health knowledge is crucial for comprehensive care delivery in counselling services, as reported in a Malaysian study [27].

Regarding disease management services, the high demand for hypertension and diabetic management services highlighted the urgent need for effective interventions to control and prevent these chronic diseases. The primary care clinics in Malaysia are also focusing on hypertension and diabetic management services [19]. Conversely, the limited provision of chronic kidney disease management and smoking cessation services presented an opportunity for community pharmacists to enhance their efforts [20] in supporting patients with these specific health challenges. However, the management of chronic kidney disease in Malaysia is mainly conducted by hospital pharmacists [28]. To enhance the effectiveness of smoking cessation programmes, the Ministry of Health, Malaysian Academy of Pharmacy and Malaysian

Table 5. Barriers while rendering EPS (part A) and barriers to render VAS (part B).

	Strongly disagree, *n* (%)	Disagree, *n* (%)	Neutral, *n* (%)	Agree, *n* (%)	Strongly agree, *n* (%)	Median (IQR)
Part A						
1. Access to detailed patient medical records	0 (0.0)	5 (2.1)	21 (8.9)	116 (49.2)	94 (39.8)	4 (4–5)
2. Designated close counselling area	0 (0.0)	2 (0.8)	24 (10.2)	113 (47.9)	97 (41.1)	4 (4–5)
3. Designated clinical testing area	4 (1.7)	15 (6.4)	40 (16.9)	95 (40.3)	82 (34.7)	4 (3–5)
4. Appointment card	1 (0.4)	10 (4.2)	33 (14.0)	107 (45.3)	85 (36.0)	4 (4–5)
5. Accreditation for specific pharmacy services/ activities	98 (41.5)	103 (43.6)	30 (12.7)	3 (1.3)	2 (0.8)	2 (1–3)
6. Dedicated study time for pharmacists	2 (0.8)	4 (1.7)	34 (14.4)	108 (45.8)	88 (37.3)	4 (4–5)
7. Establishment of the adequate and certified training program for the provision of EPS	0 (0.0)	2 (0.8)	20 (8.5)	104 (44.1)	110 (46.6)	4 (4–5)
8. Liaison with other healthcare team members (interprofessional)	100 (42.4)	117 (49.6)	16 (6.8)	3 (1.3)	0 (0.0)	2 (1–3)
9. Proper database system to set up patient's data	0 (0.0)	3 (1.3)	20 (8.5)	98 (41.5)	115 (48.7)	4 (4–5)
10. Support and encouragement from government, MCPG, and MPS	125 (53.0)	98 (41.5)	11 (4.7)	2 (0.8)	0 (0.0)	1 (1–3)
11. Remuneration for the EPS provided	1 (0.4)	1 (0.4)	21 (8.9)	103 (43.6)	110 (46.6)	4 (4–5)
Part B						
1. Shortage of time for pharmacist due to busy workload	8 (3.4)	10 (4.2)	28 (11.9)	109 (46.2)	81 (34.3)	4 (4–5)
2. Shortage of pharmacist	18 (7.6)	28 (11.9)	49 (20.8)	80 (33.9)	61 (25.8)	4 (3–5)
3. Shortage of pharmacy assistants	13 (5.5)	33 (14.0)	51 (21.6)	88 (37.3)	51 (21.6)	4 (3–4)
4. High pressure on community pharmacists to generate sales	4 (1.7)	8 (3.4)	20 (8.5)	81 (34.3)	123 (52.1)	5 (4–5)
5. Community pharmacists lack the appropriate knowledge and skills	12 (5.1)	26 (11.0)	73 (30.9)	90 (38.1)	35 (14.8)	4 (3–4)
6. Lack of ongoing training to perform VAS	4 (1.7)	7 (3.0)	33 (14.0)	119 (50.4)	73 (30.9)	4 (4–5)
7. Community pharmacists lack of confidence in the provision of VAS	14 (5.9)	28 (11.9)	77 (32.6)	81 (34.3)	36 (15.3)	3 (3–4)
8. Community pharmacists feel that VAS are not an essential part of their job	33 (14.0)	53 (22.5)	84 (35.6)	46 (19.5)	20 (8.5)	3 (2–4)
9. Financial constraints	9 (3.8)	19 (8.1)	77 (32.6)	86 (36.4)	45 (19.1)	4 (3–4)
10. High running cost expenses	9 (3.8)	14 (5.9)	60 (25.4)	97 (41.1)	56 (23.7)	4 (3–4)
11. Too many technical tasks to perform in VAS	9 (3.8)	17 (7.2)	42 (17.8)	104 (44.1)	64 (27.1)	4 (3–5)
12. There is no extra remuneration for providing VAS	6 (2.5)	13 (5.5)	48 (20.3)	95 (40.3)	74 (31.4)	4 (3–5)
13. Customer would not pay for VAS	2 (0.8)	14 (5.9)	34 (14.4)	101 (42.8)	85 (36.0)	4 (4–5)
14. Would impair working relationships with local GPs (interprofessional)	22 (9.3)	42 (17.8)	84 (35.6)	56 (23.7)	32 (13.6)	3 (2–4)
15. Lack of opportunity to meet with local GPs	8 (3.4)	16 (6.8)	65 (27.5)	97 (41.1)	50 (21.2)	4 (3–4)
16. GPs do not recognize pharmacists' skills in VAS	3 (1.3)	10 (4.2)	66 (28.0)	100 (42.4)	57 (24.2)	4 (3–4)
17. Lack of recognition as the primary healthcare professional	1 (0.4)	12 (5.1)	45 (19.1)	102 (43.2)	76 (32.2)	4 (4–5)
18. Lack of customer demand and recognition	3 (1.3)	28 (11.9)	55 (23.3)	100 (42.4)	50 (21.2)	4 (3–4)
19. Lack of patient awareness about the existence/benefit of VAS	0 (0.0)	10 (4.2)	26 (11.0)	126 (53.4)	74 (31.4)	4 (4–5)
20. Patient's confidence or trust issues on VAS	2 (0.8)	24 (10.2)	57 (24.2)	117 (49.6)	36 (15.3)	4 (3–4)
21. Confused among patients about the role of pharmacists	1 (0.4)	17 (7.2)	54 (22.9)	97 (41.1)	67 (28.4)	4 (3–5)
22. Inappropriate salary level for pharmacists	2 (0.8)	15 (6.4)	57 (24.2)	91 (38.6)	71 (30.1)	4 (3–5)
23. Inadequate management support	3 (1.3)	6 (2.5)	47 (19.9)	121 (51.3)	59 (25.0)	4 (4–5)
24. Legal and regulatory constraints	5 (2.1)	9 (3.8)	59 (25.0)	103 (43.6)	60 (25.4)	4 (3–5)
25. Lack of access to sharing patient medical record system	3 (1.3)	5 (2.1)	31 (13.1)	104 (44.1)	93 (39.4)	4 (4–5)
26. No standardized practice model for the provision of VAS	0 (0.0)	5 (2.1)	25 (10.6)	116 (49.2)	90 (38.1)	4 (4–5)

Table 6. Spearman rho correlation.

	Pharmacists' perspectives on rendering EPS	Pharmacists' willingness to render VAS
Age	0.37	−0.45*
Gender	0.40	0.36
Ethnicity	0.42	0.39
Years of experience	0.38	−0.42*
Employment status	0.48	0.27
Type of pharmacy	0.32	0.34
State	0.31	0.39
Educational qualification	0.34	0.37
Number of CPD events in a year	0.58*	0.59*

*$P < 0.05$.

Pharmacists Society conduct smoking cessation training programmes in Malaysia predominantly focusing on community pharmacies for providing mQuit service [29].

The enhanced services of the blood pressure test and blood glucose test in community pharmacies emphasized their importance in identifying early signs of cardiovascular and diabetes. Similar results were reported by studies from Australia and the United Kingdom [30, 31]. Nevertheless, the underutilization of the anti-coagulation blood test and creatinine blood test suggested the need to raise awareness about the significance of screening for conditions related to blood coagulation and kidney function.

The willingness to provide medication waste management services and vaccination aligned with the growing emphasis on environmental sustainability and preventive health care. Community pharmacists recognize the importance of managing medication waste and promoting immunization as essential components of their professional responsibilities [32, 33]. On the other hand, attention needs to be given to the participants' lower willingness to provide therapeutic drug monitoring and sterile compounding services. These services are typically more specialized and therefore may require additional training, infrastructure, and quality control measures. It is crucial to address the barriers associated with providing these services to expand the scope of community pharmacy practice, particularly in optimizing medication therapy and ensuring the safe preparation of sterile products. To overcome the barriers related to therapeutic drug level monitoring, implementing continuing education programs and fostering collaborative efforts between pharmacists and other healthcare professionals could be beneficial [34–36]. By enhancing pharmacists' knowledge and skills in collaborative practice, medication management will be improved and better patient outcomes can be achieved [37].

This study provided valuable insights into the barriers faced by Malaysian Community pharmacists in effectively implementing EPS and VAS. The identified barriers have significant implications for the quality and extent of patient care provided by Community pharmacists. While previous studies in Malaysia reported barriers like the separation of prescribing and dispensing medicines and medicine price discrimination [3, 15, 16], the current study reported barriers like access to patient medical records and designated areas for counselling and remuneration. Lack of time was the barrier that was reported in earlier studies in Malaysia [3, 15, 16] as well as this study. Barriers like lack of practice, lack of advanced qualifications, resource limitations, system limitations, and interprofessional obstacles have been reported by studies from other countries [9, 38–40].

Addressing the challenges identified in this study is crucial to unlocking the full potential of EPS and maximizing the positive impact on patient outcomes. Improving access to patient medical records is a fundamental requirement for pharmacists [41] to make informed decisions and provide personalized care. Collaborative efforts between healthcare providers, policymakers, and regulatory bodies should focus on developing standardized mechanisms to facilitate secure and efficient access to relevant patient information, ensuring seamless integration into the pharmacy workflow [42].

The lack of designated areas in community pharmacies for counselling represents a significant barrier to effective patient–pharmacist interactions, a finding consistent with another report [43]. Policymakers and pharmacy stakeholders should prioritize the provision of suitable arrangements within community pharmacies to ensure privacy, confidentiality, and a conducive environment for counselling services. This may involve physical infrastructure improvements, workflow adaptations [44], and clear guidelines to optimize patient counselling services.

Remuneration is a critical factor that influences the motivation and sustainability of EPS implementation. Stakeholders should explore innovative reimbursement models that recognize and incentivize the VAS provided by community pharmacists. This could include revisiting reimbursement frameworks, exploring public–private partnerships, and aligning remuneration [45].

This study indicated correlations between community pharmacists' age, experience, CPD events attended, and their willingness to provide VAS within their practice. These correlations provided insights into the factors influencing pharmacists' engagement in VAS and highlighted the importance of ongoing professional development in shaping their service provision. The negative correlation observed between community pharmacists' age and their willingness to provide VAS suggested that younger pharmacists may be more inclined to embrace new service offerings. This could be attributed to factors such as exposure to evolving healthcare models, greater familiarity with innovative practices, and a stronger desire to expand their professional roles beyond traditional dispensing. On the other hand, older pharmacists may be more resistant to change or face additional barriers that limit their willingness to adopt new services.

Similarly, the negative correlation between pharmacists' experience and their willingness to provide VAS suggests that the more experience the pharmacists had the more resistant they were to change. This finding highlighted the need for targeted strategies to address barriers and enhance the engagement of experienced community pharmacists in VAS. However, improving the design and implementation of any service depends on successful behaviour change interventions [46, 47]. Hence, efforts could include providing tailored training, offering mentorship opportunities, and fostering a culture of lifelong learning and professional growth.

Community pharmacists attend an average of three CPD events annually, crucial for earning the required 30 CPD points within 2 years for Annual Retention Certificate application and renewal [48]. The Pharmacy Board Malaysia

provides the CPD points grading system [49]. Hence, attendance is vital for pharmacists aiming to provide EPS, enhancing their skills and knowledge [50]. Attending CPD events correlates positively with pharmacists' provision of EPS and their willingness to offer VAS. In Malaysia, previous studies have reported that CPD has an impact on patient counselling [51, 52]. Thus, prioritizing diverse, accessible CPD opportunities aligned with evolving needs is crucial for regulatory bodies and professional associations.

Conclusions

This research provides insights into the perspectives of community pharmacists regarding EPS and VAS and the types of services rendered in Malaysia. The results highlight the importance of addressing barriers such as access to medical records, counselling spaces, and appropriate remuneration to facilitate the successful implementation of EPS and VAS in community pharmacies. Furthermore, this study suggested the importance of CPD to enhance the delivery of these services by community pharmacists.

Supplementary material

Supplementary data are available at *International Journal of Pharmacy Practice* online.

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Author contributions

Conceptualization, M.K.M. and K.R.; methodology, K.R.; software, C.J; validation, M.K.M. and K.R.; formal analysis, C.J.; investigation, C.J.; resources, C.J.; data curation, C.J.; writing—original draft preparation, C.J.; writing—review and editing, M.K.M. and K.R.; visualization, M.K.M. and K.R.; supervision, M.K.M. and K.R.; project administration, C.J.; funding acquisition, K.R. All authors have read and agreed to the published version of the manuscript.

Conflict of interest

The authors have no conflict of interest to declare.

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Data availability

All data supporting this study are provided in full in the 'Results' section of this paper. All data are incorporated into the article.

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