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A qualitative study exploring community pharmacists' awareness, attitudes and perceptions about drive-thru community pharmacy service in Malaysia during COVID-19

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ABSTRACT

Introduction: Drive-thru services are not given sufficient focus in the community pharmacy setting which was highlighted during COVID-19, particularly in Malaysia. This study aimed to explore the community pharmacists' perspectives regarding drive-thru community pharmacy service during COVID-19 in Malaysia.

Methods: In-depth online semi-structured individual interviews were conducted among 25 community pharmacists working in Malaysia. All interviews were conducted between March 2022 and May 2022 and were audio-recorded and transcribed verbatim, and then analysed by thematic analysis.

Results: Thematic analysis yielded seven major themes, 1-familiarity with drive-thru community pharmacy service during COVID-19, 2-willingness toward this service during COVID-19, 3-perceived benefits toward drive-thru community pharmacy service during COVID-19, 4-perceived disadvantages toward this service, 5-barriers toward drive-thru community pharmacy service, 6-factors affecting the preference toward this service, and 7-facilitators to drive-thru community pharmacy service. Enhancing social distancing and preventing the spread of COVID-19 were the major perceived benefits of this service during COVID-19 as reported by participants.

Conclusion: Overall, community pharmacists reported positive attitudes toward drive-thru community pharmacy service during COVID-19. However, concerns about poor communication between the pharmacist and the patient, limited counselling, and dispensing errors were acknowledged. These concerns would need to be addressed to improve the provision of drive-thru community pharmacy service.

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KEYWORDS Attitudes; awareness; community pharmacists; drive-thru community pharmacy service; COVID-19; Malaysia

Introduction

On January 30, 2020, the World Health Organization (WHO) proclaimed that the coronavirus disease (COVID-19) was a Public Health Emergency of International Concern (PHEIC) (*Overview of Public Health and Social Measures in the Context of COVID-19*, n.d.). Responding to the widespread COVID-19, the World Health Organization (WHO) has issued numerous safety measures aimed at mitigating the transmission of the virus to the greatest extent feasible. One of the preventive measures implemented was the practice of social distancing which is maintaining a minimum distance of one metre between two individuals (*Overview of Public Health and Social Measures in the Context of COVID-19*, n.d.). Mandatory lockdowns and fear of being infected changed physical ways of getting daily life essentials for more safe ways; requiring less or no physical contact, such as online shopping or drive-thru services (Mofijur et al., 2021; Nicola et al., 2020). The drive-thru pharmacy approach has emerged as a viable option for implementing social distancing measures, particularly in response to the COVID-19 pandemic (Ngo et al., 2021).

The concept of a drive-thru is characterised by the provision of services to individuals without requiring them to exit their automobiles (*Drive-Thru – Definition of Drive-Thru by The Free Dictionary*, n.d.). The use of drive-thru pharmacy service has been motivated by various factors, including the desire to minimise waiting periods, enhance the accessibility of pharmaceutical services for specific demographics, and, most recently, enhance safety measures in light of the COVID-19 pandemic (Ababneh, Ong, Mahmoud, et al., 2023d; Hussain et al., 2021).

The Walgreens pharmacy in the United States of America (USA) introduced the first drive-thru pharmacy service during the 1990s with the intention of catering to elderly individuals who may have limited mobility (A., 2011). Similarly, in the United Kingdom (UK) and Croatia, the first drive-thru pharmacies were introduced to serve less mobile older adults (*Boots Opens Britain's First Drive-through Chemist ... in an Old McDonald's | Daily Mail Online*, n.d.; *First Drive-through Pharmacy Opens in Zagreb – The Dubrovnik Times*, n.d.). In Taiwan, the drive-thru pharmacy was found to offer fast and efficient services compared to traditional pharmacy services (Lin et al., 2013). Likewise, in Australia, the drive-thru pharmacy Griffith has been providing time-saving pharmacy services since 2010 (*Drive Thru Pharmacy Griffith Soul Pattinson Chemist | Drive Thru Pharmacy Griffith*, n.d.). Customers of Jordanian pharmacies expressed positive feedback about using drive-thru community pharmacy services, particularly busy males with families who confirmed that such services are fast and convenient (Abu Hammour et al., 2019).

In 2003, the Ministry of Health Malaysia's Pharmaceutical Services Division implemented a drive-thru pharmacy service as part of their Pharmacy Value Added Services (VAS) (Loh et al., 2017). The establishment of the first drive-thru pharmacy service in Malaysia took place in 2008 as part of a trial project. This service was introduced at Pulau Pinang in Penang General Hospital (Hasnor et al., n.d.). According to a report by the Pharmaceutical Services Division of the Ministry of Health Malaysia in 2014, the implementation of drive-thru pharmacy services at 18 hospitals and 18 health clinics aimed to address parking challenges and alleviate congestion in the pharmacy waiting area (*Drive-Through Pharmacy Service | Pharmaceutical Services Programme, n.d.*).

In 2015, the drive-thru pharmacy service was provided by the Queen Elizabeth Hospital (QEH), Kota Kinabalu. The drive-thru pharmacy service at QEH was liked by the patients who used it (Liew et al., 2020). Furthermore, patients in Hospital Raja Perempuan Zainab II (HPRZ II) in Malaysia were aware of the existence of a drive-thru pharmacy service in (HPRZ II) and the significance of using this service by the general public (Azmi & Hasnah, 2015). Drive-thru pharmacies, on the other hand, may limit encounters between the pharmacist and patient, having a significant effect on the counselling practice (Azmi & Hasnah, 2015). Assessing awareness, perception, and barriers among Jordanian pharmacists provided additional support for this evidence (Abu Farha et al., 2017). On the other hand, drive-thru pharmacy services might offer practical medication dispensing and address the issue of inadequate parking spaces and enhance patient satisfaction (Abu Farha et al., 2017).

The primary objective of the implementation of drive-thru pharmacy services during the COVID-19 pandemic was to prioritise the safety of pharmacists and consumers (*Madigan's Pharmacy Is Serving Beneficiaries Via Drive-Thru | Article | The United States Army, n.d.*). For instance, Sidra Medicine in Qatar, and Thumbay University Hospital in the United Arab Emirates (UAE) had launched the first drive-thru pharmacy services during COVID-19; to prevent the spread of COVID-19 infection and encourage social isolation (*Sidra Medicine Introduces Drive-through Pharmacy | The Peninsula Qatar, n.d.; Thumbay University Hospital Launches Drive-Thru Pharmacy Service – News | Khaleej Times, n.d.*). According to the chairman of the Malaysian Pharmacy Association, the provision of drive-thru pharmacy service is deemed essential and imperative amidst the COVID-19 pandemic (*Farmasi Komuniti Pandu Lalu Pertama Di Malaysia [METROTV], n.d.*).

More sales and manufacture of pharmaceuticals were required as a result of the COVID-19 pandemic, which was good news for the pharmaceutical industry. Consumers also had a strong need for fast-serving pharmaceutical services, including drive-thru service (Padilla & Faller, 2022). Consequently, the benefits of creating these services might be emphasised by standardising

worldwide norms for drive-thru pharmacies, which could be aided by the knowledge acquired from utilising drive-thru pharmacies during COVID-19 in various countries (Hussain et al., 2021). In order to assess the need for drive-thru pharmacy services during COVID-19, a cross-sectional research conducted in Saudi Arabia examined the views of customers towards drive-thru community pharmacy services during the COVID-19 pandemic. The findings confirmed the urgent need for drive-thru pharmacy services to support community pharmacies (Diri, 2020).

In Malaysia, only two studies evaluated drive-thru pharmacy service through service consumers' perceptions (Azmi & Hasnah, 2015; Liew et al., 2020). However, these studies were conducted in hospital settings at Queen Elizabeth Hospital, and Raja Perempuan Zainab II Hospital before COVID-19 (Azmi & Hasnah, 2015; Liew et al., 2020). The introduction of this service in the community pharmacy setting in Malaysia is relatively new. The Superbig Kubang Kerian Pharmacy, located in Kelantan, Malaysia, has the distinction of being the first community pharmacy to provide a drive-thru service, commencing operations on the 5th of February, 2022 (*Farmasi Komuniti Pandu Lalu Pertama Di Malaysia [METROTV]*, n.d.). A recent cross-sectional study showed positive attitudes toward drive-thru community pharmacy service during COVID-19 in Malaysia among the general population (Ababneh et al., 2023c). It was found that drive-thru community pharmacy services were considered to be helpful during COVID-19 to enhance social distancing and reduce the spread of the COVID-19 virus (Ababneh et al., 2023c). However, community pharmacists' attitudes were not explored (Ababneh et al., 2023a; 2023b; 2023c). Qualitative studies analysing community pharmacists' interviews to drive-thru pharmacy experience are needed (Hussain et al., 2021).

This qualitative study was conducted with objectives to explore the awareness, attitudes of community pharmacists toward drive-thru community pharmacy services, and their perspective on possible barriers, and facilitators toward this service during COVID-19 in Malaysia.

Materials and methods

This study is reported by using the Consolidated Criteria for Reporting Qualitative Studies (COREQ) (Tong et al., 2007), the COREQ checklist for the current study is in Appendix 1.

Study design

A qualitative research method was followed. The qualitative method has been chosen because it is a flexible design for the exploration of respondents' attitudes, experiences, and intentions, and since it aids in creating thorough

perspectives that respondents have about the problem (Cleland, 2017; Howard Lune, 2017). Additionally, it is a good choice for research areas that do not cover well to fill in gaps that are left unexplained by survey-based research methods (Mullen & Reynolds, 1978). By analysing the participants' comments, this study tried to understand their experiences from their perspective using a phenomenological method (Aspers & Corte, 2019; Lester, 1999).

Study sampling

The sample size for the qualitative study was estimated based on reaching the saturation point, where no more new information is generated (Saunders et al., 2018). The targeted participants were registered community pharmacists from the Malaysian Pharmacists Society (MPS) and practicing either at independent or chain pharmacies with minimum of 8 h per day at a pharmacy. Only full-time licensed community pharmacists in Malaysia were included. Pharmacy technicians and non-registered pharmacists were excluded from the study. The first researcher who conducted the interviews (BFA) had access to some community pharmacists in Malaysia through pharmacists working in some hospitals in Malaysia. The hospital pharmacists invited ten of the targeted participants over the phone. Those participants were purposively selected based on their preference for participation and convenience as per time and were referred through WhatsApp to the researcher who conducted the interviews. The remaining respondents were recruited using the snowball technique. Upon initial approval, respondents received the study information package (via WhatsApp) to review and provide an initial agreement to participate. Those who agreed to participate signed electronic consent and were contacted to schedule an online interview through Zoom application.

Participants were recruited from three different cities in Malaysia, and all of them worked in pharmacies (Kuala Lumpur, the nation's capital and biggest city; Penang, the country's second-largest; and Johor, the country's fourth-largest). Informed consent was obtained from all individuals, and their participation was entirely voluntary. Furthermore, no motivational incentives were provided.

Data collection

The literature study served as the basis for the creation of an English semi-structured interview guide (Abu Farha et al., 2017; Lee & Larson, 1999). Researchers discussed and agreed on questions for the interview manual. Academic experts from Universiti Sains Malaysia (USM) were consulted to make sure the interview guide was easy to understand and included reliable information. Two local pharmacists piloted the document, and based on their feedback, several adjustments were made (Appendix 2). Table 1 shows a summary of the topic guide for the semi-structured interview.

Table 1. Summary of the topic guide for the semi-structured interview.

No	Summary of the interview topic guide
1	Awareness toward drive-thru community pharmacy service during COVID-19
2	Attitudes toward drive-thru community pharmacy service during COVID-19
3	Perceived benefits toward drive-thru community pharmacy service during COVID-19
4	Perceived disadvantages, barriers, and facilitators toward drive-thru community pharmacy service during COVID-19
5	Suggestions

A qualitative approach using in-depth online semi-structured individual interviews was followed. A sample of 25 community pharmacists, twelve males, and thirteen females, were interviewed online via Zoom application due to COVID-19 restrictions (Tavares et al., 2021). The interviews were conducted between March/2022 and May/2022 and were conducted in English (pharmacists, generally are good in English speaking as the medium of instruction in institutions and universities in Malaysia is exclusively in the English language). Each interview lasted for 30–40 min via Zoom application. All questions were asked, and respondents were given the freedom to express additional views and comments. All interviews were audio-recorded with consent and then transcribed into verbatim text. Saturation (no more new information was generated) was achieved at the 22nd interview; however, for further confirmation of the saturation, three more interviews were conducted. The interviews were verified for accuracy and consistency by listening to the recordings and reviewing the verbatim transcription by the researchers.

Validity and reliability /rigour

To ensure trustworthiness and rigour in data collection and analysis we followed the work of Braun and Clarke (2006). The study team had access to digital recordings of the data that had been transcribed professionally to guarantee correctness. A qualified and experienced qualitative researcher served as the primary researcher and was responsible for all interviews, thematic analysis and identification of themes. The whole study was overseen by two additional researchers well-versed in qualitative research techniques. Another researcher, a DrPH with expertise in qualitative research methodologies, confirmed the themes and performed a thematic analysis. There was no collaboration between the researchers and the subjects in this study. To assure the researchers' reflexivity, some of the participants' interview transcripts were sent back to them through WhatsApp for evaluation. The transcribed words met the expectations of the participants.

Data analysis

Data were thematically analysed using the method described by Braun and Clarke (2006). The analysis was conducted manually by reading and re-

reading the interview transcripts. An inductive analysis was performed by the research team to analyse the data. The data analysis was conducted through line-by-line coding and analysis. The first step involved developing familiarity with the interview data by the main author by listening repeatedly to the audio recordings and reading the transcriptions. Initial codes generation included the identification of raw data which could be categorised in a meaningful manner. The categories were created by chunking together groups of previously coded data. Then followed by searching for themes, merging categories into themes, reviewing the themes, and defining the themes by two authors. The generation of themes was conducted through sorting the codes that represented overarching ideas or recurrent concepts across the data set. Co-authors of the study read the interview transcripts to confirm that generated codes, categories, and themes were reflective of the interviews. All members of the study team came to a consensus on a common set of findings. Disagreements were discussed and settled amicably. A summary of the data analysis phases is presented in (Table 2).

Ethical considerations

Ethical approval was obtained from the Human Research Ethics Committee of Universiti Sains Malaysia (USM) (Reference code: USM/JEPeM/21110755). All interviewees in the research gave their informed, written electronic permission before taking part in the interviews. No one's identity or participation in the research shall be revealed to maintain the participants' privacy. Each person has their own special identifier (CP, Male or Female, 01, 02, 03, among others). To help respondents feel more comfortable opening up during interviews, the researcher outlined the study's goals, introduced herself and detailed her background in the pharmacy field. All of the interviews were

Table 2. Data analysis process.

Analysis phase	Tasks completed	Research team member involved
Familiarization with the data	Transcription, reading, and re-reading of the interview transcripts	BFA
Generation of initial codes	Initial, open coding of the entire data set	BFA and HZA
Categorization of initial codes	Categorizing generated codes into groups	BFA and HZA
Searching for themes and merging categories	Merging generated categories into potential themes	BFA and HZA
Reviewing of themes	Confirming themes – ensuring the internal homogeneity and external heterogeneity of themes	BFA discussed with IE
Defining and naming themes	Further refinement of themes	BFA, confirmed by SCO, RH, and IE
Report finalisation	Production of the manuscript, selection of illustrative quotes	BFA, reviewed and discussed by SCO, RH, IE, and HZA

recorded and stored safely on the principal researcher’s computer. The recordings were erased as soon as the data processing was complete.

Results

Demographic details of participants

Twenty-five community pharmacists ranging in age from 26 to 56 were interviewed for this study. A flow diagram of participants’ recruitment is presented in (Figure 1).

The analysis included 25 community pharmacists (CPs) (12 males, 13 females). Most of the participants ($n = 16$) were between 25–30 years of age. Eleven people surveyed had 1–4 years’ experience, whereas 6 were community pharmacists with 10 or more years’ tenure. Only three business owners were among the 25 CPs questioned. Demographic characteristics are summarised in Table 3, and all details are available in Appendix 3.

Thematic analysis results

Based on the study’s primary objectives, seven main themes and fourteen subthemes themes emerged. These themes subthemes and categories are presented in (Table 4).

Theme 1: Familiarity with drive-thru community pharmacy service during COVID-19

CPs were asked about their familiarity with drive-thru pharmacy service, their sources of knowledge about this service, and the availability of this service at

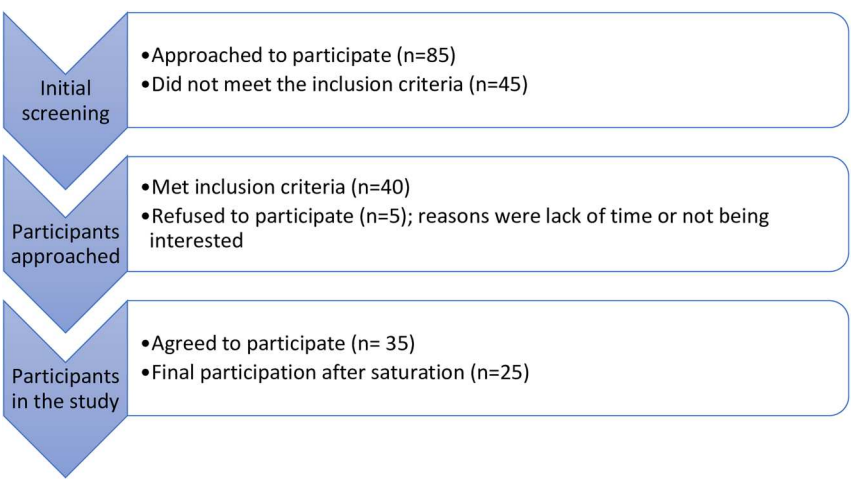


Figure 1. A flow diagram of the participants’ recruitment for the qualitative interviews.

Table 3. Demographic and practice characteristics of the study respondents (*N* = 25).

Variable	<i>n</i>	%
Age (years) mean ± SD	33.3 ± 9.2	
25–30	16	64%
31–35	3	12%
36–40	1	4%
41–50	3	12%
>50	2	8%
Gender		
Female	13	52%
Male	12	42%
Nationality		
Malaysian	25	100%
Ethnicity		
Malay	10	40%
Chinese	10	40%
Indian	5	20%
Education Level		
Bachelor's degree	25	100%
Experience (years) mean ± SD	7.9 ± 7.2	
1–4	11	44%
5–10	8	32%
>10	6	24%
Status in pharmacy		
Employee	22	88%
Owner	3	12%
Pharmacy Location		
Kuala Lumpur	2	8%
Penang	21	84%
Johor	2	8%
Availability of drive-thru service at site of work officially		
Yes	3	12%
No	22	88%

their sites of work. The majority of participants were aware of drive-thru pharmacy service and reported good knowledge about the concept of drive-thru pharmacy service.

to my knowledge, all is needed is the drive-thru window for vehicles counter for the service to order and catch the order (CP, Male,01)

usually the customers call for the order via WhatsApp or phone then drive to the pharmacy to pick up the medications or the order thru a separate window for that service (CP, Female,07)

the ideal way for running is the presence of a drive-thru window as thru it the order, payment, and picking up the order are going to be done (CP, Male,07)

Their reported familiarity with this service goes to the hospitals that offer this service. Only eight participants reported the availability of this service at their site of work; three reported it as an officially available service (through a special drive-thru window) and five reported it as still not officially available service (not through a special drive-thru window). The participants reported

Table 4. Description of themes, subthemes, and categories.

Themes	Subthemes	Categories
Familiarity with drive-thru community pharmacy service during COVID-19	1. Familiarity with drive-thru pharmacy service requirements	<ol style="list-style-type: none"> 1. Sources of getting information regarding this service. 2. Presence of this service at their site of work. 3. Knowledge about the concept of this service. 4. Factors needed to implement the service in community pharmacies.
Willingness toward drive-thru community pharmacy service during COVID-19		<ol style="list-style-type: none"> 1. Supportive to establish community pharmacies with drive-thru services all over Malaysia.
Benefits of having drive-thru community pharmacy service during COVID-19	<ol style="list-style-type: none"> 1. Time saver& fast 2. Need for specific population 3. Enhanced safety and social distancing 	<ol style="list-style-type: none"> 1. General perceived benefits 2. The category that will benefit the most from drive-thru community pharmacy service 3. Perceived benefits during COVID-19 time
Perceived disadvantages toward drive-thru community pharmacy service	<ol style="list-style-type: none"> 1. Less counselling and communication 	<ol style="list-style-type: none"> 1. Perceived disadvantages toward drive-thru community pharmacy service.
Barriers toward drive-thru community pharmacy service	<ol style="list-style-type: none"> 1. Pharmacy-related barriers 2. Pharmacist-related barriers 3. Customer-related barriers 4. Regulation-related barriers 	<ol style="list-style-type: none"> 1. Absence of suitable pharmacy layout. 2. Absence of drive-thru window 3. Shortage of pharmacy staff 4. Poor pharmacists' skills 5. Lack of customers cooperation at high workload times 6. The registration for drive-thru service is complicated
Factors affecting the preference toward drive-thru community pharmacy service	<ol style="list-style-type: none"> 1. Population-related factors 2. Service-related factors 	<ol style="list-style-type: none"> 1. socio-demographic factors that affect the perception of the public towards drive-thru community pharmacy service 2. Drive-thru service is applicable for OTC 3. It is not applicable for full consultations services
Facilitators to drive-thru community pharmacy service	<ol style="list-style-type: none"> 1. The need for ready brochures and instructions for counselling 2. Pharmacists' staffing and skills 3. Enhance customers' awareness 	<ol style="list-style-type: none"> 1. Suggested ways to improve drive-thru community pharmacy service

that the availability of drive-thru pharmacy service either official or not official was a need during COVID-19 to ensure safety precautions.

Yes, I'm familiar with this service as it was at my previous workplace in a hospital in Kuala Lumpur. It is running thru a window; patients pick up their prescribed medications thru a drive-thru window (CP, Female,3)

Drive-thru services recently appear especially after the COVID-19 pandemic due to quarantine and social distancing. Despite not having it in the pharmacy working at but I wish to provide it soon. I knew it from university when I was a student and then from my friends who are working in hospitals and clinics, and they are providing this service at their sites of work (CP, Male,01)

We offer it here not thru a special window, the owner will find a way soon to establish a special window for this service, since 2 years, it was started here as a need of the COVID-19 pandemic as a lot of precautions were required (CP, Female,04)

Subtheme-1: Familiarity with drive-thru pharmacy service requirements.

Participants reported uniform responses regarding factors that must be available in the pharmacy to implement drive-thru pharmacy service at community pharmacies. Those factors were good pharmacy layout, presence of a drive-thru window, presence of an external area for cars, authorisation by the council, and to be outside malls.

to operate this service a special separated window should be available for ordering and picking the orders and outside the pharmacy, there should be good space for cars, it is doable for community pharmacies outside malls (CP, Female,08)

a drive-thru window and the pharmacy's size is very important to create such a service (CP, Male,05)

I think if it's suitable I mean a good layout of pharmacy and authorized by regulations to offer this service, why not, it is fast service and let people follow COVID-19 pandemic restrictions like social distancing (CP, Male,06)

it would be very good and helpful, but should be authorized by the council and the pharmacy layout should be good to offer this service (CP, Male,08)

Theme 2: Willingness toward drive-thru community pharmacy service during COVID-19

Positive attitudes by participants toward drive-thru community pharmacy services were reported by participants whether who are providing it or not, as the majority showed high support to establish this service in community pharmacies in Malaysia. The positive attitudes toward drive-thru community pharmacy service were mainly due to the benefits of this service such as enhancing social distancing during COVID-19.

Despite not having it in the pharmacy working at but I am supportive to provide it because I believe it is good and helpful for customers who are not able to come to the community traditionally (CP, Male,02)

this service is available in hospital pharmacies and some community pharmacies in Malaysia. I agree to provide it, this service enhances social distancing as required nowadays (CP, Female,05)

we don't not having here in the pharmacy working in but If the customer asks to pick up the order after requesting over phones outside the pharmacy we can offer that service. wish to provide it soon, in the official drive-thru services the requested order and the pick-up are operating thru a drive-thru window, I wish to offer this window soon (CP, Male,05)

Theme 3: Perceived benefits toward drive-thru community pharmacy service during COVID-19

Community pharmacists perceived some benefits toward drive-thru community pharmacy service either general benefits related to this service or benefits during COVID-19 time as below.

Subtheme-1: Time saver& fast. Participants described the generally perceived benefits of drive-thru community pharmacy service as follows: convenience, time-saving, practical service, reduced workload in hospitals or health clinics, making pharmacy work organised, and trendy or modern service.

it is trendy as people wish nowadays to receive their services fast as by using drive-thru services (CP, Male,10)

Drive-thru service reduces the time for patients to receive their medications (CP, Male,01)

it is convenient and fast service (CP, Male,12)

people will use it because they need to get their medications fast with the least possible waiting time (CPFemale02)

drive-thru offer fast services for customers and reduce workload in hospitals like my previous workplace was very loaded (CP, Female,03)

Subtheme-2: Need for specific population. Additionally, some participants reported categories that will benefit the most from drive-thru community pharmacy services, such as all populations, busy customers, sick customers, people with disabilities, parents with kids and older adults.

definitely it will help all population who are busy with kids or who are employed (CP, Female,01)

it is fast and convenient during the pandemic or even after the pandemic for busy customers like a mom with kids or old individuals who don't have care-givers (CP, Female,13)

this service will be helpful for all populations, especially older adults who cannot wait for a long time to get their medications (CP, Male,11)

it would serve sick patients and will be more convenient for parents with kids (CP, Male,09)

it is nice and helpful for customers who are not able to come to the community pharmacies in a traditional way such as handicaps (CP, Male,02)

Subtheme-3: Enhanced safety and social distancing. Participants reported that customers desired drive-thru community pharmacy service during COVID-19 and became an essential service due to COVID-19 requirements in which this service enhances social distancing, reduces the spread of the virus, and decreases pressure on healthcare centres like hospitals.

drive-thru community pharmacy is very helpful during the COVID-19 pandemic as it enhances actions in response to the COVID-19 pandemic, which are limiting direct patient contact and limiting the chance of getting the infection, and during the pandemic, customers felt that community pharmacy drive-thru service is safer than going to hospitals and getting their medications because hospitals have COVID-19 cases and they are afraid of getting the infection (CP, Male,04)

it is needed during COVID-19 pandemic and quarantine time as it is fast service and facilitates the limiting of direct patient contact and limiting the number of patients visiting the pharmacy, I mean crowdedness; we can say drive-thru service will make the community pharmacy service more organized. In my opinion drive-thru, community pharmacy service will reduce the need to go to hospitals or clinics (CP, Female,04)

I think COVID-19 pandemic and restriction control time affected the need to offer services that reduce physical contact and spread of the virus as much as possible, will reduce the need to visit hospitals and reduce pressure on it as well (CP, Female,12)

Theme 4: Perceived disadvantages toward drive-thru community pharmacy service

Community pharmacists perceived some disadvantages while providing drive-thru community pharmacy either during COVID-19 or regular times as below.

Subtheme-1: Less counselling and communication. Community pharmacists reported that drive-thru community pharmacy service may lead to losing the professional relationship between pharmacists and customers, decrease the communication between pharmacists and customers, and

decrease the ability to provide counselling services, which may increase the occurrence of dispensing errors.

I think the main disadvantage is the inability of providing full counselling for customers especially when the customer is in hurry or there are so many customers waiting (CP, Male,12)

actually there will be some disadvantages like fewer communications and counselling between pharmacists and customers, and it may lead to dispensing errors due to the fast service provided (CP, Female,08)

according to my experience the only thing is that less counseling is done with the drive-thru service than the traditional service (CP, Male,04)

Theme 5: Barriers toward drive-thru community pharmacy service

Community pharmacists were asked about the barriers either during COVID-19 or regular times toward drive-thru community pharmacy service in Malaysia. Barriers were divided into four categories: 1- pharmacy-related barriers, 2- pharmacist-related barriers, 3- customer-related barriers, and 4- regulation-related barriers.

Subtheme-1: Pharmacy-related barriers. Pharmacy-related barriers were identified to be not suitable pharmacy layouts like small pharmacies, absence of drive-thru windows, and not good pharmacy locations; ex.: inside malls.

the only barrier for offering drive-thru service is the pharmacy layout and absence of good space to offer it (CP, Female,02)

in my opinion the absence of a drive-thru window is a barrier (CP, Male,11)

location and layout are barriers; since small pharmacies and pharmacies in the malls are not suitable to introduce this service (CP, Female,08)

Subtheme-2: Pharmacist-related barriers. Pharmacist-related barriers were identified as a shortage of pharmacy staff, poor pharmacists' skills, and not well-trained pharmacists.

shortage in pharmacy staff could be among barriers toward offer this service (CP, Female,05)

I think shortage of pharmacy staff is a main barrier to offer drive-thru pharmacy service (CP, Male,06)

in my opinion in a community setting would not be any barriers except poor pharmacists' skills to deal with such service under workload (CP, Male,12)

Subtheme-3: Customer-related barriers. Customer-related barriers were described by community pharmacists as a lack of customers cooperation at high workload times.

lack of customers' cooperation and understanding of providing such service especially when there is workload and crowdedness could be a major barrier to introduce drive-thru pharmacy service (CP, Male,01)

in my opinion barriers are mainly low customers' understanding of providing such service especially when there is workload (CP, Male,09)

Subtheme-4: Regulation-related barriers. Community pharmacists mentioned regulation-related barriers that may be a complicated process.

maybe the registration for drive-thru service at the council is complicated, this could be a barrier to introduce this service (CP, Female,10)

I heard from a friend the registration for drive-thru service is very complicated and too many things to be done before taking that registration, that's why I think the registration is the main barrier for it (CP, Male,07)

Theme 6: Factors affecting the preference toward drive-thru community pharmacy service

Subtheme-1: Population-related factors. The participants stated that there are some socio-demographic factors that may affect the general population's perceptions toward drive-thru community pharmacy service. Education level, employment status, being a student, having kids, age, and having a medical condition; disabilities are those perceived socio-demographic factors.

I think education level the higher the better perception and the employment status if employed better perceptions (CP, Female,01)

in my opinion, the only factor is the education level because customers who are educated will have better perceptions than those who are not educated (CP, Male,01)

age mainly those who are older adults they are not being able to walk so they prefer drive-thru services (CP, Male,02)

customers who are having kids and handicaps (CP, Male,03)

sick patients, age; older adults and busy customers such as university students and employed customers will have more perceptions about it (CP, Male,04)

Subtheme-2: Service-related factors. Some participants stated that drive-thru community pharmacy service is suitable for mainly OTC medications, and not suitable for consultations since it is fast service.

Drive-thru service is good since it will offer fast service for customers, but it is not good for consultations or customers who need information about medications, good for medications like OTC only because OTC products don't need too much information to tell the customer about it (CP, Female,10)

in my opinion, drive-thru service is more practical for OTC products like vitamin and antipyretics; because when the customer or patient comes for taking anti-hypertensive medicine we need to check his blood pressure so it will not be practical for dispensing such prescribed medications or medications need special counseling or those who are asking for consultation because drive-thru service is fact and lack of direct contact with customers so we will not be able to do that in a proper way (CP, Male,03)

Theme 7: Facilitators to drive-thru community pharmacy service

Participants perceived some facilitating factors which can enhance drive-thru pharmacy service provision and overcome some barriers to drive-thru pharmacy service.

Subtheme-1: The need for ready brochures and instructions for counseling. During the interviews, some participants suggested doing counselling through brochures or WhatsApp or over phones as a good suggestion while offering drive-thru community pharmacy service.

maybe find some solutions for counseling by preparing brochures or ready instructions to be given with every prescribed medication (CP, Female,01)

maybe the success of offering this service depends on both pharmacists and customers, I mean if customers need consultations or more details about medications with the least time and physical contact they should ask for that over the phone and take the medications thru drive-thru service or online, for pharmacists they should aware that some counseling points may be lost due to fast service they should ask customers if they want more details they can call the pharmacists for that (CP, Male,04)

Subtheme-2: Pharmacists' staffing and skills. Participants were convinced that the presence of enough pharmacy staff could help to improve drive-thru pharmacy service practice. They also discussed that training for the pharmacy staff who provide this service would be helpful for drive-thru pharmacy service practice.

maybe sometimes due to a shortage of staff some dispensing errors may happen to prevent this a good number of staff should available while offering this service to do double-check (CP, Male,07)

I think it is better to increase the manpower for drive-thru pharmacy to decrease errors and workload and of course the staff need to be trained for that service before start offering it (CP, Female,09)

we need to improve pharmacists' skills by training sessions by the council (CP, Male,12)

Subtheme-3: Enhance customers' awareness. During the interviews, some participants favoured improving customers' awareness of drive-thru community pharmacy service through advertisements.

we need to increase patients' or customers' awareness toward this service by advertisements or any other way (CP, Male,01)

we need to increase customers' awareness for this service by advertisements or TV (CP, Male,12)

Discussion

To the best of our knowledge, this is the first study that qualitatively assessed the drive-thru community pharmacy service among community pharmacists during COVID-19 in Malaysia. Drive-thru community pharmacy service is a relatively new service in Malaysia during COVID-19. Within this context within the past 10 years, only two cross-sectional studies are reported in the literature about drive-thru community pharmacy service before COVID-19 time one among consumers (Abu Hammour et al., 2019) and the second among community pharmacists in Jordan (Abu Farha et al., 2017). Recently during the COVID-19 time, two cross-sectional studies discussed drive-thru community pharmacy service among consumers in Saudi Arabia (Diri, 2020), and among the general population in Malaysia (Ababneh et al., 2023c).

The current study reported good awareness and positive attitudes toward drive-thru community pharmacy service among community pharmacists in Malaysia during COVID-19. They perceived some barriers and facilitators that must be considered for better practice of drive-thru community pharmacy service in Malaysia. The participants were aware of this service, this referred to the presence of this service at hospital pharmacies and healthcare centres in Malaysia in 2008 (*Drive-Through Pharmacy Service | Pharmaceutical Services Programme, n.d.*). Similar findings were reported among Jordanian pharmacists as 85.5% were aware of drive-thru pharmacy service (Abu Farha et al., 2017). The participants in this study reported that the availability of drive-thru pharmacy service either official (through the drive-thru window) or not official (not through the drive-thru window), was a need during COVID-19 to ensure safety precautions.

Participants in the current study reported some sources of knowledge about drive-thru pharmacy service. The main source of interviewed pharmacists was from hospitals in Malaysia that had started this service more than 5 years. This is not a surprise since drive-thru pharmacy service was introduced at hospitals in Malaysia in 2008 (*Drive-Through Pharmacy Service |*

Pharmaceutical Services Programme, n.d.). On the other hand, pharmacists in Jordan when they were asked about the sources of knowledge about this service, about 53% of them indicated the internet as the main source. This is because the drive-thru pharmacy service was established in 2016 in Jordan, and is only offered by some chain community pharmacies (Abu Farha et al., 2017).

Positive attitudes were noticed among interviewed community pharmacists toward this service as the majority were supportive of introducing this service in the community pharmacy setting. The positive attitudes toward drive-thru community pharmacy service were mainly due to the benefits of this service such as enhancing social distancing during COVID-19. Moreover, participants mentioned some factors that must be available for better practice, namely good pharmacy layout and enough number of well-trained pharmacy staff. These findings contradict a previous study in Jordan, as only one-quarter of community pharmacists were supportive to introduce this service among sites of work due to the unsuitability of their pharmacies' layout (Abu Farha et al., 2017). Pharmacy layout and management support such as staff training should be considered during the implementation of extended pharmacy services (Hattingh et al., 2020; Hussein et al., 2021).

Community pharmacists perceived many benefits of drive-thru pharmacy service in the community setting. General benefits were reported as being convenient, fast, time-saving, and solving parking problems (Ababneh et al., 2023c; Abu Hammour et al., 2019; Padilla & Faller, 2022; Liew et al., 2020; Hasnor et al., n.d.). Additionally, they perceived that drive-thru community pharmacy service is helpful for all populations and especially for some groups of population such as parents with kids, older adults, sick patients, disabled people, and busy customers. Similar results were mentioned in studies from Jordan and the USA, where pharmacists perceived that drive-thru pharmacy services are helpful for disabled cases, geriatrics, women with kids in cars, and ill patients (Abu Farha et al., 2017; Lee & Larson, 1999). The interviewed community pharmacists in this study reported that drive-thru community pharmacy service is very helpful during COVID-19 as it enhances social distancing, reduces the risk of getting the virus for both customers and pharmacists, and reduces pressure on hospitals. Similar results were outlined lately among the general population in Malaysia toward this service during COVID-19 time, as they believed that those services were helpful during COVID-19 to enhance social distancing and reduce the spread of the COVID-19 virus (Ababneh et al., 2023c).

This study highlighted some perceived disadvantages by community pharmacists while providing this service, such as losing the professional relationship between pharmacists and customers, the probability of having dispensing errors, decreasing the communication between pharmacists and customers, and the ability to provide counselling services. These findings

were similar to previous studies where pharmacists perceived that drive-thru pharmacy service may contribute to dispensing errors, and miscommunication between pharmacy staff and customers (Abu Farha et al., 2017; Szeinbach et al., 2007).

Participants in our study identified four categories of barriers to providing drive-thru pharmacy service in community settings including pharmacy, pharmacist, customer, and regulation-based barriers. Some pharmacies-based barriers to drive-thru pharmacy service implementation were documented previously, such as hospital settings in are not appropriate for this service as the layout of hospital pharmacies was not designed for providing this service. Moreover, preparing a building with a drive-thru window is costly (Abu Farha et al., 2017). Furthermore, the participants stated that the registration for drive-thru community pharmacy service is complicated as a regulation-related barrier. Abu Farha et al. (2017), also pointed out that the registration process for drive-thru pharmacy service is complicated and one of the barriers to drive-thru pharmacy implementation (Abu Farha et al., 2017).

Furthermore, community pharmacists in this study mentioned some service and population-related factors affecting the preference towards drive-thru community pharmacies. Concerning aspects of service, participants hypothesised that, due to its emphasis on speed, a drive-thru pharmacy would be best suited for over-the-counter prescriptions rather than consultations. This agrees with the findings of recent research, that found clients of community pharmacies thought drive-thru pharmacy service was only appropriate for over-the-counter purchases and prescription refills (Ababneh et al., 2023c; Abu Hammour et al., 2019). Possible causes for this include the fact that patients may feel less connected to their pharmacists and less written medication information may be offered to them while utilising this service (Abu Hammour et al., 2019; Azmi & Hasnah, 2015; Lee & Larson, 1999; Szeinbach et al., 2007). Moreover, for population-related factors, respondents assumed that education level, employment status, having kids, age, and having a medical condition; disabilities are the socio-demographic factors that may affect the general population's preference toward drive-thru community pharmacy service as well. No previous studies in the literature discussed the association between sociodemographic factors and perceptions toward this service from pharmacists' perspectives. However, some socio-demographic factors were associated with the Malaysian public use of drive-thru pharmacy services during COVID-19 time (Ababneh et al., 2023c), as males, being married and having kids were more likely to use the drive-thru pharmacy service (Ababneh et al., 2023c). Similar findings were documented among Jordanian consumers before COVID-19 time (Abu Hammour et al., 2019). This may be because Jordanian adult males tend to be busy and look for the quickest and most efficient services for their needs, whether they are married or not responsible for their

families' daily needs (Abu Hammour et al., 2019). Additionally, it was found by Leen and Larson that younger people were more likely to use this service (Lee & Larson, 1999). In contrast to what was reported by the Malaysian public (Ababneh et al., 2023c) and Jordanian consumers (Abu Hammour et al., 2019), where people with age more than 55 years old were more likely to use this service (Ababneh et al., 2023c; Abu Hammour et al., 2019). Maybe this can be linked to the increased usage of technology among older adults per statistics in 2017 (*Technology Use among Seniors* | Pew Research Center, n.d.). The above-outlined factors among the participants of this study cannot be an exhaustive list so more studies for further assessment.

Community pharmacists in our study have perceived some facilitators to enhance the provision of drive-thru community pharmacy service. To overcome the less provided counselling to the customers while using drive-thru pharmacy service, providing counselling through brochures or WhatsApp or over phones can be introduced to the customers. Similarly, for the lack of pharmacists' skills and staffing, increasing pharmacy staff numbers and training them are necessary to overcome pharmacist-related barriers. It is very important to identify barriers and facilitators influencing pharmacy practice among pharmacists (Hussein et al., 2021). Pharmacists' aspects such as enough staffing, and training are very important to consider during the implementation of any new extended pharmacy service (Hattingh et al., 2020).

Limitations of the study

During COVID-19 in Malaysia, this is the first research to explore community pharmacists' attitudes, awareness and experiences with drive-thru community pharmacy service. The lack of research analysing pharmacists' attitudes towards drive-thru pharmacies during or before COVID-19 is a limitation of this study. This study faced limitations in the number of sites it could sample due to time constraints and the difficulty of contacting community pharmacists. This is particularly relevant in light of the restrictions placed on social interactions and in-person studies under COVID-19. Generalisation beyond the research participants and limited sample size is still a problem, just as it is in qualitative research. More extensive investigations would improve the understanding with less risk of bias. Although the confidentiality was assured by not mentioning the participants' identities; social desirability bias may have happened. Most of the community pharmacists who participated in the interviews were under the age of 30, which might bias the results since younger people are more likely to use different types of services and to have different options, compared to the older generation. The research also has the drawback that the interviewed participants were limited to community pharmacists from only three different areas of Malaysia. Although Kuala Lumpur is the country's largest and most developed metropolis, Penang is the

country's second largest. Since most of the community pharmacists questioned were from Penang, two were from Kuala Lumpur, and two were from Johor, the findings of the current research cannot be extrapolated to the whole nation. It follows that findings in other parts of the nation are not likely to vary much from those here; however, further research is required to confirm this throughout the country, especially in rural areas.

Conclusion

Overall, the community pharmacists surveyed in this research had positive perceptions of the value of providing COVID-19 customers with drive-thru community pharmacy service. Customers wanted this service during COVID-19, they said, since it helps them feel less connected to others and hence less likely to get the virus. However, issues with dispensing mistakes, insufficient counselling and inadequate patient-pharmacist contact were highlighted. To enhance the delivery of drive-thru community pharmacy service, several issues must be resolved. Accessibility, workflow, pharmacist-patient contact and challenges to adoption have been explored in this research to better inform future pandemic preparation efforts, including drive-thru pharmacies in Malaysia. A more in-depth evaluation of community pharmacists' drive-thru service implementation during COVID-19 is required, which may be done by doing additional research on a larger sample of community pharmacists. To help decision-makers figure out whether the drive-thru community pharmacy service would benefit pharmaceutical care without requiring increased budget allocation, additional research on the full cost of implementation of the drive-thru community pharmacy service is recommended. Moreover, future studies are required to focus on those community pharmacies where this service is provided and to focus on consumers' perspectives utilising the drive-thru community pharmacy service.

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No potential conflict of interest was reported by the author(s).

Data availability statement

The authors confirm that all data underlying the findings are fully available without restriction. All relevant data are within the paper and its Supporting Information files.

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