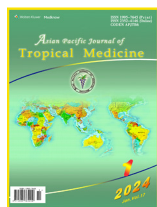

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Informing policy makers in developing countries: Practices and limitations of geriatric home medication review in Malaysia–A qualitative inquiry

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ABSTRACT

Objective: To explore existing practices and challenges in the delivery of geriatric home medication review (HMR). The study was part of a larger study aimed to offer solution to expand the range of geriatric HMR.

Methods: This study employed qualitative exploratory design through semi-structured individual in-depth interviews with the public pharmacists involved in the delivery of geriatric HMR at public hospitals. The purpose of the interviews was to explore challenges faced by them in the delivery of geriatric HMR.

Results: Based on the emerging themes from the qualitative data, the study reveals that geriatric HMR in Malaysia is integrated as part of multidisciplinary home care visits, encompassing a diverse patient population with various healthcare needs. However, it faces challenges such as the lack of outcome monitoring, formal training, and workforce constraints. Despite these hurdles, there is a pressing need for the expansion of this service to better serve the community, and collaboration with community pharmacists holds potential to broaden its scope. Ultimately, the findings suggest that pharmacist-led HMR is both warranted and feasible within the Malaysian healthcare context. In order to optimize medicine-use among older people living in the community, approaches for expanding geriatric HMR services in Malaysia must be developed.

Conclusions: This study holds profound implications as it attempts to illuminate policy makers in developing countries, enabling them to formulate effective HMR plans. By considering the challenges highlighted within this research, policy makers can design a comprehensive HMR service that caters adeptly to the healthcare needs of the mass population.

KEYWORDS: Home medication review; Older adults; Malaysia; Pharmacists; Low-to-middle-income countries

1. Introduction

Medications if prescribed or used inappropriately, may affect individual's health and healthcare cost adversely[1]. Adverse drug events (ADEs) have major repercussions among those taking many medications to manage multiple health conditions such as older adults[2]. Although common in primary care settings, majority of these ADEs are preventable[1]. In order to combat this, various developed and developing countries have introduced multidimensional interventions whereby community pharmacists

Significance

The exploration of geriatric home medication review (HMR) practices in Malaysia shed light on critical aspects that can inform healthcare policies and practices. Addressing the study question of the existing challenges in delivering geriatric HMR, the findings reveal that while integrated into multidisciplinary home care, this service faces obstacles such as the lack of outcome monitoring, formal training, and workforce constraints. The importance of this research is underscored by the pressing need for expanding geriatric HMR to enhance community healthcare. By emphasizing collaboration with community pharmacists, the study advocates for a comprehensive approach to optimize medicine use among older individuals, offering valuable insights for policymakers in developing countries aiming to formulate effective HMR plans.

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are compensated for providing face-to-face review of patient's prescribed and non-prescribed medications[3]. Such medication reviews are usually aimed to improve patients' health outcomes through educating them on the purpose and use of medications and improving compliance with the help of effective patient-pharmacist collaboration[4].

Prescription reviews, compliance/concordance reviews, clinical medication reviews, and home medication reviews are among the several types of medication reviews[4]. The last one is gaining popularity for its ability to identify and resolve drug-related problems in community settings[5,6]. However, referral mechanisms, eligibility requirements, pharmacist training, and reimbursement modes varied amongst programmes implemented in different countries[7].

Ministry of Health (MOH) Malaysia also initiated home medication review (HMR) service in 2011, the protocol was revised in 2019 and the name of service was changed to home care pharmacy service. Older population is one of the target population groups for this home care pharmacy service[8,9]. The pharmacists affiliated with MOH *i.e.* hospital pharmacists or those at public healthcare clinics visit the homes of the patients to reconcile medications and educate patients on proper medication use. Service is limited to the patients seeking care from public healthcare institutions[9]. Besides two well documented protocols and forms recommended for data collection, little is known regarding delivery of service, goals achieved and challenges faced in the delivery of geriatric HMR. Therefore, we aimed to explore the current practices and challenges faced by public pharmacists in the delivery of geriatric HMR. This was part of a larger study which was designed to develop a model to improve the range of geriatric HMR through providing a better and large-scale coverage.

2. Materials and methods

2.1. Study design

A cross-sectional exploratory study was conducted to investigate the delivery of geriatric HMR at public hospitals and healthcare clinics across Malaysia. The study involved semi-structured in-depth interviews with public pharmacists actively engaged in geriatric HMR services. Ethics approval for this study was obtained from Medical Research and Ethics Committee, MOH, Malaysia [KKM/ NIHSEC/ P20-1694 (3)].

2.2. Participant recruitment

Purposive and snowball sampling strategies were employed to recruit participants. Pharmacists involved in the delivery of geriatric HMR were identified and invited to participate via email and phone. Each participant received a concise participant information sheet and consent form. Participation in the study was entirely voluntary, and strict anonymity and confidentiality of the participants were guaranteed.

2.3. Inclusion and exclusion criteria

Inclusion criteria were (1) public pharmacists actively involved in the delivery of geriatric HMR at public hospitals in Malaysia; (2) participants must have experience with geriatric HMR services in a professional capacity.

Exclusion criteria were (1) pharmacists not affiliated with public hospitals in Malaysia; (2) pharmacists not actively engaged in geriatric HMR services; (3) participants who do not provide informed consent to participate in the study.

2.4. Study tool

A semi-structured topic guide was developed for this study through an extensive literature review. The purpose of this topic guide was to facilitate the exploration of current practices and challenges faced by public pharmacists in the delivery of geriatric HMR. The topic guide served as a flexible framework that allowed for in-depth discussions during the interviews with the study participants. It was designed to cover key areas related to geriatric HMR, including but not limited to current practices, challenges, patient interaction, collaboration, training and resources.

2.5. Data collection

After obtaining written informed consent, online interviews were conducted using the Zoom platform. A semi-structured topic guide was developed for the interviews. The guide was validated through several rounds of discussion within the research team until a consensus was reached on each item.

2.6. Data analysis

All interviews were conducted in English between August 2020 and September 2020 and were recorded for subsequent analysis. The recordings were transcribed verbatim. To ensure familiarity with the content, researchers read each transcript multiple times. An inductive approach was utilized to analyze the data through a descriptive interpretive process. A digital software QDA Miner was used to store and manage the transcripts. Quotes relevant to the aim of the study were extracted, and meaningful codes were assigned to each set of quotes for interpretation.

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The analysis proceeded iteratively. Starting from the first transcript, relevant codes were identified, and this procedure was repeated for the next two transcripts. The resulting codes were then organized into emerging themes, and similar sub-themes were grouped under larger main themes.

To enhance the rigor of our analysis, the thematic framework was continuously debated among the research team until consensus was achieved. The final thematic framework was then used to analyse subsequent transcripts. Any additional themes identified during the analysis were added to the framework with mutual consent from the research team.

3. Results

A total of 10 in-depth interviews were conducted with the public pharmacists from different states of Malaysia. Thematic saturation was achieved during eight interviews. However, two in-depth interviews were conducted additionally to confirm data saturation. The demographic details of the participants are presented in Table 1. Study findings on current practices and challenges faced in the delivery of geriatric HMR were grouped into nine themes as presented in Table 2.

Table 1. Demographic characteristics of the pharmacists interviewed.

Characteristics	*n*
Sex	
Male	4
Female	6
Age, years*	32 (28-41)
Highest level of education	
Undergraduate	6
Postgraduate (Masters)	4
Postgraduate (PhD)	0
Years of HMR experience	
1-5 years	7
5-10 years	3
Average HMR per month	
1	8
2-4	2

HMR: home medication review. *: age were expressed as median (range).

3.1. Geriatric home medication review was delivered as part of multidisciplinary home care visit

HMR in Malaysia was not delivered as a separate intervention rather geriatric pharmacists joined nurses, occupational therapists and physiotherapists during their home visits to patients with either mobility issues, history of frequent falls or those recently discharged from the hospital. Geriatric pharmacists utilised the same opportunity to provide pharmaceutical care to improve patients' clinical outcomes. Pharmacists took turns with other healthcare workers to interact with patients or caregivers to reconcile their medications and to provide required medication-related information. Since the visits were initiated by other team members, occasionally patient case information provided to the pharmacists were incomplete for a comprehensive HMR provision. Additionally, participants expressed that the current HMR protocol designed by MOH provided only a general guide to perform HMR and was not specific to the geriatric population. Therefore, in their opinion, it should be modified to include parameters specific to geriatric medical practice to provide targeted care to older adults.

"*When they (doctors) decided, okay! We need to go for home visit, so pharmacist is like an adjunct service. The main purpose of the home visits in the Malaysian setting is to troubleshoot physiotherapy and occupational therapy issues regarding home hazard, rehabilitation process and whatnot*". PP 01

"*At the moment, the home visit is under other profession, and we (pharmacists) are just acting as an adjunct, sometimes they (HMR manager–nurses) don't really pass over the case properly. So that's the issue. Despite pre–home visit discussion, sometimes missing of important information for us still happened*". PP 01

"*To be honest, I do think there's room for improvement for everything including the protocol. Because the protocol does not only cater for geriatric home visits, but also, for home visit in psychiatric discipline. Some of the things [sic] cannot be implemented into geriatric practice and those in geriatric cannot be implemented into psychiatry. We have to amend a bit so that we can collect more effective data. Some of the things are not really executable in this protocol. So, there's room for improvement. If let's say they can come up with a specific geriatric protocol, I will be really glad*". PP 07

Table 2. Current practices and challenges in the delivery of geriatric home medication review in Malaysia.

No.	Description of themes
1.	Geriatric home medication review was delivered as part of multidisciplinary home care visit
2.	Patients with broad range of healthcare issues were selected for home visit
3.	Home medication review outcomes were not monitored
4.	No formal training available for geriatric home medication review pharmacists
5.	Delivery of service was limited due to workforce constraints
6.	Going out for home visit affected pharmacists' service to hospital patients
7.	Service needs to be expanded to meet the needs of the community
8.	Collaboration with community pharmacists can expand the range of service
9.	Pharmacist-led home medication review is warranted and feasible

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3.2. Patients with broad range of healthcare issues were selected for home visit

Since the geriatric HMR visits were provided as part of a multidisciplinary home care visit, patients selected for the intervention did not usually present with drug-related problems. Participants reported that patients with collective problems were selected so that the nurses, occupational therapists, physiotherapists, and pharmacists in the multidisciplinary team will have some input/role during the home visit. Patients who were recently discharged from the geriatric ward were also commonly referred to the team for home visit. Since pharmacists were not part of the outpatient team at the geriatric clinic, patients visiting the clinic were not referred for HMR and often readmitted with more serious problems. However, the process of referral to HMR service remained unclear. Different participants reported different ways of referrals. A few participants reported that only doctors would identify and refer suitable patients for the home visit service while others reported that any healthcare professional including pharmacists and nurses may identify and refer patients in need for HMR intervention.

"*When there is a patient who is planned to be discharged in the coming two weeks' time, they (doctors) will try to reassess whether there is a necessity for home visit. Not necessarily every single patient with medication issues will be assigned to the home visit. Home visit in geriatric patients from ward X, Hospital Y is more like if the patients have accumulated issues like medication issues, mobility issues, or they have carer issues. It´s for cumulative issues that are needed to be troubleshot and you couldn´t really see them when the patient was hospitalised*". PP 01

"*Usually they (patients referred to HMR) are more complicated patients. They have problems which could not be solved at the hospital and we (healthcare professionals) need to go to their houses. So not mainly drug–related problems, but most of the time, there will be drug (related) issues when we go to their house*". PP 02

"*In the acute ward we don´t provide patients with the home visit. So yeah, the acute patients are more in need actually. From what we have seen in this acute geriatric ward, without the home visit, the number of readmissions is very high. As you can see, they (patients) are being discharged with premature conditions and also they are not being reviewed. So that´s why it incurs more problematic issues. When they are discharged, they come back to us with more complex problems*". PP 01

3.3. Home medication review outcomes were not monitored

Participants expressed that HMR service was not given enough recognition and importance by higher authorities in the organization. Key performance indicators in public hospitals did not include the number of HMR visits accomplished nor the results achieved. According to the participants, this lack of acknowledgment of HMR in MOH policy may be attributed to the qualitative aspect of HMR outcomes. Participants perceived that head of departments and policymakers only placed high regard for large quantitative outcomes in terms of results and improvements. Unfortunately, achieving substantially compelling statistics for HMR was not possible due to the nature of the service and limited resources where only small number of HMR visits were conducted per month or per year. Patient satisfaction, reduced hospitalisation rates, and improved health outcomes were among the perceived benefits of HMR reported by participants. However, measuring such parameters would require a longitudinal approach to allow, at minimal, pre-post comparison of outcome. Given the current scenario where no follow-up HMR visit was conducted, this information was not available to convince policymakers of the impact of the service on patient outcomes.

"*So whatever data they presented in any kind of annual reports, be in the hospital or at the ministry level, they (head of the departments) will be expecting to put a lot of graphs, a lot of bar charts, and a lot of pie charts to show that how well the organization or people in the organization have done it. They wouldn´t want to put a lot of descriptive kind of findings.*" PP 04

"*The problem with our higher authority is that they only see numbers. Okay, this hospital has hundred HMR. Right! Hundred a year, where are you? Conducting so little! You should have more pharmacists conducting HMR. But they don´t have a measurement to see whether the patients have actually improved from the HMR?*" PP 08

"*We don´t do follow up visits. So when we don´t do follow up we never know what´s the outcome? So, we do not have pre and post. Like I said for geriatric discipline, we tag along with other team members so I cannot say, oh, let´s go to this house again because I want to see the outcome. Yeah, I cannot be so selfish. So, at the end of the day, we don´t know what happened to the patient.*" PP 08

3.4. No formal training available for geriatric home medication review pharmacists

Participants expressed that the training provided to the geriatric HMR pharmacists was inadequate. Typically, trainee pharmacists would join the home visit team under the supervision of a senior pharmacist, a process known as 'tagging'. After two supervised home visits, trainee pharmacists were then allowed to join multidisciplinary team independently to conduct HMR. While this was a common practice in one of the institutions, it was not standardized/practiced across all MOH institution. It was also strenuous on the hospital pharmacy workforce to allow two pharmacists to go for HMR at any time. Participants expressed that a formal, standardized and recognized geriatric HMR training would improve service quality, recognition as well as interest of junior pharmacists to participate

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in the HMR service. In their opinion, simulated case-based training can be designed to train pharmacists on managing common drug-related problems encountered during HMR. A few participants also highlighted that providing remuneration/recognition for the pharmacists involved in HMR would further motivate them, as practiced in other countries.

"*The training or the tagging is conducted during the home visit. During the home visit day, the coordinator will assign one junior and one senior to go for that particular home visit. So, it will be a live, hands–on training at the patient´s house. But we had a lot resistance from the bosses to allow two people to go for one home visit. So, this training has been abolished as it could not be done too frequently because it takes out staff from their departments. So, what we have been doing is that we have been arranging teaching and training sessions at the pharmacy, on monthly basis. But there were some limitations too. Some of the pharmacists were not able to attend training session on monthly basis because of their work commitment or because of the boss′s permission.*" PP 01

"*Training wise, yes, I do agree that we need training. You can´t just expect the pharmacist in the community or even in the hospital that you give them protocol and they can execute it. Because we need to deal with the patients and not with the protocol. How will we tackle things, what should we do if things are happening out of the protocol?*" PP 07

"*Of course, currently, there is no extra bonus for doing this extra service. I think it should be recognized and privileged alright! So it becomes a plus point in their (HMR pharmacists′) curriculum vitae that I am certified and privileged of doing the service. I have been trained for doing this service. And it must be recognized by the whole country not only a state. And the competency of the HMR pharmacist should be maintained. It (certificate of training) needs to be renewed. So you may have to submit like I already visited let′s say 10 house each year so I want to renew my license for conducting home medication review.*" PP 02

3.5. Delivery of service was limited due to workforce constraints

Due to a small number of trained staff to take on additional responsibilities like HMR, the number of visits per week was kept minimum. Usually, one visit per week and maximum four visits per month were conducted depending upon availability of personnel and resources. HMR service was provided as one-off visit and no follow-up visit was rendered to a single patient. Instead of follow-up HMR visit, an urgent appointment for clinic consultation was set up, if necessary, to address emergency issues. Participants reported that since there was no dedicated staff for the service, it was difficult to expand the service or to provide follow up visits. They fostered their opinion by stating that their core responsibility was to take care of hospitalised patients and achieve key performance indicators set by their organization. Due to clashing responsibilities, heads of the departments also were reportedly reluctant to release pharmacists from their departments to go for HMR training or home visit.

"*So not necessarily within a month, there are compulsory four home visits. Probably it might be less than four visits, according to the resource that we have and situation of the patient at home*". PP 01

"*That´s one of the hiccups doing HMR in our settings, because we can´t afford to do follow ups. Because manpower of course, time and when we follow up one patient, we are going to neglect those patients who really need initial review by pharmacists.*" PP 07

"*Yeah, there´s always that manpower issue. Even strictly speaking HMR in my point of view, how to say it (thinking) it´s not a core part of the service. It´s important. Yes… but the core service is actually the pharmacist to be present at the clinics and the wards. Right? And we don´t even have enough manpower for that (laughs), let alone additional activities like HMR.*" PP 03

"*There were opportunities to go for HMR sessions. But then, due to the workforce constraint, I had to ask approval from my own boss. My boss had to ask for approval from another boss, so that I can leave to join HMR team. So there were certain cases whereby due to some conflict I was not allowed to leave (to conduct HMR).*" PP 06

3.6. Going out for home visit affected pharmacists′ service to hospital patients

Since delivering HMR was assigned as an additional role to the hospital pharmacists, it often conflicted with their core duties, such as attending ward rounds and reviewing medications of hospitalised patients. As a result, they attempted to manage their time by either arriving early or leaving their workstations late on the day of the home visit. They also preferred to complete HMR reports and prepared presentation slides on HMR findings over the weekends at home. Participants stated that the monthly roster for HMR visits was typically prepared in advance, which allowed hospital pharmacists to schedule their duties accordingly.

"*Yes, because we have our own day–to–day obligations, especially I take care of the ward. So we have our monthly quota of meditation history taking and pharmacotherapy review. So actually, when we leave half day slots, we miss the ward rounds, and the progress of the patients is lost halfway. So actually, we have to find time after coming back to review the patients and then we spend extra time to prepare all these presentation slides and to discuss them with the doctors on what is to be done for those patients. So, I think it involves about one day′s work to actually go for this HMR session.*" PP 06

"*Usually, I will take an effort to come to work much earlier like one to two hours in the next day so that I can do my own stuff and I can prepare the pass over for while I am gone. That´s how I do.*" PP 01

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"*Okay, (laughing) so who covers for me, it´s like first thing first. Any turn to attend the home visit should not be done impromptu. Let´s say you have already assigned this person A to go for this week. Person B to go for next week. C is for the subsequent week. So, for me, if it´s possible I will try to stick to that plan because I can make arrangements for the people who will cover for me.*" PP 01

3.7. Service needs to be expanded to meet the needs of the community

The number of HMR visits conducted (one visit per week) was too low to offer meaningful impact to the geriatric population. Participants agreed that frequency of home visits should be increased and the criteria should be made more inclusive to include more individuals especially those with co-morbidities and polypharmacy.

"*In terms of improvement, it will be the expansion of the service and having more pharmacists to be involved in this geriatric HMR. Means, more frequent visits.*" PP 06

"*I think all (geriatric) patients should have home medication review, to be honest. But pharmacoeconomics might not support my suggestion. So I do think that all patients should be at least screened for home medication review.*" PP 07

"*We are talking about geriatric patients and we are an ageing country. So we do have more ageing patients in our society and not everyone knows the medication well. Or even sometimes I feel like there should be a dedicated team just to do HMR or even the service can be extended to the community setting where any pharmacist can just go and visit patient's home but of course the risk and benefits need to be weighed.*" PP 09

3.8. Collaboration with community pharmacists can expand the range of service

Participants suggested that in order to overcome the challenge posed by lack of manpower and clashing responsibilities for hospital pharmacists to conduct HMR, collaboration with private community pharmacists should be established. Participants perceived that in comparison to public sector, workload at the private sector was manageable. Hence clinically stable patients from outpatient clinic could be referred to the nearest community pharmacist. Community pharmacists can conduct HMR to patients referred to them, prepare a report and communicate their findings to fellow pharmacists at the hospital. Participants highlighted similarly community pharmacists who intend to be involved would require training to acquire necessary skills.

"*At the moment, I feel that we are underutilizing our primary care and have been overloading the tertiary care. So, this can be a good challenge and a good opportunity for them (primary care healthcare professionals).*" PP 01

"*For example, if I can identify some of my patients who don´t really need nurses' assessment and we already know the case earlier. So, we may just zoom in and ask any pharmacist, 'can you go out as you´re nearby from this house and then give me input on your findings during the home visit?' Of course, it would be better. Definitely, we can improve patient care.*" PP 02

"*I do not think we have enough people. That is why I think community pharmacists have to come into the picture. Yeah, one patient per week is not enough. I got like 50 patients in a ward. More than 200 patients in a week (laughs). Yeah, so (one HMR visit per week is) definitely not enough. We only selectively choose patients which is very unfair for other patients.*" PP 08

3.9. Pharmacist-led home medication review is warranted and feasible

Participants explained that one of the reasons for having multidisciplinary team to conduct home visit was to ensure safety of the visiting personnel. However, participants felt that gathering a team for every visit further strained HMR service provision as it was not easy to find a common available slot. Going in large teams also sometimes led to the patient feeling intimidated and uneasy. In addition, the amount of time spent for HMR during each visit was limited as the visit was 'shared' with other personnel to carry out their assessment and intervention. Hence, participants favoured pharmacist-led home visits which would allow in-depth exploration of medication-related problems. HMR findings can be shared with patients' health care team *via* report post-visit and there is no real need for everyone to be present at each visit. As for safety concerns, participants perceived that this could be addressed by performing risk assessments prior to each visit and acting accordingly.

"*Based on my experience, I definitely say that by going as a pharmacist-alone for HMR, we can focus better. And also the efficiency of time consumed during visit can be maximized to gain more information rather than we go as multidisciplinary teams where we have minimal time to gain any information. I definitely prefer pharmacist-only HMR visit because it is more meaningful. And also, I think patient is more comfortable when pharmacist is going alone. I will say that no need to be afraid about the safety issues. As I mentioned, the patient is (not) a stranger to the pharmacist, because we see the patient from time to time at the clinic. So, it´s not something that we need to be afraid of. We just need to do the risk assessment before we go and we need to classify whether the risk is low, moderate, or high.*" PP 10

"*There's one (case) where the patient refused to let so many personnel enter at once. So that's why we try to get consent first. At first, patient was like quite irritable because so many personnel wanted to enter at once.*" PP 05

"*The most important thing in HMR is the report. So the report is how we share the information with other healthcare professionals, so we do not need to go as a multidisciplinary team of more than five people. Rather we (can) go alone as a pharmacist and have quality time with patient, and we can make our time as short as possible.*" PP 10

4. Discussion

To our knowledge, this was the first study to explore the delivery of geriatric HMR service by MOH in Malaysia. We set to explore the experiences and challenges faced in the delivery of the service hoping to highlight good practices as well as areas for improvement. Our study revealed that the provision of geriatric HMR by Malaysian public hospitals was not a stand-alone intervention and patients referred to the service were not referred based on their risk/presence of drug-related problems. Patients were commonly referred for occupational therapy or physiotherapy issues especially among those with history of multiple falls or those unable to visit hospital settings after being discharged. Previous studies, however, have established that HMR improved chronic disease management scores, reduced the number of medications and overall cost of healthcare utilisation when provided to patients with multiple medications and those with potential risk to develop drug-related problems[6,10,11]. Therefore, we postulated that inclusion criteria to recruit patients for geriatric HMR should be customized according to medication needs of the geriatric population to achieve better outcomes. This will also ensure efficient use of resources by targeting the intervention to high-risk population.

Our study revealed that there was no dedicated staff assigned for geriatric HMR delivery in the MOH facilities. Therefore, the level of care provided to hospitalised patients was compromised when hospital pharmacists left premises during working hours to perform geriatric HMR. Globally, however, HMR was provided by community pharmacists to people living in their local communities[4,12]. While these global HMR delivery models provide evidence of improved patient outcomes, there is a lack of evidence of its economic impact[4,13]. In Malaysian context, the role of community pharmacists in delivering HMR becomes even more significant due to increased workload at public hospitals and the surplus community pharmacists[14,15]. In this regard, MOH of Malaysia may define criteria to recruit and train a pool of community pharmacists to administer HMR, and the information about these pharmacists may be maintained in a database at the public hospitals. Patients from public hospitals may then be referred to the community pharmacist of their choice with the help of this database.

Absence of follow-up visits was also indicated in our findings corresponding to the lack of staff to deliver geriatric HMR under MOH. Without follow-up HMR visits, it is impossible to compare clinical results and cost considerations before and after intervention. Due to the lack of outcome tracking, geriatric HMR has been denied proper recognition by higher authorities in hospitals as well as in the federal level. Poor acknowledgement of HMR service is not only a problem in Malaysia. Most developing countries have failed to launch this intervention at a scale capable of showing significant impact on treatment goals, patient outcomes and healthcare cost[16]. In order to showcase the actual impact of HMR in Malaysia, it is necessary to expand the range of current service to a larger geriatric population along with the provision follow up visits until the drug-related problems are resolved. This would also help to compare patient outcomes pre- and post-intervention and establish the impact of interventions on treatment goals and economic impact.

Lack of formal training for pharmacists involved in geriatric HMR was consistently highlighted by study participants. Sorensen *et al.* showed that HMR was capable of producing significantly positive impact on patient outcomes even with short follow-up duration of six months when adequate training is provided to the service provider[11]. While other studies showcasing lack of impact of HMR on hospital readmissions failed to describe any specialized training provided to the professionals for conducting HMR[10,17,18]. In light of this, we suggest that a standard protocol be developed specifically to train pharmacists with the necessary skills for providing geriatric HMR, which must be certified and acknowledged by national pharmacy regulatory authorities in order to raise the standard of the intervention and provide a consistent nationwide service. This training program, once in place, will assist in the training of eligible pharmacists from both sectors, resulting in the establishment of a trained geriatric HMR workforce.

Safety of the home healthcare providers was a topic of special concern which was repeatedly highlighted by the participants of this study and is debated sufficiently in the literature[19,20]. Home healthcare providers are exposed to several risks which may include crime, violence, aggressive pets, dangerous weapons, poor sanitation or extremes temperatures[19]. Kendra *et al.* reported that factors contributing to safety risk include unsafe geographical locations, rate of crime in the area, and late/evening assignments[20]. In their opinion, safety risk may be minimized thorough several approaches, for example, using personal protection equipment, accompanying escorts, avoiding evening assignments and/or making use of buddy system where a home healthcare provider may alert a person they know in case of possible threat[20]. MOH of Malaysia suggests that pharmacists should visit patient homes as a team of at least two members and must inform HMR manager about the departure and arrival timings of the home visit[9]. The key idea in this recommendation is to stay in touch with the home healthcare provider during the visit so that prompt assistance may be provided in case of emergency. In a resource limited setting, requiring at least

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two healthcare workers to visit is unrealistic and may represent poor resource utilization. Instead, home healthcare providers must be trained to assess safety risk, remain vigilant of surrounding situation and being aware of the procedures to report threat. Due to societal variations at different locations, one solution may not fit to all situations. Therefore, a combination of safety measures including the utilization of modern technology such as GPS trackers and video surveillance may be adopted to safeguard service providers. This therefore should be incorporated into the HMR training and protocol document.

Our study gathered data from pharmacists delivering geriatric HMR in different states of Malaysia. It highlighted that the current delivery of geriatric HMR by the MOH was markedly constrained due to lack of trained workforce and resources. Provision of service at a low scale has failed to produce significant impact on the society or healthcare and thus accounts for low awareness among public and healthcare professionals about the delivery of geriatric HMR in Malaysia[21]. Issues highlighted in this study would play significant role in informing policy makers as they explore strategies for expanding the service.

In conclusion, since there is no dedicated team/pharmacists assigned for HMR, hospital pharmacists have to juggle between their responsibility at the hospital and conducting HMR. This may negatively impact the quality of care delivered to hospitalised patients and burden the pharmacists who have to spend longer hours at the hospital to compensate for the hours when they were away for home visit. To overcome the pressing issue of workforce limitation, it is proposed that private community pharmacists should be trained through a standard certified geriatric HMR training programme and engaged for the delivery of geriatric HMR in Malaysia. Since qualitative research typically lacks quantitative data and statistical representation of issues, it's important to note that the findings may not be readily applicable to all low-to-middle-income economies, given the unique context of Malaysia.

Conflict of interest statement

Authors have no conflict of interest to declare.

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Authors' contributions

A.S conducted the literature search and performed data acquisition. A.S and R.S developed the theoretical formalism and performed the analytic calculations. A.S, R.S, and M.P.T contributed to the final version of the manuscript. R.S and M.P.T supervised the project.

References

[1] Gandhi TK, Weingart SN, Borus J, Seger AC, Peterson J, Burdick E, et al. Adverse drug events in ambulatory care. *N Engl J Med* 2003; **348**(16): 1556-1564.

[2] Lavan AH, Gallagher P. Predicting risk of adverse drug reactions in older adults. *Ther Adv Drug Saf* 2016; **7**(1): 11-22.

[3] Hatah E, Tordoff J, Duffull SB, Braund R. Pharmacists' performance of clinical interventions during adherence support medication reviews. *Res Social Adm Pharm* 2014; **10**(1): 185-194.

[4] Blenkinsopp A, Bond C, Raynor DK. Medication reviews. *Br J Clin Pharmacol* 2012; **74**(4): 573-580.

[5] Papastergiou J, Zervas J, Li W, Rajan A. Home medication reviews by community pharmacists: Reaching out to homebound patients. *Can Pharm J* 2013; **146**(3): 139-142.

[6] Kwint H, Faber A, Gussekloo J, Bouvy M. The contribution of patient interviews to the identification of drug-related problems in home medication review. *J Clin Pharm Ther* 2012; **37**(6): 674-680.

[7] Pechlivanoglou P, Abrahamyan L, MacKeigan L, Consiglio GP, Dolovich L, Li P, et al. Factors affecting the delivery of community pharmacist-led medication reviews: Evidence from the MedsCheck annual service in Ontario. *BMC Health Serv Res* 2016; **16**(1): 1-12.

[8] MOH HMR Protocol. *Home medication review protocol.* 2011. [Online]. Available from: https://www.pharmacy.gov.my/v2/en/documents/home-medication-review-protocol.html. [Accessed on 28 July 2022].

[9] MOH. *Home care pharmacy services protocol. 2nd.* 2019. [Online]. Available from: https://www.pharmacy.gov.my/v2/sites/default/

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files/document-upload/home-care-pharmacy-services-protocol-2nd-edition-2019.pdf. [Accessed on 28 July 2022].

[10]Lenaghan E, Holland R, Brooks A. Home-based medication review in a high-risk elderly population in primary care-the POLYMED randomized controlled trial. *Age Ageing* 2007; **36**(3): 292-297.

[11]Sorensen L, Stokes JA, Purdie DM, Woodward M, Elliott R, Roberts MS. Medication reviews in the community: Results of a randomized, controlled effectiveness trial. *Br J Clin Pharmacol* 2004; **58**(6): 648-664.

[12]Medicare Benefit Schedule. *The Australian Government Department of Health and Ageing*. 2012. [Online]. Available from: http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/276B8A3E93673BECCA257CCF00051C25/$File/201212-Allied.pdf. [Accessed on 28 July 2022].

[13]Flanagan PS, Barns A. Current perspectives on pharmacist home visits: Do we keep reinventing the wheel? *Integr Pharm Res Pract* 2018; **7**: 141-159.

[14]Hassali MAA, Shafie AA, See OG, Wong ZY. *Pharmacy practice in Malaysia pharmacy practice in developing countries*. US: Academic Press, Elsevier; 2016, p. 23-40.

[15]Mohd-Tahir NA, Paraidathathu T, Li SC. Quality use of medicine in a developing economy: Measures to overcome challenges in the Malaysian healthcare system. *SAGE Open Med* 2015; **3**: 2050312115596864. doi: 10.1177/2050312115596864.

[16]Gudi SK, Kashyap A, Chhabra M, Rashid M, Tiwari KK. Impact of pharmacist-led home medicines review services on drug-related problems among the elderly population: A systematic review. *Epidemiol Health* 2019; **41**: e2019020.

[17]Holland R, Lenaghan E, Harvey I, Smith R, Shepstone L, Lipp A, et al. Does home based medication review keep older people out of hospital? The HOMER randomised controlled trial. *BMJ* 2005; **330**(7486): 293.

[18]Jatau AI, Aung MMT, Kamauzaman THT, Rahman AFA. Prevalence of drug-related emergency department visits at a teaching hospital in Malaysia. *Drugs Real World Outcomes* 2015; **2**: 387-395.

[19]Gershon RR, Pogorzelska M, Qureshi KA, Stone PW, Canton AN, Samar SM, et al. Home health care patients and safety hazards in the home: Preliminary findings. In: Kerm H, James BB, Margaret AK, and Mary LG. (eds.) *Advances in patient safety: New directions and alternative approaches*. Rockville, MD: Agency for Healthcare Research and Quality; 2008.

[20]Kendra MA, Weiker A, Simon S, Grant A, Shullick D. Safety concerns affecting delivery of home health care. *Public Health Nurs* 1996; **13**(2): 83-89.

[21]IMU News. *Pharmacist shares her experience on home medication review.* 2015. [Online]. Available from: http://imunews.imu.edu.my/people/alumni/pharmacist-shares-experience-home-medication-review/. [Accessed on 28 July 2022].

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