

Original Article

Practical Problems of Medication Use in the Elderly Malaysians and Their Beliefs and Attitudes Toward Deprescribing of Medications

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INTRODUCTION

Elderly population is often suffering from chronic disease due to aging. Chronic diseases among the elderly often affect their quality of life due to physical disabilities and emotional concerns.^[1] Elderly with chronic disease often require taking multiple medication regimens and may cause them to experience medication use problems.^[2] Elderly are prone to polypharmacy due to their physiological and anatomical changes and comorbidities that must be managed by multiple medications.^[3] However, multiple medication or polypharmacy has a potential impact on the patient's health outcomes.^[4]

Medication errors are a significant concern to health-care systems as they may reduce the therapeutic effectiveness and represent an incremental cost.^[5] While, practical problems with medication use were defined as problems related to the presentation and formulation of medicine

and included labeling, information leaflet, material and type of outer and inner packaging, administration device, color, shape, size, taste, surface texture, and any break mark on a medicine.^[2] Deprescribing is also beneficial in reducing the risk of adverse drug reaction, reduction of financial cost, and improved adherence with other medications, especially among elderly patients with polypharmacy.^[6] Thus, deprescribing is beneficial to be implemented to reduce the burden of polypharmacy among elderly patients.

A qualitative study in 2014 has listed numbers of practical problems with medication use experience by elderly and their management strategies to overcome

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ABSTRACT

Objective: This study aimed to investigate the prevalence of practical problems with medications use experienced by elderly patients and the management strategy employed to overcome the problems. This study also aimed to evaluate the belief and attitude of elderly patients toward deprescribing. **Methods:** A cross-sectional study was conducted among elderly patients that seeking treatment in a primary care clinic in Malaysia from September to November 2018 using a set of researcher-assisted and validated questionnaire on their consent.

Findings: A total of 182 elderly patients were included in this study. A majority of participants ($n = 87, 47.8\%$) admitted experiencing practical problems with their medication use. There are varieties of choice of management strategy employed by elderly patients to overcome the problems. For the willingness to deprescribing, there were positive correlation for patients' age ($r_s(182) = 0.183, P < 0.05$) and number of medications ($r_s(182) = 0.271, P < 0.01$) with the burden factor. There were also a negative correlation of age ($r_s(182) = -0.174, P < 0.05$) and number of medication ($r_s(182) = -0.176, P < 0.04$) with appropriateness of medications.

Conclusion: A majority of Malaysian elderly experience practical problems with their medication use. Elderly patients' belief and attitudes toward deprescribing were influenced by age and number of medications.

KEYWORDS: *Chronic disease, elderly, medication use problem, medication*

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the issues and showed that these problems experience by elderly may cause medication error that has different clinical consequences.^[2] The clinical deterioration varies depending on the types of problems and medicines that the patients take. The practical problems also may be one of the factors to be considered for deprescribing in the elderly patient. There is still a lack of study that investigates the relationship between practical problems with medication use in the elderly and how these affect their perception toward deprescribing. Hence, this study may be beneficial in order to convey the problems with medication use regarding identifying, handling packaging, or preparation use of medicines that elderly patients experienced and find out solutions to reduce the burden in medication use in the elderly to improve their adherence and importantly reduce harm due to the potentially inappropriate medications (PIMs). This study aimed to investigate the prevalence of practical problems with medications use experienced by elderly patients and the management strategy employed to overcome the problems. This study also aimed to evaluate the elderly patients' belief and attitude toward deprescribing.

METHODS

A cross-sectional study was conducted among elderly patients who aged at least 65 years old or above from a primary care clinic in Malaysia from September to November 2018 on their informed consent. Participants were recruited based on the following criteria: older people aged 65 years old or above, with at least one diagnosis of chronic disease, currently taking one or more long-term prescription medication as well as able to understand and speak Malay or English language. Patients will be asked to answer questions verbally to identify their age and their management of daily medications. Those who did not complete the questionnaire were excluded from the study. This study was approved by the Universiti Kebangsaan Malaysia Research Ethics Committee (UKM PPI/111/8/JEP-2018-306). A set of validated instruments was utilized, consisting of the following.

Practical problems with medication use questionnaire

This first section was to determine the practical problems with medication use that may be experienced by the participants. The list of practical problems with medication use was adapted from a qualitative study.^[2] This section consists of 10 questions that include problems from reading, understanding, opening, adjusting the dose, handling, and consuming their daily medication. Participants were required to answer "Yes" or "No" to the 10 questions. The response of each question was reported descriptively.

Management strategy to overcome problems with medication use questionnaire

This section consists of nine questions that cover the aspect of a management strategy that was employed by the elderly to overcome the practical problems with medication use. The participants were given several management strategies for each type of problems from the previous section. The participants were asked to choose one most preferred management strategy. Each question in this section consists of three to five management strategies that were adapted from a qualitative study.^[2] The response of each question was reported descriptively.

Revised patient's attitude toward deprescribing questionnaire

This section was to determine the participant's belief and attitudes toward deprescribing. This section consists of 22 questions that focus on the following four factors, which are burden factor, appropriateness factor, concern about stopping medication factor, and involvement factor. Each factor consists of five questions, and the remaining two are global questions. There is no total score for the overall questionnaire, and the two global questions were not included in any of the scores. Each question in the factor has a score between 1 and 5 where these scores were summed for each factor and then averaged to give a score (between 1 and 5). The direction of the scoring was based on the overall factor theme, with negatively worded questions reverse scored. Factors were scored so that a higher total score indicated a greater perceived burden, concerns about stopping, and involvement (strongly agree = 5, agree = 4, unsure = 3, disagree = 2, and strongly disagree = 1). Questions in the appropriateness factor were reverse scored to represent a greater belief in appropriateness as agreements to the questions represented a belief in the lack of appropriateness of their medications. The scores for each factor were analyzed using Spearman correlation with participant's characteristics.

All data analyses were performed using Statistical Package for Social Science (SPSS) version 17.0 (IBM Corp. NY, USA). Participants' demographic, type of chronic diseases, number of medicines, current health status, practical problems with medication use, and its management were presented descriptively. Normality of the numeric data such as age and number of medicines was tested using the Shapiro–Wilk test. All results with the $P < 0.05$ were considered to be statistically significant.

RESULTS

A total of 189 patients were recruited in this study.

Seven participants were excluded as they were not able to complete the questionnaire resulting in a final number of 182 participants who successfully answered all sections of the questionnaire. Demographic characteristics were summarized in Table 1. The median (interquartile range [IQR]) age was 72 (9) with most falling between 70 and 74 years old. Most respondents were female ($n = 95$, 52.2%) and retired or unemployed ($n = 156$, 85.7%). The median (IQR) of the total number of medication received by patients was 6 (2). The majority of participants are Chinese ($n = 99$, 54.5%) and had three types of chronic diseases ($n = 133$, 73.1%). Most participants are in good health condition ($n = 96$, 52.7%).

Table 1: Demographic data of participants ($n=182$)

Variables/characteristics	Frequency, n (%)	Median (IQR)
Age group (year-old)		
65-69	56 (30.8)	72 (68-77)
70-74	60 (33.0)	
75-79	43 (23.6)	
80-84	23 (12.6)	
≥ 85	23 (12.6)	
Gender		
Male	87 (47.8)	
Female	95 (52.2)	
Highest education level		
Primary school	69 (37.9)	
Secondary school	83 (45.6)	
University/college	28 (15.4)	
None	2 (1.1)	
Employment status		
Employed for wages	0 (0)	
Self-employed	5 (2.8)	
Homemaker/househusband	21 (11.5)	
Retired/unemployed	156 (85.7)	
Number of chronic diseases		
One	7 (3.8)	3 (3)
Two	24 (13.2)	
Three	133 (73.1)	
Four	14 (7.7)	
Five	4 (2.2)	
Number of medications		
1-3	0 (0)	6 (5-7)
4-6	111 (61.0)	
7-9	55 (30.2)	
10-12	10 (5.5)	
≥ 13	6 (3.3)	
General perceived health status		
Very good	6 (3.3)	
Good	96 (52.7)	
Regular	72 (39.6)	
Poor	8 (4.4)	
Very poor	0 (0)	

IQR=Interquartile range

Practical problems with medication use experienced by the elderly and the management strategy preferred by elderly

From this study, 87 (47.8%) of participants admitted to experience practical problems with their medication use with the most common was a problem to open their medication ($n = 43$, 49.4%). Sixty-six (75.9%) of participants experienced one practical problem, while 14 (16.1%) two practical problems, and 7 (8%) elderly patients experience three practical problems with medication use [Table 2]. The least common problems experienced by the elderly are a problem to hold medicines before taking it ($n = 2$, 2.3%) and problem to swallow medicines ($n = 2$, 2.3%). The management strategy of choice when elderly patients experience problems with reading or understanding the instruction for use is to take medicine as how they remember to take ($n = 53$, 60.9%) usually and only 3 (3.4%) of participants choose not to take medicines when they experience this problem. 49 (56.3%) of participants chose to take medicine as instructed by their doctor if they found out any distressing information or side effects of the medicines and 2 (2.3%) participants chose not to take medicine at all [Table 3]. When participants facing problems to identify their medicines, 56 (64.4%) chose to take medicine as how they remember to take and 5 (5.7%) usually does not want to take the medicines if they cannot identify between their medications. Forty-nine (56.3%) participants chose to use sharp tools such as a knife or scissors to open the outer packaging of their medicine, and 3 (3.4%) chose not to take the medicines. While 57 (65.5%) of participants chose to use sharp tools like a knife or scissor to open or remove medicines from its immediate packaging, and 4 (4.6%) chose not to take the medicines. When the medicine breaks or crumbles 52 (59.8%) chose to take the broken pieces, 29 (33.3%) take another different tablet, and 6 (6.9%) not to take the medicines. The use of sharp equipment like a knife or scissor ($n = 41$, 47.1%) is the most common choice of management strategy in participants that have problems to break the tablets and 6 (6.9%) does not want to take the medicines. Fifty-four (62.1%) participants drink more water, and 23 (12.6%) chose not to take the medicines when they have trouble to swallow their medicines. When participants need to take medicines that have a very unpleasant taste, 66 (75.8%) take the medicines separately, 12 (13.8%) take with food or flavored drink, and 9 (10.4%) not take the medicines.

Response to revised patients' attitude toward deprescribing questionnaire

The mean score (standard deviation) of response for the rapid questionnaire according to factors is

Table 2: Prevalence of practical problems with medication use among the elderly (n=87)

Practical problems with medication use	Frequency, n (%)	
	Yes	No
Problem to read and understand the instructions for the use of medicines because the text is too small	10 (11.5)	77 (88.5)
Problem to read and understand the instructions for the use of medicines because the information was written too difficult to understand	3 (3.4)	84 (96.6)
Problem to read and understand the instructions for the use of medicines because the information on adverse events is distressing	5 (5.7)	82 (94.3)
Problem to differentiate between medicines	24 (27.6)	63 (72.4)
Problem to open medicines	43 (49.4)	44 (50.6)
Tablets break or crumble when removed from blister	6 (6.9)	81 (93.1)
Problem to identify medicines after it has been removed from its packaging	4 (4.6)	83 (95.4)
Problem to cut the tablet into half	16 (18.4)	71 (81.6)
Problem to hold medicines before taking it	2 (2.3)	85 (97.7)
Problem to swallow medicines	2 (2.3)	85 (97.7)

3.18 (0.604) for involvement factor, 2.31 (0.478) for burden factor, 2.77 (0.374) for appropriateness, and 2.52 (0.297) for concern about stopping [Table 4]. The factors were titled burden (questions related to the burden of medication taking), appropriateness (the perceived benefits and harms of their medications), concerns about stopping (concerns expressed about stopping medications), and involvement (items about their knowledge of their medications and involvement in making decisions).^[7] There are positive correlation of age ($r_s(182) = 0.183, P < 0.05$) and number of medications (Spearman's ρ ($r_s(182) = 0.271, P < 0.01$) with the burden factor. There is a negative correlation ($r_s(182) = -0.174, P < 0.05$) age and number of medication ($r_s(182) = -0.176, P < 0.04$) with appropriateness of medications.

DISCUSSION

Most people with medication use problem did not report their problems to their prescriber or pharmacist.^[2] Thus, identifying the common practical problems with medication use should be a proactive way done by a pharmacist or medical practitioner to improve the quality use of medicine among elderly patients with chronic diseases and polypharmacy. In our study, we found out that the most common practical problems experienced by elderly patients in a primary care clinic were to open their medications, followed by the problem to differentiate between their medications. These practical problems will become a burden to elderly patients in addition to their limited physical abilities and complex medication regimen. Moreover, if elderly patients experienced problems with multiple medications, this will increase the likelihood of these problems adversely affect their health.^[8]

Elderly patients that experienced these problems may choose not to take their medications as they feel

burdened by the problems. Based on our findings, the percentage of elderly patients that chose not to take their medications when facing these problems were not significantly high, but these problems can cause nonadherence among elderly patients. This can also be supported from a case report by Park *et al.*^[9] that listed different medication factors such as formulation and packaging, drug regimen, drug handling, and poor labeling instruction can affect the adherence of the elderly to their medications. Some of the management strategies preferred by elderly patients were not appropriate. For example, the majority of elderly chose to take the broken pieces of their medicines instead of taking a new one. This may cause inappropriate dose taken by elderly if the broken pieces are too small or too big. In addition to that, some elderly also preferred to reduce the frequency or dose of their medications when encountered distressing information or side effects of the medicines.

The practical problems experienced by the elderly should be a concern to prescriber and pharmacist. This is because practical problems with medication use can be a burden to elderly patients with multiple medications, and their management strategy may contribute to PIM use among the elderly. PIMs are medications that the risk to elderly patients outweighed its benefits, there are better alternative medications exist, the medication is used at an inappropriate dose or duration, or there is a high risk for drug-disease interactions.^[10] Although practical problems with medication use are not categorized as PIMs, attention should be given if the problems are present as the problems have the potential to cause burden and nonadherence among elderly patients.

Deprescribing is the process of reducing PIMs among the elderly.^[11] In this study, we found out that the majority of elderly patients that seek treatment in primary care clinics feels the burden from their medications. Elderly

Table 3: Management strategy of choice of elderly (n=87)

Management strategy	Frequency, n (%)
Problems with reading or understanding the instruction for use	
Use reading glass or magnifying glass	22 (25.3)
Use with extra light	9 (10.4)
Not take the medicines	3 (3.4)
Take medicine as how I remember I usually take	53 (60.9)
Find out distressing information or side effects of the medicines	
Take medicine as instructed by my doctor	49 (56.3)
Lower the frequency of taking medicine	11 (12.6)
Take a lower dose than instructed	7 (8.1)
Not take medicine at all	2 (2.3)
Enquire to my doctor or pharmacist	18 (20.7)
Problem to identify medicines	
Label the packaging	9 (10.4)
Store separately from look-alike packaging	17 (19.5)
Take medicine as how I remember I usually take	56 (64.4)
Not take the medicines	5 (5.7)
Problem to open or remove the outer packaging	
Use sharp tools (knife or scissor)	49 (56.3)
Ask help from other people	23 (26.5)
Store all my medicines into a different container	12 (13.8)
Not take the medicines	3 (3.4)
Problem to separate, open or remove my medicines from its immediate packaging	
Use a sharp knife or scissor	57 (65.5)
Ask help from other people	17 (19.5)
Open all medicine and store in a different container	9 (10.4)
Not take the medicines	4 (4.6)
Medicine breaks or crumbles	
Take another different tablet	29 (33.3)
Take the broken pieces	52 (59.8)
Not take the medicines	6 (6.9)
Problem to break the tablets	
Use tablet splitter	23 (26.5)
Use sharp equipment like knife or scissor	41 (47.1)
Ask help from other people	17 (19.5)
Not take the medicines	6 (6.9)
Trouble to swallow medicines	
Drink more water	54 (62.1)
Eat medicines with food	7 (8)
Break the tablet	14 (16.1)
Take the medicines separately	8 (9.2)
Not take the medicines	4 (4.6)
Medicines have a very unpleasant taste	
Take with food or flavored drink	12 (13.8)
Take the medicines separately	66 (75.8)
Not take the medicines	9 (10.4)

patients with a higher number of medications feel that their medication has become a burden to them, and this may cause nonadherence to their medications. Moreover, elderly patients also feel that their medications are a burden for them to take it daily. We also found that, when elderly patients were diagnosed with multiple comorbidities, it increases the feeling of burden with their medications. Beside Burden factor, increase in

age, and a number of medications will also cause elderly patients to feel that their medications are not appropriate. Thus, these factors increase the willingness of the elderly to deprescribing their medications.

A previous study was conducted by Hao *et al.* on elderly patient's attitudes toward deprescribing in 2017 also provide quite similar findings.^[12] However,

Table 4: Revised patients' attitude toward deprescribing

	Involvement score		Burden score		Appropriateness score		Concern score	
	rs	P	rs	P	rs	P	rs	P
Age	-0.060	0.419	0.183*	0.013	-0.174*	0.019	0.079	0.291
Gender	0.035	0.637	0.007	0.928	-0.017	0.819	0.116	0.120
Race	0.154	0.137	-0.150	0.053	0.092	0.217	-0.039	0.603
Number of chronic diseases	-0.137	0.066	0.253**	0.001	-0.137	0.065	0.025	0.734
Number of medication	-0.003	0.970	0.271**	0.000	-0.176*	0.018	0.047	0.532

*Correlation is significant at the 0.05 level, **Correlation is significant at the 0.01 level

this study utilizes the older version of patient attitude toward deprescribing questionnaire. Based on the study, majority of elderly patients willing to deprescribing their medications and this was associated with the feeling of taking large number of medications, desire to reduce the number of medications, feeling of taking medicines that are no longer needed, having to pay for fewer medication and believe their medicines are causing side effects. The impractical use of medicine is alarming as in elderly, several problems such as problems holding a medicine and problems swallowing in which the medicine became stuck in the throat may lead to nonadherence and subsequently affecting their quality of life.^[13] General practitioners are mostly responsible for primary prescribing decisions and deprescribing the impractical medicines may be useful to achieve the goal of therapy and improving health outcomes.^[14] Cooperation from the patients also needed as patients' beliefs about treatment is an influential factor on medication use.^[15]

The current study showed that a majority of elderly patients experienced problems with their medication use. Their management strategies may not be appropriate and may have possibilities to affect the efficacy and quality use of medicines. Our result also showed that a majority of elderly patients willing to have their regular medication deprescribed. The main factors that may affect elderly willingness to deprescribing were age, the number of chronic diseases, and a number of medications, and this will affect their willingness to deprescribe. Nevertheless, the willingness to deprescribing was likely to be different based on the medication and was not covered in the scope of this study. The lack of in-depth exploration of the factor of participants was another limitation of this study as the only quantitative and descriptive study was done on the list of practical problems, management strategy, and factors affecting elderly's willingness to deprescribing.

Furthermore, the problems in this study were related to oral medication. Elderly patients may also have problems with nonoral medications. Further research on different formulations of medications that may reduce potential practical problems to elderly patients is recommended.

Improvement measures need to be taken to minimize drug-related problems among elderly patients.

AUTHORS' CONTRIBUTION

Noorlaili Mohd Tohit and Marhanis Salihah Omar design the study and did the manuscript editing and manuscript review. Amiruliana Hendri Ariandi and Marhanis Salihah Omar did the literature search, data analysis and manuscript preparation.

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Conflicts of interest

There are no conflicts of interest.

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