ORIGINAL ARTICLE

Analysis of Drug Management Ability on the Elderly in the East Surabaya Using MedMaIDE™

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ABSTRACT

The elderly are at the highest risk for drug-related problems caused by age-related physiological changes, multiple chronic illnesses, polypharmacy, and poor drug management. This study aims to analyze the ability of elderly regarding drug management. This study used an observational research method with an elderly population in the East Surabaya area. The research instrument used was MedMaIDETM (Medication Management Instrument for Deficiencies in the Elderly), which can be used to measure ability in medication management in the elderly community who are undergoing self-medication with at least one medication. Sampling was carried out using a non-random sampling method with a purposive sampling technique. The number of respondents obtained in this study were 100 elderly who live in the East Surabaya area. The inclusion criteria for research respondents were: (1) willing to be a respondent; (2) domiciled in the East Surabaya area; (3) aged ≥ 60 years; (4) able to communicate in Indonesian; and (5) consuming at least one medicine. The variable studied was drug management skills in the elderly which includes knowledge of the medications aspect, knowledge on how to take the medication aspect, and knowledge on how to obtain the medication. The average MedMAIDE scores of respondents in the three domains with a total average value of 1.18 and a standard deviation of 0.10, meanings each elderly at least had one deficiency out of 13 maximun score of deficiencies. There were 70 respondents out of 100 respondents who had limitations in drug management with one deficiency score as the smallest score and the largest total deficiency score being 7. Meanwhile, 30 other respondents had a no deficiency. The most difficult tasks were identified the problems after taking the medication, fill a glass with water, sip enough water to swallow medication and identify if a refill exists on a prescription. The ability of elderly people in the East Surabaya area to manage their medicines was good. The elderly were able to recognize the drugs used, use the drugs correctly, and comply with drug administration.

Keywords: *Drug Management, Elderly, Health System, MedMaIDE*

INTRODUCTION

Based on data from Health Office East Java Province (East Java Government, 2020), the population of East Java Province in 2020 was 39,886,288 and Surabaya had the higher population with 2,904,751 people. Of the total population of Surabaya, based on data from the Surabaya City Population and Civil Registration Office, the number of elderly in Surabaya was 322,628 people. The elderly in Surabaya live in five areas including the Central Surabaya (42,408; 13.1%), West Surabaya (48,281; 14.9%), North Surabaya (55,537; 17, 2%), South Surabaya (83,477; 25.9%), and East Surabaya (92,925; 28.8%). East Surabaya had the highest number of elderly.

According to the Regulations of the Government of the Republic of Indonesia Number 88 of 2021, an elderly person is someone who has reached the age of 60 years and over. At this age, there is a decrease in the ability to adapt to the outside environment. Functional bodies also experience a decline starting from decreased organ function (physiological), decreased knowledge (cognitive), and psychological decline. The elderly have more than one disease ranging from acute illnesses to chronic diseases such as hypertension, diabetes, cardiovascular disease, stroke, etc (Assalwa, et al., 2020).

Based on data from Basic Health Research (2018), the most common diseases in the elderly were non-communicable diseases, namely hypertension, dental problems, joint diseases, oral problems, diabetes mellitus, heart disease, stroke, and infectious diseases, namely ARI (acute respiratory infection), diarrhea, and pneumonia.

The aging process that occurs in the elderly often lead to increased morbidity and mortality rates, resulting in a worsening quality of life. This had an effect on increasing disease risk factors so that the

elderly were very likely to experience polypharmacy due to drug therapy that was consumed at the same time (Nguyen, T., Wong, E., Ciummo, F., 2020).

The results of research in Poland in 2020 showed that 60.2% of elderly people received at least 1 to 3 medications per day (301/500). The most commonly used medications included antihypertensive drugs and analgesics (51.0% and 46.0%, respectively). Taking clinical conditions into account, independent predictors of receiving more than 3 medications per day turned out to be coronary artery disease, diabetes, asthma, heart failure and gastroesophageal reflux disease. Elderly patients suffering from depression were more likely to take hypertension medication, while patients experiencing anxiety and social loneliness more likely took pain medication (Pietraszek, A. Et al., 2022).

The elderly also experienced memory decline, so there was a high probability that the use of drugs by the elderly was not according to the drug administration rules. Polypharmacy can cause drug-related problems, for example dosage too low or too high, wrong drug (Chippa V, Roy K., 2023).

Drug-related problems can be experienced by anyone who received treatment, but elderly is at the highest risk. The causes of DRPs (drug-related problems) were age-related physiological changes, experiencing several chronic diseases at once, polypharmacy, and poor drug management. Inappropriate prescribing, adverse drug side effects, and drug interactions were the most frequent DRPs experienced by the elderly (Simonson & Feinberg, 2005).

Precipitating factors for drug side effects detrimental to the elderly can be categorized into three, factors that are ordering, monitoring, and patient non-adherence. The order consists of dosage errors, wrong medication, unknown drug interactions, and lack of patient education. Monitoring consists of failure to act according to information, and inadequate monitoring. Patient non-adherence consists of patients who are unable to make up for their medication, patients who cannot use their medication due to the form of the drug, patient failure to understand instructions for using the drug, and patients who choose not to use the drug (Simonson & Feinberg, 2005). Moreover, the increasing number of elderly people and the number of drugs were high so the awareness of drug-related problems is needed and requires intervention so that drug therapy can provide positive results (Simonson & Feinberg, 2005).

Patients must have sufficient ability to manage their own medication to achieve treatment goals. Poor ability can occur due to functional limitations such as cognitive and/or physical impairments (Suwarni et al., 2017). Assessing the patient's ability to manage medication can be a guide for developing treatment in patients, especially in geriatrics. Therefore, many instruments have been developed and have undergone different levels of validity and reliability tests.

This research explored the ability of elderly people to manage their medication using the The Medication Management Instrument for Deficiencies in the Elderly (MedMaIDE). MedMaIDE is an instrument to assess a person's ability to manage their medication. starting from the patient's knowledge about the treatment, how to administer it, and how to procure it.

RESEARCH METHODS

This study was an observational research involving the elderly population in the East Surabaya area from various local communities such as Manyar, Kenjeran, and Dharmahusada areas. Sampling was carried out using a non-random sampling method with an accidental sampling technique. Data was obtained by conducting direct interviews with respondents. The researchers helped filling in the questionnaire on google forms. Data collection was carried out for 2 weeks, from 18 September 2022 to 2 October 2022. The number of samples obtained in this study was 100 elderly people.

The criteria for inclusion of research respondents were: (1) willing to be a respondent; (2) domiciled in the East Surabaya area; (3) aged ≥60 years; (4) able to communicate in Indonesian; and (5) consuming at least 1 type of medicine. The variables studied were drug management skills in the elderly includes what a person knows about their medications.

MedMaIDE deficiency score was calculated as follows: (1) The three areas assessed by MedMaIDE have subscores. The number of subscores equals the total deficiency score. (2) Respondents must be able to answer or do each question correctly in order to receive a "yes" score. (3) If the respondent receives a score of "no" for one of the questions, then the deficiency score is calculated as 1. The greater the deficiency score, the worse the drug management by respondents. Deficiency score is the score that determines if an elderly person has deficiencies which measures the inability in managing medications (Orwig, 2006). The deficiency score can be determined by adding up the total "no" answers from the respondents to the question which is the parameter determining the deficiency score.

In the area of knowledge related to medications, there were four parameter namely (1) being able to mention the name of the drug being consumed, (2) knowing the time of taking the drug, (3) identify the obstacles while taking the drug, and (4) the conditions that require drug consumption. Whereas in the area of knowledge related to how to take the medication, the parameters that determine the deficiency score including being able to fill the glass with water before taking the medication, remove top from medication containers, count the amount of medicine consumed, to explain how to take medicine, and to sip enough water to swallow medicine. In the domain of knowledge on how to obtain the medication, the parameter determining the deficiency score is being able to identify whether a prescription received can be repeated/not, to mention the

location to fill the prescription, and resources to obtain medications (Orwig, 2006). Data were analyzed descriptively using SPSS (Georgia State University Library, 2023). The results of the analysis were shown in tables containing the following information: characteristics of respondents, average deficiency score for each domain and total score, as well as what tasks were most difficult for respondents to carry out.

RESULTS AND DISCUSSION

Table 1. Characteristic of respondents (n=100)

Characteristic	%
Age	
60-65	42
66-70	30
71-75	13
76-80	9
81-86	6
Total	100
Gender	
Female	53
Male	47
Total	100
Level of education	
Elementary	28
Junior High School	20
High School	34
Diploma	3
Higher Education	15
Total	100
Occupancy	
Employed	38
Unemployed	62
Total	100

Table 2**.** MedMaIDE Deficiency Scores

Deficiency Score	Mean (SD)
Know (0-5)	1.13 (0.41)
Take (0-3)	1,31 (0.46)
Get (0-5)	1.09 (0.31)
Total (0-13)	

Old age is often associated with decreased cognitive, psychomotor and bodily function abilities and is associated with the emergence of various problems related to drug therapy problems (Gray SL, Mahoney JE, Blough DK, 2001). Problems that often arise include non-compliance with taking medication due to forgetting and misuse of medication (Fitrika, Y., Saputra, K. Y., & Munarti, M., 2018). Table 2 shows the average MedMAIDE scores of respondents in the three domains with a total average value of 1.18 and a standard deviation of 0.10. This result could be interpreted that at least one elderly had one deficiency in each domain (knowledge of the medications, knowledge on how to take the medication, and how to get their medications). Although this result showed that most respondents had good capability managing their medication, however cautions should be taken due to natural characteristic of elderly as a vulnerable person (Nienke E. Dijkstra, 2022). Moreover, there were 70 respondents out of 100 respondents who had limitations in drug management with the one deficiency score as the smallest score and the largest total deficiency score being 7 (maximum deficiency score 13). Meanwhile, 30 other respondents had a deficiency score of 0.

More than two-thirds of respondents could not identify whether there were any problems after taking medication (such as dizziness, stomach ache, constipation, loose stools, frequent urination, etc.). Although this question item is important, it is not too critical so this item does not affect the MedMAide deficiency score. This result was higher than study in Belgium in November 2019 until March 2020 (Mortelmans, Laura, Elyne De Baetselier, Eva Goossens, and Tinne Dilles, 2021).

Fifteen percent of respondent failed to identify whether there were refills on a prescription. Patient compliance with refilling their prescriptions is very important to ensure the success of therapy and achieve maximum therapeutic outcomes (Nieuwlaat, R., 2014). Moreover, elderly people often have chronic conditions that require lifelong adherence to therapy, so failure to obtain treatment for them can harm the elderly patients (OECD, 2018).

Another task that was not successfully performed was filling a glass with water and drinking enough water to swallow the medication by 8% and 7% of respondents respectively. A person's ability to swallow will decrease with age, that's why elderly people often have difficulty swallowing solid oral preparations such as tablets, capsules or pills (Stegemen, 2012, Hummler H et al. 2023). Drinking the tablets with 150mL of water can help elderly people who have difficulty swallowing. Therefore, the ability to fill a glass is important so that the elderly can drink enough water to be able to swallow their medicines (Fuchs J, 2009).

Table 3. The most difficult task (n = 100)

Task	**Unable to do the task %**
Identify if there are problems after taking the medication (i.e., like dizziness, upset stomach, constipation, loose stool, frequent urination, etc.)*	70
Fill a glass with water	8
Sip enough water to swallow medication	7
Identify if a refill exists on a prescription	15

* The noncritical items

CONCLUSIONS

The ability of elderly people in the East Surabaya area to manage their medicines wss good. The elderly were able to recognize the drugs used, use the drugs correctly, and comply with drug administration. However, there were still several things that need to be considered, namely the ability to identify a problem after taking medication, filling the glass with water, sip enough water to swallow the medication, and the ability to identify if there are any refills on a prescription. Pharmacists need to be aware of these deficiencies, as they may increase non-adherence to medication.

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