



Relationship between education level and understanding of fall risk increasing drugs in elderly

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ABSTRACT

Increasing of life expectancy in Indonesia has an impact on increasing the number of elderly in Indonesia. Elderly is closely related to health problems. Falling is a major health problem that occurs in the elderly. Falling can reduce the quality of life of the elderly. Preventive action that can be taken to prevent falls in the elderly is to evaluate the understanding of the elderly regarding fall interventions. Fall risk increasing drugs is one of the fall interventions in the elderly. So that an evaluation of the understanding of elderly patients regarding fall risk increasing drugs can be carried out as a preventive action. The understanding of the elderly can be influenced by their last level of education. The elderly who live today received education in the past with all the limitations so that the participation of the elderly in the education sector is relatively low. The purpose of this research was to determine the relationship between knowledge level and elderly patients' understanding of fall-risk increasing drugs. This research is a type of correlation analysis with a cross-sectional approach and uses a research instrument in the form of a closed questionnaire with a Guttman scale. The number of respondents in the research were 50 elderly patients who consume fall risk increasing drugs in the Health Center of Cukir, Jombang Regency. The research results showed that there were 38 respondents (86%) with basic education level, 6 respondents (12%) with intermediate education level, and 1 respondent (2%) with high education level. Respondents with less understanding were 19 respondents (38%), respondents with a sufficient level of understanding were 25 respondents (50%), and respondents with a high level of understanding were 6 respondents (12%). Based on the research conducted, it shows that there is a relationship between education level and understanding of elderly patients regarding falling risk drugs at the Cukir Health Center, Jombang Regency with a significance value of 0.001 with a unidirectional relationship and it is known that the strength of the relationship is moderate with a correlation coefficient value of 0.442.

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1. INTRODUCTION

Life expectancy in Indonesia has increased with each passing year. One of the impacts of increasing the life expectancy of Indonesia's population is the increase in the number of elderly or elderly people (Badan Pusat Statistik, 2021). The large number of elderly population certainly has an impact

on various aspects of life, because with increasing age, decreased functional organs of the body, both due to scientific factors and due to disease factors, will be common, which will later affect their physical health (Kementrian Kesehatan Republik Indonesia, 2016). This is also mentioned in one of the verses of the Qur'an, namely Surah Yassin verse 68. This verse can be interpreted as Allah confirming that whoever extends his life will surely return to the beginning of what happened. That is, they return weak and lack sense like small children (Kementrian Agama RI, 2022). In other words, this verse explains that the process of aging is often accompanied by a decrease in quality of life, so that the elderly tend to experience several health problems. One example of several health problems that are common in the elderly is falling. Falls are a major problem that occurs in the elderly or commonly known as geriatric syndrome (Magnuson et al., 2019). As the aging population grows around us, the prevalence of falls among the elderly increases.

As the aging population grows around us, the prevalence of falls among the elderly increases. Quoted from the Center for Disease Control and Prevention (CDC), it is known that more than one in four elderly people in the United States are reported to experience falls every year. The latest survey conducted in 2020 in the United States, it is known that 36,508 elderly aged 65 years and over died from falls that could have been prevented, and more than 2.8 million were rushed to the emergency department. Over the past 10 years, the number of deaths due to falls in the elderly has increased by 59%, while referrals to emergency departments have increased by 19% (National Safety Council, 2022). Apart from these facts, it is known that in low and middle income countries there are more than 80% of deaths related to falls and the Southeast Asia and West Pacific regions contribute to 60% of these deaths (WHO, 2021). In Indonesia, the prevalence of falls in the last two years among elderly people living in communities aged 50 years and over has reached 12.8% (Susilowati et al., 2020).

Falls, especially those that occur repeatedly, cause an increased risk of injury, result in much greater financial expenses for hospitalization, and can be a cause of death, especially in the elderly who are weak and have pre-existing co-morbidities and a decrease in the quality of activities. everyday life. Falls are often experienced by the elderly and this is caused by a single factor or a complex interaction between several factors, namely situational factors, extrinsic factors, and intrinsic factors (Rubenstein, 2021). In Indonesia, there is a lack of information about the incidence of falls and the risk of falling, both for the elderly who are cared for in nursing homes and for the elderly who live in the community (Susilowati et al., 2020). In a study, it is known that Indonesia is preparing fall management for the elderly. One of the effective actions in fall management to reduce the risk of falling in the elderly is to evaluate the understanding of fall risk and consider interventions related to this, including the elderly's physical weakness, gait, confusion in the elderly and consumption of certain drugs (Susilowati et al., 2020).

Certain drugs that are consumed by the elderly and can increase the risk of falling are called Fall Risk Increasing Drugs (FRID) and are often called Medication Related Fall. Fall risk increasing drugs are drugs that are known to be a high risk factor for falls in a person (de Vries et al., 2018). Drugs at risk of falling on their own include antihypertensives, antidepressants, and blood sugar controllers. Although the mechanism is not fully understood, these drugs may affect fall risk with adverse side effects including cardiovascular or central nervous system effects (eg, orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion, headache) (Lee et al., 2021). Referring back to effective actions in fall management to reduce the risk of falling in the elderly, one of which is conducting a fall risk assessment with fall risk drug interventions, so that the elderly and their families are expected to have sufficient understanding regarding drugs that can be a factor in increasing the risk of falling in the elderly. in order to avoid unwanted events.

In this understanding process, it will be much easier for the elderly to understand drugs that can increase the risk of falling if they have an adequate educational background. The education level of the elderly can affect the level of welfare and the ability of the elderly to access information and have an independent life (Djamhari et al., 2021). The limitations of facilities and infrastructure as well as educational facilities at that time certainly affected educational outcomes. This resulted in the low

educational participation of the elderly (Badan Pusat Statistik, 2021). However, if the education level of the elderly is associated with other factors related to understanding, one of which is the incomplete medical information provided by health workers to patients (Susanto et al., 2017), then the level of education will not necessarily be related to patient understanding. Referring to the previous sentence, where patients are required to extract information on their own in order to meet their information needs related to cases.

The reason for choosing the research location for the Cukir Health Center in Jombang Regency is because in 2021, eight provinces in Indonesia have entered the old population structure, namely the percentage of the elderly population which is greater than 10% (Badan Pusat Statistik, 2021). East Java Province occupies the second position (14.53%) with the largest number of elderly people in Indonesia. In East Java Province, Jombang Regency itself ranks 23rd out of 40 provinces in East Java with a percentage of the elderly population of 13.26% (Badan Pusat Statistik, 2022) or in other words, in Jombang Regency there are 166,993 elderly people. Data obtained through the Jombang District Health Office states that, in 2019, it is known that the Cukir area has the highest number of elderly people in Jombang Regency, namely 8,100 people (Dinas Kesehatan Kabupaten Jombang, 2019). Apart from this, as reported by the official website of the Cukir Health Center, it is known that the Cukir Health Center has elderly health services where this unit provides services to patients aged ≥ 60 years. The implementation of this service is in accordance with the public service schedule at the registration counter. However, the elderly service unit aims to provide service priority to elderly patients so that the service process at the counter is separated between elderly patients and general patients (BLUD Puskesmas Cukir, 2022). So this is an opportunity for researchers to examine the understanding of elderly patients regarding fall risk drugs and whether there is a relationship between education level and understanding of elderly patients regarding fall risk drugs at the Cukir Health Center, Jombang Regency.

2. RESEARCH METHOD

The research carried out this time uses analytic correlation research with a cross-sectional approach design (Siswanto et al., 2016). This research was conducted from July 2022 to September 2022 and was carried out to elderly patient at the Cukir Health Center, Jombang Regency.

The population in this study were all elderly patients who took fall-risk drugs at the Cukir Health Center. The sampling method used in this study was purposive sampling. The sample used in this study were elderly patients at the Cukir Health Center who met the inclusion and exclusion criteria. The inclusion criteria in this study were as follows: elderly patients aged ≥ 60 years, patients have the ability to answer questionnaires (can communicate well), the patient's last education level is at least elementary school, and is willing to be a respondent. Exclusion criteria in this study included drop out patients.

The number of samples is determined using the sample size formula for correlational analytical research (Dahlan, 2016). Type 1 error is set at 5%, so $Z_{\alpha} = 1.960$. Type 2 error is set at 10%, so $Z_{\beta} = 1.645$. The correlation determined by the researcher and considered to have a meaning (r) is 0.5 with the consideration that the value of $r = 0.5$ indicates a moderate correlation between variables (Sugiyono, 2007). Thus, the number of samples used for this study was 50 people.

The instrument used in this study was a questionnaire or questionnaire with a closed questionnaire type which was expressed using a guttman scale. In this study there are two variables which we want to know whether or not there is a relationship between the variables. By considering the independent variable, namely the level of education which can be categorized into primary, secondary, and higher education levels. And don't forget to pay attention to the dependent variable, namely the understanding of elderly patients regarding fall risk increasing drugs which can be categorized into poor, sufficient, and good levels of understanding. Based on these categories, the data that has been obtained can be processed using SPSS with the Spearman test because the data obtained is in the form of categorical data presented ordinal.

3. RESULTS AND DISCUSSIONS

Respondents' Education Level

Information regarding the education level of the respondents can be seen in the diagram below.

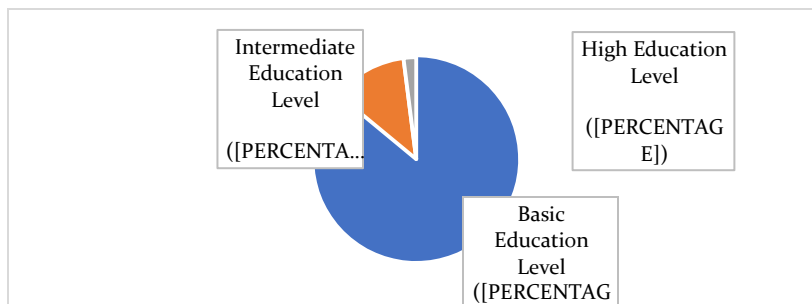


Figure 1. Diagram of respondent's education level

According to the Law of the Republic of Indonesia Nomor 20 of 2003 concerning the National Education System, education levels are divided into three, namely the basic education level which consists of Elementary School or equivalent and Middle School (Junior High School) or equivalent, secondary education level consisting of from High School or equivalent, and higher education level, namely High Education or equivalent. Based on the research that has been done, the majority of respondents have a basic education level. This can be seen from the number of respondents who have an equivalent level of elementary school and junior high school equivalent. This is in line with research conducted by Lailatul Munawaroh (2018) which states that the education level of the majority of the elderly population in Jombang Regency is basic education.

The current elderly population is the population who received education during the early days of Indonesian independence. At that time, there were several national constraints that had an impact on the low participation in education of today's elderly population. Some of these obstacles include the lack of availability of educational facilities and infrastructure, in this case school buildings at that time were not evenly distributed throughout Indonesia. In addition to this, the economy of the Indonesian people at that time was in the process of improving the economy, bearing in mind that education funding, which was previously guaranteed by the Dutch and Japanese governments, gradually began to be guaranteed by the Indonesian government independently. Because of this, education costs increased from year to year and these costs were borne by students so that not all Indonesian people at that time could receive proper education (Syaharuddin & Susanto, 2019).

Respondents' Understanding

Information related to respondents' understanding can be seen in the diagram below.

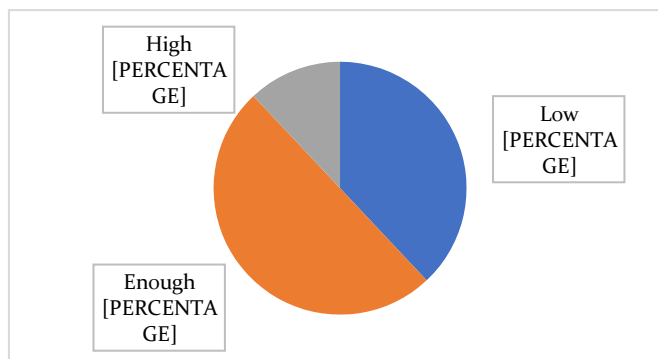


Figure 2. Diagram of the number of respondents based on understanding

Based on the diagram above, it can be explained that of the 50 respondents, namely Cukir Health Center patients in Jombang Regency who met the inclusion and exclusion criteria, they could be categorized into three categories of understanding. The categories are made based on the total percentage of correct and incorrect answers to the 11 questions provided in the questionnaire that have been distributed to respondents, or in other words can be categorized as low, medium, and high based on the total percentage of correct answers to the questions. So the results obtained were that of the 50 respondents, the majority of respondents, namely as many as 25 respondents (50%) had sufficient understanding regarding fall risk increasing drugs. Furthermore, as many as 19 respondents (38%) had less understanding regarding fall risk increasing drugs. As many as 6 respondents (12%) had a high understanding of fall risk increasing drugs. The data obtained during this research is slightly different from the research conducted by Amanda Anisawati, et al. (2021) which states that the majority of the elderly's understanding regarding the proper and correct use of drugs is in the less category. This difference can occur due to research conducted by Amanda Anisawati, et al. using DAGUSIBU (Dapat or get, Gunakan or use, Simpan or store, and Buang or dispose) of drugs as an indicator of understanding, while this study uses three indicators of understanding, namely translation, interpretation, and extrapolation.

The majority of elderly patients' understanding of risk drugs falls into the sufficient category because in a patient understanding process, there are three indicators of understanding, namely the stages of translation, interpretation, and extrapolation. (Yohanes & Sutriyono, 2018). Assessment of the level of understanding of patients as respondents in the study was based on the number of true and false answers in the questionnaire items given to respondents. However, if you pay attention to the table above, the third indicator, namely extrapolation related to fall risk increasing drugs, has the mean (average) value of the smallest number of correct answers among the other indicators. The third level of understanding indicator is closely related to the attitude or behavior of elderly patients where this attitude or behavior can be formed due to various factors. The elderly are a minority status that is carried by someone, where this can reduce their social abilities so that they tend to be more difficult to interact with health service workers regarding the health services they receive (Kementrian Kesehatan Republik Indonesia, 2016).

Relationship between Education Level and Understanding of Elderly Patient regarding Fall Risk Increasing Drugs

The relationship between education level and understanding of elderly patients regarding fall risk increasing drugs was tested using the Spearman rank test and processed with the help of the IBM SPSS 26 application. understanding of elderly patients at the Cukir Health Center, Jombang Regency. This is in line with research conducted by Payung & Mambela (2018) which states that there is a significant relationship between education level and understanding of elderly patients. In addition, interpretations can be made regarding the direction of the relationship between the two variables by taking into account the significance value is negative or positive. A positive significance value can be interpreted as a unidirectional relationship where the higher the education level of elderly patients, the higher the understanding of elderly patients regarding fall risk increasing drugs.

Table 1. Result of Spearman Rank Test

Education Level	Low		Understanding				TOTAL		Significance Value	Correlation Coefficient Value
	n	%	Enough		High		n	%		
Basic	18	36%	23	46%	2	4%	43	86%	0,001	0,442
Intermediate	1	2%	2	4%	3	6%	6	12%		
High	1	2%	0	0%	1	2%	1	2%		
TOTAL	19	38%	25	50%	6	12%	50	100%		

The level of education can build a person's literacy towards health. Health literacy is a person's ability to obtain, process, understand and use health information and basic health services needed to determine the right attitude regarding health, and someone is able to develop their

knowledge and potential in the health sector. Literacy affects a person's ability to obtain information, related to linguistic and cognitive abilities and the ability to determine attitudes (Santosa & Pratomo, 2021). Thus, it can be said that the patient's understanding of health is closely related to the level of literacy which is influenced by the level of education they have.

The foundation of health literacy is instilled from an early age and continues in tandem with a lifelong learning process. The education system plays an important role in increasing health literacy. Schools, as a type of formal education, can include students from various backgrounds from an early age for the long term so that they become appropriate long-term interventions to improve health literacy skills. In a study conducted by Santosa and Pratomo in (2021), it was stated that the level of education is in line with the health literacy carried out by a person. In general, the level of literacy has an influence on the ability to obtain health information, study health promotion and disease prevention, comply with medication regimens and establish communication with other people related to health (Santosa & Pratomo, 2021). This is the implementation of the understanding indicator. In this study, the health information referred to relates to fall risk increasing drugs consumed by elderly patients. Thus, with an adequate background level of education, elderly patients can avoid the risk of falling through a process of understanding related to fall risk factors (namely fall risk increasing drugs) that can occur to them through a process of health literacy. Thus, it can be said that the level of education is in line with the level of literacy and can affect the level of understanding of patients regarding fall risk increasing drugs.

In this research, it is known that the correlation coefficient is 0.442. The range 0.40 – 0.599 or it can be stated that the relationship between education level and patient understanding regarding the elderly and the risk of falling at the Cukir Health Center, Jombang Regency has a moderate level of relationship.

As explained earlier, that one's understanding can be influenced by one's level of education. However, by looking at the relationship between education level and the understanding of elderly patients regarding fall risk drugs which have a moderate level of relationship, it can be said that there are several other factors that can influence this, including the role of pharmacists as one of the elements to increase the understanding of the elderly about the importance of using drugs that are good and correct because pharmacists have the authority and obligation to convey information and education on these drugs so that the use of drugs among the general public remains rational (Anisawati et al., 2021). But unfortunately, in Indonesia itself there is still not enough information regarding falls and falls both for the elderly who are cared for in nursing homes and for the elderly who live in the community, with the prevalence rate of falls in the last two years in the elderly aged 50 years and over reaching 12.8% (Susilowati et al., 2020). At the Cukir Health Center itself, the provision of information and education related to drugs prescribed to patients has been carried out, this has not yet reached the stage of providing information and education regarding specific fall risk drugs. The lack of provision of information related to fall risk drugs by pharmacists at the Cukir Health Center was due to the fact that the Cukir Health Center had not implemented it fall risk management in elderly patients. This is inversely proportional to a study which states that Indonesia is preparing fall management for the elderly. As for one of the effective actions in fall management to reduce the risk of falling in the elderly is to do assessing understanding of fall risk and considering related interventions in this case, among others, by paying attention to fall risk drugs consumed by patients (Susilowati et al., 2020).

In addition, there are other factors, namely support from service facilities local health in facilitating the counseling process to the community also plays a role in the process of increasing the understanding of the elderly regarding the proper and correct use of drugs (Anisawati et al., 2021). This is still related to the risk of falling in the elderly which has not been implemented at the Cukir Health Center, considering that there are many other factors that can cause falls in elderly patients so that the role of all health workers at the Health Center is needed. The health workers who must play a role are nurses, pharmacists, and doctors. Provision of health-related information related to the patient's condition can prevent falls because clinical management should be carried out in a

comprehensive manner (Sunarko et al., 2019). As for pharmaceutical staff, primarily pharmacists, have a role in the process of preventing falls in the elderly. This role is related to the pharmacist's rights and authority to review prescriptions and pharmacists can recommend a replacement for fall risk drugs if deemed necessary for the condition of elderly patients with the doctor's consideration. In addition, pharmacists can also provide counseling to elderly patients regarding pharmacological therapy accepted and the mechanism of therapy as a risk factor for falls (Elliott et al., 2022). So it is hoped that elderly patients have sufficient understanding regarding fall risk drugs in order to avoid the risk of falling that might happen to them.

4. CONCLUSION

Based on the research that has been done, it can be concluded that, the level of education of elderly patients at the Cukir Health Center in Jombang Regency is 86% in the basic education category, 12% in the intermediate education category, and 2% in the high education category. The level of understanding of elderly patients regarding falling risk drugs at the Cukir Health Center, Jombang Regency, was in the category of low understanding by 38%, the category of enough understanding was 50%, and the category of high understanding was 12%. Based on the Spearman Rank correlation test, a significance value of 0.001 was obtained and a correlation coefficient value of 0.442 which can be interpreted by the relationship between education level and understanding of elderly patients regarding fall risk increasing drugs at the Cukir Health Center, Jombang Regency with a moderate level of relationship with a unidirectional relationship.

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