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Education of Cardiovascular Disease in the Elderly through Health Seminars and Health Corner

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***Abstract*—** Advanced age or elderly refers to individuals who have reached the age of 60 and above. According to data from the National Socioeconomic Survey in March 2020, there is a total of 10.48%, consisting of 51.81% elderly women and 48.19% elderly men. The elderly population undergoes the aging process, making them at a higher risk of degenerative diseases. According to Basic Health Research in 2013, the most common diseases among the elderly are hypertension (57.6%), arthritis (51.9%), stroke (46.1%), dental and oral problems (19.1%), chronic obstructive pulmonary disease (8.6%), and diabetes mellitus (4.8%). Hypertension can lead to other disorders, such as cardiovascular disease. Cardiovascular diseases have a high mortality rate and can be caused by various factors, such as diabetes mellitus and obesity resulting from an unhealthy lifestyle. Therefore, through education on cardiovascular diseases and the formation of elderly cadres and health corners, efforts to prevent cardiovascular diseases in the elderly are expected to be optimally implemented. The main target of this program is the congregation of the Indonesian Christian Church (GKI) in Sepanjang Sidoarjo, Taman District, Sidoarjo Regency. Activities include pre-tests and post-tests related to cardiovascular diseases in the elderly, health seminars, and the establishment of health corners. The results of this activity show that the respondents' knowledge level, assessed through questionnaires, had an average pre-test score of 12.52 and a post-test score of 14.71, indicating a significant change with a p-value < 0.001 meeting the significant level of 95%.

***Keywords*—**Elderly, Health Corner, Health Education, Cardiovascular

I. INTRODUCTION

Elderly is an advanced stage of the phase of human life. According to the Kementerian Kesehatan Republik Indonesia (2023), elderly is someone who has entered the age of 60 years and over. According to the Badan Pusat Statistik (2019), in Indonesia there are 25.6 million elderly people. The elderly figure is projected to reach 63.3 million by 2045 (Badan Pusat Statistik, 2018). Based on data from the National Socioeconomic Survey in March 2020, there are 10.48% of the elderly, consisting of 51.81% women and 48.19% men (Badan Pusat Statistik, 2022).

The elderly group experiences an aging process characterized by a gradual decline in organ function and decreased body resistance to disease (Misnaniarti, 2017). Health problems in the elderly are often closely related to degenerative diseases, such as cardiovascular disease. Types of cardiovascular disease that are widely found in the elderly are hypertension, stroke, coronary heart disease, and heart failure (Riset Kesehatan Dasar, 2013).

As we age, the arterial walls thicken and their compliance decreases, causing an increase in systolic blood pressure and left ventricular afterload. In response to changes in the arteries, the myocardium of the heart remodels or adjusts its structure in order to maintain the function of contracting and filling the heart (Singam, Fine and Fleg, 2020). Rostagno (2019) also found an increase in the incidence of heart valve disease with aging, which proves the relationship between old age and degenerative heart disease. In more than 10% of the population of people aged $\geqslant$ 75 years, degenerative diseases associated with aortic stenosis and mitral and tricuspid valve regurgitation are found (Rostagno, 2019).

The most common cardiovascular diseases in the elderly are cardiomyopathy, arrhythmia and heart failure (Roth *et al.*, 2020). These heart diseases can cause adverse disorders in the elderly, such as: frailty or weakness in the body, sarcopenia which is characterized by loss of muscle mass and muscle strength, cognitive impairment or delirium which is characterized by impaired memory function in dementia patients and cause mental disorders. concurrent diseases or the emergence of comorbid diseases

(Alonso Salinas *et al.*, 2024). Disorders caused by cardiovascular disease will worsen the condition of the elderly and hinder rapid recovery. This can play a role in increasing mortality rates due to cardiovascular disease in the elderly (Lazzeroni *et al.*, 2022).

Health efforts for the elderly begin with the promotion of cardiovascular-related health. Many elderly people suffer from cardiovascular disease but do not know the cause or are at risk of suffering from cardiovascular disease but do not know how to prevent it (Suri, 2021). So it is necessary to empower elderly cadres and educate the elderly related to cardiovascular disease (Ariyanti, Preharsini and Sipolio, 2020; Suri, 2021). The dominant risk factors for coronary heart disease are hypertension, mental emotional disorders, and diabetes mellitus. Efforts to promote and early detection of risk factors from an early age need to be increased to minimize the incidence of risk factors and coronary heart disease (Ghani, Susilawati and Novriani, 2016). Previous research recommends 7 health factors or goals to prevent cardiovascular disease, namely body mass index <25 kg/m2, not smoking, low salt diet and sugar intake, participating in moderate to vigorous physical activity every day (average) $\geqslant$ 30 minutes, untreated total cholesterol < 200 mg/dl, untreated blood pressure <120/<80 mm Hg, and fasting blood glucose <100 mg/dl (Turco, Inal-Veith and Fuster, 2018).

The Indonesian Christian Church (GKI) Sepanjang Sidoarjo is located on Jalan Raya Wonocolo number 90, Taman District, Sidoarjo Regency. The number of elderly people is around 50 people. Common diseases suffered include cardiovascular disease, some digestive diseases, joints, dementia, etc. Socioeconomic conditions in this congregation is lower to middle class. The problem faced by the congregation at GKI Sepanjang Sidoarjo is the lack of knowledge about the prevention and treatment of cardiovascular disease in the elderly. The solutions offered to the GKI Sepanjang Sidoarjo congregation are education related to cardiovascular disease, the formation of elderly cadres and health corners, blood tests which include cholesterol, uric acid, blood sugar, and consultation with cardiologist.

II. METHODS

The solution offered to GKI Sepanjang Sidoarjo is a health seminar related to cardiovascular disease in the elderly, and the formation of elderly cadres and a health corner at GKI. Health corner is a place to carry out disease promotion and prevention activities, especially cardiovascular disease. Health corner contains information, education and communication media about cardiovascular disease, tension devices, independent blood test tools. In establishing the health corner, the abdimas team will train elderly health cadres at GKI to be able to use the tools at GKI.

The method of carrying out activities describes the stages or steps in implementing the solutions offered to overcome problems that contain the following.

1. Preparatory stage. The preparation stage is carried out by *brainstorming* with the community service team to prepare the methods and media to be used in the socialization stage.
2. Implementation Phase
   The socialization stage is carried out in two activities, namely:
   Activity 1 : Health Seminar: Cardiovascular disease in the elderly
   Day/Date : Saturday, October 21, 2023
   Time : 12.00-13.00 WIB
   Activity 2 : Cadre training and inauguration *Health Corner*
   Day/date : Saturday, October 28, 2023
   Time : 09.00 WIB
3. Evaluation stage
   The evaluation stage is carried out after the socialization stage and analysis of pre and post-test results and community service reports are made.

III. RESULTS AND DISCUSSION

This section describes the characteristics of cardiovascular disease education activities in the elderly through health seminars and the establishment of a health corner at GKI Sepanjang, Sidoarjo. The characteristics of the respondents include their age, sex, blood pressure, body weight, blood glucose, uric acid, and cholesterol, which can be observed through table 1.

Table 1. The characteristics of respondents (n=42)

Characteristics	Category	Freq	%
Age	< 40 years old	2	4,8
	40 - 50 years old	6	14,3
	51 - 60 years old	9	21,4
	61 - 70 years old	12	28,6
	71 - 80 years old	12	28,6
	> 80 years old	1	2,4
Sex	Man	19	45,2
	Woman	23	54,8
Blood Pressure	< 120/80 mmHg	10	23,8
	120-139 / 80-89 mmHg	13	31
	140-159 / 90-99 mmHg	11	26,2
	> 160/100 mmHg	5	11,9
Body Weight	< 50 kg	8	19
	50 - 60 kg	14	33,3
	61 - 70 kg	9	21,4
	71 - 80 kg	6	14,3
	> 80 kg	5	11,9
Blood glucose	< 140 mg/dl	37	88,1
	140 - 199 mg/dl	5	11,9
Uric acid	< 6 mg/dl in women dan < 7 mg/dl in man	20	47,6
	> 6 mg/dl in women dan > 7 mg/dl in men	22	52,4
Cholesterol	< 200 mg/dL	17	40,5
	200 – 239 mg/dL	17	40,5
	> 240 mg/dL	8	19

Cardiovascular disease education activities in the elderly through health seminars and the establishment of a health corner are preceded by history and physical examination. Physical examination performed is an examination of body weight and blood pressure (Figure 1).

Figure 1. Measurements of blood pressure and body weight

Furthermore, blood glucose, uric acid, and cholesterol tests are also executed (Figure 2). After the physical examination, respondents were given a pre-test on general knowledge related to hypertension, diabetes, and cardiovascular diseases with a processing time of 15 minutes. The pre-test given is 18 questions with answer choices consisting of correct answers or incorrect answers.

Figure 2. Measurement of blood sugar, uric acid and cholestrol.

Education about cardiovascular disease in the elderly is carried out after pre-test work. The education was presented by dr. Ronald Torang Marsahala Panggabean, Sp. JP (Figure 3). Education starts from the anatomical shape of the heart and how the heart works normally and continues with the condition of the heart in the elderly and factors that can affect heart problems in the elderly. Then education is also given about diabetes and hypertension that can affect the heart health of the elderly and how to prevent heart problems that can be done by the elderly. After the education, participants can interact with the speakers through question-and-answer activities that are directly answered by the speakers.

Figure 3. Delivery of material by the speaker.

After the education and question and answer session, it was followed by a door prize giving session which was given to participants who were active during the activity. The door prize was handed over by dr. Ronald Torang Marsahala Panggabean, Sp. JP as a resource person to the participants of the educational activity. Then after that continued with the post test. The post-test contains the same questions as the pre-test which consists of 18 questions with answer choices consisting of correct answers or incorrect answers to see if there is an increase in knowledge from the respondents. The event completed with the establishment of the health corner (Figure 4).

Figure 4. The establishment of health corner.

Figure 5 and table 2 shows the results of the pre-test and post-test have changed. Pre and post tests questions contain 10 questions related to hypertension such as factors that affect hypertension and habits that can affect blood pressure. While the other 8 questions are about diabetes mellitus such as the causes of diabetes, risk factors for DM, especially type 2 DM. In the pre-test the average respondent got the correct number of questions as many as 6 questions on hypertension questions, 5 questions on diabetes mellitus questions, and in total as many as 12 questions from 18 questions. After being given education and conducted a post test, there was an increase in respondents' knowledge. There was an increase in the number of correct questions in which 8 questions about hypertension, 6 questions about diabetes mellitus, and

overall by 14 questions that were correct from 18 questions. This can be observed on figure 5.

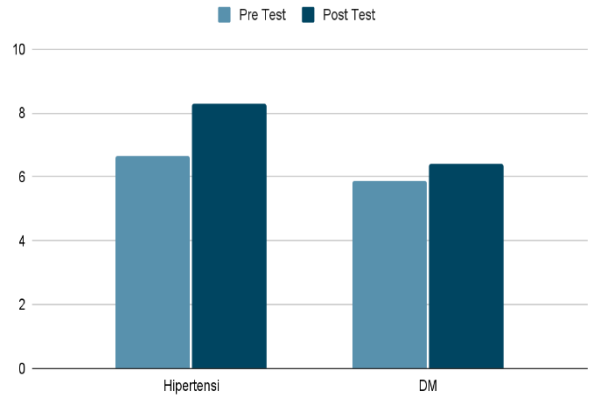

Figure 5. Pre and post-test of Hypertension and Diabetes Mellitus

Table 2 shows the result of paired T-test. It is found that the p-value meets a significant level of 95% with a p-value value of < 0.001 which means that there is a significant change in the level of knowledge between before and after the provision of education which can be assessed through pre-test and post-test values.

Table 2. Paired T-test

Paired differences		Value
Mean		-2.190476
Std. Deviation		2.501103
Std. Error Mean		0.385929
95% Confidence Interval	Lower	-2.969875
of the Difference	Upper	-1.411078
t		-5.675859
df		41
Sig(2-tailed)		.000

In previous research, it was found that there was a change in knowledge about hypertension in the elderly at the Panti Wredha Budhi Dharma Yogyakarta before education was given and after education, and this research was the same as the activities carried out on the elderly at GKI Sepanjang Sidoarjo (Sari and Priyantari, 2020). In addition to increasing knowledge, education in the elderly about hypertension can also change the behavior of the elderly to be more positive than before, because there is an increase in a healthy and obedient lifestyle if education is carried out regularly and continuously will also form the habit of the elderly to have behaviors to be able to control and prevent hypertension (Resnayati, Riasmini and Maryam, 2022).

Then from other studies also mentioned that this seminar or counseling to the community is a very effective health promotion method to increase public knowledge at the Manisrenggo Elderly Posyandu, especially knowledge about hypertension (Wardani *et al.*, 2018). Providing education about hypertension to the community also provides other benefits to the community to know the treatment or management and complications that can be caused by hypertension, not only understanding hypertension but being able to understand the factors that influence and treatment as a whole (Oktaviana and Rispawati, 2023). In a research conducted in desa Agung Jati, Kabupaten OKU Timur, it was also found that there was an improvement of knowledge before and after the provision of education about hypertension to the community (Khoirin and Juliasih, 2020).

In addition to health promotion regarding hypertension, there are other health promotions that can be done and are beneficial for the elderly. Health promotion regarding degenerative diseases such as joint diseases, stroke, asthma, diabetes, cancer, hypertension, heart, then health promotion regarding balanced nutrition is also important to provide knowledge to the community, especially the elderly to prevent disease and improve the quality of life of the elderly, especially in Indonesia (Sofiana and Khusna, 2019). To improve health promotion in the elderly, especially in Indonesia, there are 3 stages that can be implemented, first there is advocacy which is a discussion carried out with the government to discuss the main health problems that occur in a region and also health promotion that will be implemented (Arifuddin, Idris and Aofuddin, 2022). Then the second is atmosphere building which is carried out in 3 ways, namely large deliberations, cross-sectors and mini workshops involving community leaders so that community coverage can be quite wide, have awareness independently and be active in health promotion activities (Arifuddin, Idris and Aofuddin, 2022). Third, there is empowerment assisted by the Family Empowerment and also cadres who function to help other communities in health promotion activities regularly every month (Arifuddin, Idris and Aofuddin, 2022).

Elderly cadres have an important role in fostering elderly health in the community and are tasked with conducting counseling, community mobilization, and services for the elderly (Dinas Kesehatan Provinsi Sumatera Utara, 2020). Previous research in Pedukuhan Plempoh, Yogyakarta, found several problems including the lack of formation of elderly cadres and the incidence of hypertension in the elderly which was quite high (42.1%), so the formation of posyandu cadres with a five-table system was carried out (Wahyuntari and Kurniawati, 2018). The five-table system includes registration, height measurement and weight weighing, recording of Cards Towards Health (KMS), health counseling, and health checks (Wahyuntari and Kurniawati, 2018). Another study found that training elderly cadres has various benefits including improving the quality of life of the elderly, the health status of the elderly, and elderly visits to posyandu (Suprapto, Mulat and Yuriatson, 2022). Helena et al. (2020) found that during the Covid-19 pandemic, the physical activity of the elderly was very limited and posbindu activities in Cikutra Village, Cibeunying Kidul District, Bandung City, which usually runs, have stopped. Education related to physical activity and the establishment of an elderly corner is carried out with the aim of improving the health of the elderly (Helena *et al.*, 2020).

According to research conducted by Setyaji, Prabandari and Gunawan (2018) found a higher prevalence of coronary heart disease in people who do less than 80

minutes of exercise every week. The elderly are advised to do regular physical activity with moderate intensity for at least 30 minutes every day (Kurnianto, 2015). Physical activity that can be done can be in the form of daily activities including walking, going up and down stairs, gardening, and doing housework (Kurnianto, 2015). The habit of consuming foods high in salt and excessive saturated fat (oil) can be one of the factors causing hypertension, so the elderly are advised to consume a maximum of one teaspoon/day of salt and 5 tablespoons/day of fat (Nadhilah and Soeyono, 2023). According to Asari H and Helda (2021), another factor causing hypertension in the elderly is obesity. The elderly with obesity have a 6 times higher risk of developing hypertension. The elderly are advised to maintain body weight in the ideal range in order to reduce the risk of hypertension (Assiddiqy, 2020). Assiddiqy (2020) found that poor sleep quality can cause an increase in blood pressure, so the elderly are advised to get enough rest by sleeping more than 6 hours to lower blood pressure.

The long-term effects of health seminars for improving the health of the elderly can be very significant. Some of the benefits are increased quality of life (Panagioti *et al.*, 2018), increasing self management especially in terms of glycemic conrol (Thongsai and Youjaiyen, 2013), improving skill and promotion of overall health (Cano *et al.*, 2023).

IV. Conclusion

Community service activities at the Indonesian Christian Church (GKI) Sepanjang Sidoarjo, located on Jalan Raya Wonocolo number 90, Taman District, Sidoarjo Regency have been carried out according to the plan prepared, including health education seminars on cardiovascular diseases in the elderly, the formation of elderly cadres, and a health corner at GKI Sepanjang. The results of the pre-test and post-test showed an increase in respondents' understanding after a health education seminar. The suggestion for the future is that there should be regular training for cadres covering diseases other than cardiovascular disease and other age groups besides the elderly. This will be useful for improving the health of the GKI Sepanjang Sidoarjo congregation.

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