

# Training For The Elderly To Improve Skills In Preventing And Managing Chronic Diseases

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## Abstract.

*An increasing elderly population in the world has a broad impact on society. Elderly people have different characteristics and are vulnerable to physical and psychological health problems, one of which is chronic diseases such as hypertension, diabetes, and coronary heart disease. The elderly require special attention from their families, surrounding communities, and the local government. In response to this, the Unisba Faculty of Medicine organized a Community Service (PKM) activity called "Training for the Elderly to Improve Skills in Preventing and Managing of Chronic Diseases." This activity aims to enhance the knowledge and skills of the elderly in preventing and managing their diseases, which will help prevent complications and increase the quality of life of the elderly. This, in turn, will empower them to remain productive members of society. PKM activities occurred in Cihanjuang Village on July 22-23, 2022. The event was a collaboration of Unisba Medical Faculty, the Cihanjuang village government, and the Parongpong District. A PKM activity was conducted offline for two days with around 60 participants. The activity included comprehensive health education material, assistance and mentoring for elderly people in sports activities, examination and modification of risk factors for chronic diseases. Detection of disease through checking blood pressure, independent blood sugar monitoring at home, and anthropometric examination including body weight, height, upper arm circumference, and waist circumference. The result of these activity showed that the knowledge of elderly on chronic disease management increased by 19.79% based on analysis of pre-test and post-test. It also enhanced the skills of elderly people in early detection and modification of risk factors for chronic diseases. The measurement results indicate that 11.32% of participants are at risk based on BMI, 54.72% are classified as obese 1, and 33.96% are classified as obese 2. All of the participants had a risk of comorbidities based on BMI and waist circumference calculations, with some falling into the category of increased 9.43%, moderate 3.77%, severe 52.83%, and very severe 33.96%. This program will support the accelerated development of Active Alert Villages and Subdistricts as one of the performance targets in the community empowerment process to improve the community's welfare.*

**Keywords:** *Elderly, chronic disease, co-morbidities, knowledge, skills and Cihanjuang.*

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## I. INTRODUCTION

National development is the responsibility of all Indonesian citizens, and efforts to achieve it require the participation and collaboration of all parties, including the university, so that the results are optimal and in line with the targets. One of the goals of sustainable national development in 2023 is to promote healthy living, support prosperity for all ages, ensure appropriate and inclusive quality education, encourage lifelong learning opportunities for all people, and create healthcare villages.<sup>1</sup> Village community development is strengthened by the Penta helix concept, which involves elements of government, academics, business bodies or actors, society or communities, and the media united in coordination and committed to developing local village potential.<sup>2</sup> Improving public health can be achieved by increasing community empowerment (Community-Based Health Efforts/UKBM) in villages through posyandu or elderly posyandu and other units.<sup>3</sup> The elderly population is currently increasing worldwide, including in Indonesia; this is related to improving health services, increasing the ability of elderly people to care for themselves, and other related factors. In 2019, the number of people aged 60 reached 1 billion. This number will increase to 1.4 billion in

2030 and 2.1 billion in 2050. In 2050, 80% of elderly people will be in developing and low-income countries. The increase in the number of elderly people has complex consequences.<sup>4,5</sup> The challenges caused by population aging have covered almost every aspect of life, including health problems.

The health problems of the elderly vary, including hearing and visual impairment, cognitive impairment, increased risk of falls, chronic diseases such as diabetes and hypertension, cardiovascular disease, and mental disorders.<sup>5,6</sup> Elderly people can suffer from more than one health problem or chronic disease, which, of course, causes the elderly to have other problems related to their condition; the psychological burden and mental disorders will increase, health care costs will increase, and there is also a high risk of polypharmacy and drug interactions. This is also often exacerbated by the condition that the majority of elderly people's understanding of how to prevent and manage the chronic diseases they experience is still lacking, causing the treatment of their illnesses to be less than optimal.<sup>4,7</sup> Older people with chronic conditions have unmet care needs related to their physical and psychological health, social life, and the environment in which they live and interact. Factors that influence the independence of older people include a lack of professional advice on self-care strategies, poor communication and coordination of services, and a lack of information on services such as care pathways. Therefore, important to develop care models and support services based on the needs of older people. Older people require care and support in three main areas: social activities and relationships, psychological health, activities related to mobility, self-care, and domestic life.<sup>8</sup> The health of the elderly must be handled comprehensively and receive special attention from the family, surrounding community, and government.

There are vital directions to improve the care and quality of life for the elderly; create an adequately prepared workforce; strengthen the role of public health; remediate disparities and inequities; develop, evaluate, and implement new approaches to care delivery; allocate resources to achieve patient-centered care and outcomes; and redesign the structure and financing of long-term services and supports.<sup>7</sup> Examples of such programs are transitional care models, care options in nursing homes, home-based primary care, and strengthened public health services.<sup>9</sup> Cihanjuang Village has a fairly large elderly population and consistently carries out elderly empowerment programs because many retired civil servants, and armed forces reside in the Cihanjuang area.<sup>10</sup> In several Residential Villages (RW), an elderly empowerment program has been implemented through elderly posyandu, which has been implemented for a long time. However, health workers still need to assist elderly people in handling their problems in an integrated and programmed manner. Therefore, "Increasing the Knowledge and Abilities of the Elderly in the Prevention of Management of Chronic Diseases from the Patient's Perspective in Cihanjuang Village" is one of the efforts to increase knowledge and management of chronic diseases from the patient's perspective of the elderly which the Unisba Community Service Team facilitates in collaboration with the government Cihanjuang village and elderly posyandu for its implementation.

This program will support the accelerated development of Active Alert Villages and Subdistricts, which is one of the performance targets to be achieved in the community empowerment process to realize increased community welfare. Islam views old age as God's blessing in life for increased piety, virtue, and reform. To ensure the positive course of elderly life, Islam sets out several spiritual, ethical, and legal measures to sustain just treatment and mercy, reflecting essential values and principles such as dignity, honor, kindness, respect, appreciation, ease, support, solidarity, and service. Anyone who does not show mercy to our children nor acknowledge the rights of our old people is not one of us. Another tradition states: "Part of respect for God is to show respect to an old Muslim". Moreover, Muslims are also instructed to care for the elderly owing to their feebleness, as seen in the reported hadith: "One may exalt Allah through showing kindness and respect to the elderly among you".<sup>11</sup>

## II. RESULT AND DISCUSSION

### 2.1 Methods

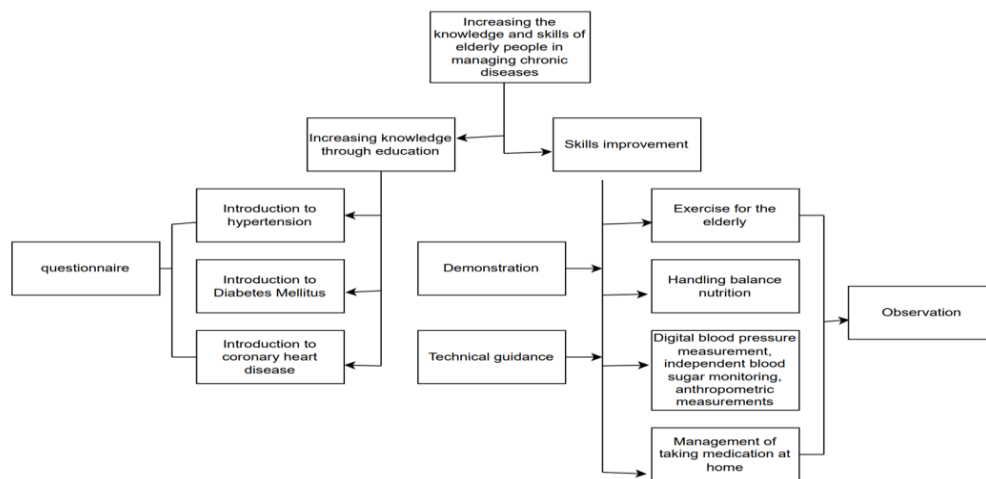
The community service carried out in Cihanjuang Village is a Community Partnership Program that aims to apply research results from the FK Unisba academic community in accordance with community conditions through education about elderly health, knowledge about chronic diseases, modification of risk

factors and disease management based on the patient's perspective. This service tries to solve problems for the elderly community, which often has health problems and other complex problems that can affect the elderly's ability to receive complete care. This elderly development activity was carried out in Cihanjuang Village, Parongpong District, West Bandung Regency, which was attended by elderly people and elderly posyandu cadres in Cihanjuang Village and also other villages in the Parongpong District area, totaling around 60 people. This activity aims to improve the skills of elderly people in preventing and managing chronic diseases from the patient's perspective. This activity is generally divided into five stages, starting with the situation analysis process, preparation of activity guidelines, implementation of activities, evaluation, and follow-up plans, as depicted in the chart below.

**Table 1.** Structure of Community Service Activities for the Elderly in Cihanjuang Village

Activity step	Activity Description
The first phase	Need assessment and identification of specific problems affecting the elderly in the Cihanjuang Village District area
Second phase	The preparation of guidelines for implementing community service activities that will be carried out in Cihanjuang Village is an effort to increase the knowledge and skills of the elderly in making efforts to prevent and manage chronic diseases from the patient's perspective.
Third phase	The implementation of community service activities that will be carried out in Cihanjuang Village is an effort to increase the knowledge and skills of the elderly in carrying out efforts to prevent and manage chronic diseases from the patient's perspective.
Fourth phase	Evaluation of the results of the implementation of community service activities that will be carried out in Cihanjuang Village is an effort to increase the knowledge and skills of the elderly in carrying out efforts to prevent and manage chronic diseases from the patient's perspective.
Fifth phase	Follow up plan

The following is the implementation scheme for Community Service for the Elderly:



**Fig 1.** Scheme of Assistance for Increasing Elderly Skills in the Prevention and Management of Chronic Diseases

This elderly development activity was carried out for two (2) days using offline methods. It took place in the Parongpong District Hall, Cihanjuang Village, one of the villages in the Parongpong District area. The first day's activities generally included providing material regarding elderly health problems. On the second day, there were demonstrations and guidance in efforts to modify risk factors for chronic diseases and efforts to detect and manage chronic diseases. On day 1, there was an increase in the knowledge of the elderly through education and provision of material by the Unisba Faculty of Medicine health team, with material described in the table below and attended by elements from sub-district and village governments, local health centers, academics, and related resource persons who were following the requirements, appropriate qualifications and scientific experts. Day 2 focused on improving older adults' skills in chronic

disease management from a patient perspective. On the 2nd day, after doing sports or gymnastics for the elderly, participants received examples of good nutrition, followed by demonstrations and assistance to carry out anthropometric examinations, blood pressure checks, and blood sugar checks independently at home.

**Table 2.** Matrix of Community Service Activities for the Elderly in Cihanjuang Village Day 1

No	Topic	Study Materials	Source person	Implementation Method
<b>Day 1 (Increasing Elderly Knowledge)</b>				
1.	Introduction to Hypertension	1. Definition of hypertension 2. Classification of hypertension 3. Mechanism of hypertension 4. Management	FK Unisba PKM Team	Offline
2.	Introduction to Diabetes Mellitus	1. Definition of Diabetes Mellitus 2. Classification of Diabetes Mellitus 3. Mechanism of Diabetes Mellitus 4. Management	FK Unisba PKM Team	Offline
3.	Introduction to Coronary Heart Disease	1. Introduction of Coronary Heart Disease 2. Classification 3. Mechanism of CHD 4. Management	FK Unisba PKM Team	Offline

On the 2nd day after doing sports or gymnastics for the elderly, participants received examples of good nutrition for the elderly, followed by a demonstration and assistance so that they could independently carry out anthropometric examinations related to blood pressure checks and independent blood sugar checks at home. Evaluation of activities was carried out by analyzing the results of pre-test and post-test questionnaires and observations based on participants' activities on both day 1 and day 2.

**Table 3.** Matrix of Community Service Activities for the Elderly in Cihanjuang Village Day 2

No	Topic	Study Materials	Source person	Implementation Method
<b>Day 2 (Increasing Elderly Skills in Chronic Disease Management from a Patient's Perspective)</b>				
1.	Improving the physical health of the elderly	1. Introduction to appropriate sports for the elderly 2. Practice sports for the elderly	FK Unisba PKM Team	Offline
2.	Good nutritional management for the elderly	1. Balanced nutrition and suitable for the elderly 2. Practice determining good nutritional patterns for the elderly	FK Unisba PKM Team	Offline
3.	Digital blood pressure measurement, blood sugar monitoring from home, anthropometric measurement	1. Demonstration 2. Practice anthropometric measurements, digital blood pressure, and blood sugar monitoring from home	FK Unisba PKM Team	Offline
4.	Management of drug use for the elderly	1. Prevention of polypharmacy and drug interactions 2. Management of taking medication in the elderly	FK Unisba PKM Team	Offline

## 2.2 Results

The opening of the Community Service Activity was attended by the Dean of the Faculty of Medicine, Unisba, the Head of the Parongpong District, the Head of Cihanjuang Village, the head of the Subdistrict PKK Mobilization Team and the Cihanjuang Village PKK, and other villages in the Parongpong subdistrict area, the local health center, and 60 training participants. This activity received a good response from the participants consisting of the elderly and elderly posyandu cadres and received full support from the local village and sub-district governments because this PKM activity will support the accelerated development of health care villages and alert villages, which is one of the performance targets set to be achieved in the process of community empowerment to realize increased community welfare.



**Fig 1.** Photo of the FK Unisba Community Service Team and the Chair of the PKK Parongpong District

### 2.2.1 Implementation Day -1

The material provided is divided into two sessions. The first session of material provided was a general introduction to chronic diseases, their causes, associated risk factors, mechanisms for the occurrence of chronic diseases, and symptoms and signs of chronic diseases. This session also introduced three chronic diseases whose incidence rates are quite high in society, namely diabetes, hypertension, and coronary heart disease.

In the second session, the elderly were given training on modifying risk factors through exercise and determining good and appropriate nutrition for the elderly. Exercise and proper nutrition are among the best ways to manage the risk of occurrence and complications of chronic diseases. The elderly were also introduced to medical devices that can be used independently to control their illnesses, namely digital blood pressure measurements and blood sugar monitoring devices at home. These two tools can be used independently, and the elderly will be guided to use them regularly and independently in their respective homes.

### 2.2.2 Implementation Day 2

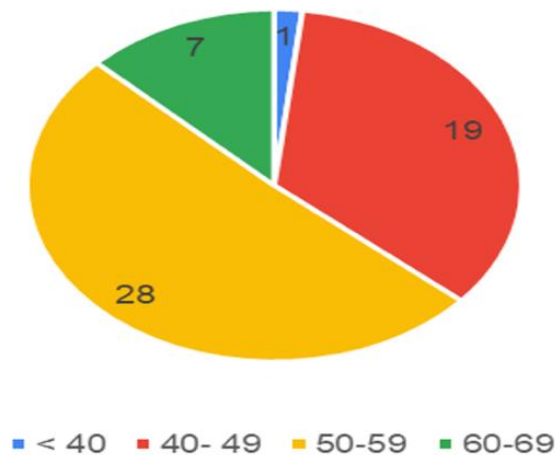
Starting with elderly exercise activities to provide an idea of the appropriate sports activities that elderly people can do in their respective places. Proper exercise will greatly determine the success of treating risk factors for chronic diseases at risk in the elderly. The elderly are also given technical assistance to measure vital signs and physical conditions that could be a sign or risk of chronic disease. The assistance provided is anthropometric measurements through measuring body weight, height, waist circumferences, body mass index or BMI, digital blood pressure measurement, monitor blood sugar at home. The three parameters above are taught directly to the elderly so that they can carry out these measurements independently and understand the interpretation of the results obtained. This allows them to carry out early detection and monitor the risk factors for chronic diseases that they will face. The increase in knowledge and skills obtained by participants is assessed through the results of pre-tests and post-tests before and after the activity.



**Fig 2.** Assistance and Increasing the Skills of the Elderly in Managing Chronic Diseases based on the Patient's Perspective

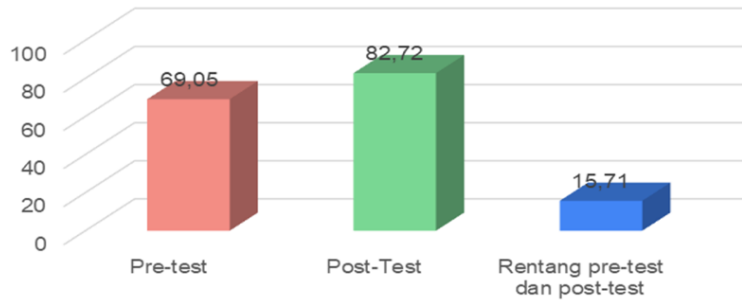
### 2.2.3 Evaluation Results of Increasing Elderly Knowledge and Skills

One of the aims of providing education and assistance to the elderly is to increase their knowledge and skills regarding chronic diseases, especially diabetes, hypertension, and coronary heart disease, as well as modify risk factors and disease management from the patient's perspective. Increased knowledge is measured using a pretest and posttest questionnaire, which covers all aspects being assessed. There were 60 participants invited to participate in this activity. However, 55 people filled in the pretest assessment, while 48 people filled in the posttest assessment because the posttest was carried out on the second day of the activity. All participants are elderly women and cadres with the following age distribution:



**Fig 3.** Age distribution of participants in assistance to improve the skills of the elderly in the prevention and management of chronic diseases from the patient's perspective in Cihanjuang Village

Training participants are generally aged 50-59 (50, 91%), with one of the youngest participants aged 37 and the oldest participant aged 66. All participants are healthy and can independently complete the pre-test and post-test questionnaires. The results of the pre-test and post-analysis show an increase in knowledge, with the average pre-test score on the 0-100 scale being 69.05 and the post-test score of 82.72, with an increase in scores of around 19.8%. In the pre-test, the minimum score is 37.7, and the maximum score is 83.33, while in the post-test, the minimum score is 56.67, and the maximum score is 100. The following is the comparison data for the average pre-test and post-test scores below.



**Fig 4.** Average Pre-Test and Post-Test Results of Training Participants

**2.2.4 Evaluation Result of Anthropometric Measurement**

The skills of the elderly in modifying risk factors and managing chronic diseases from the patient's perspective can be seen from the results of observations, participants' activeness when participating in elderly exercise, and assistance in measuring the patient's anthropometry (weight, height, waist circumference, and upper arm circumference) and Body Mass Index. After measuring height, weight, and waist circumference, the data was processed using the World Health Organization (WHO) comorbidity risk table based on BMI and waist circumference in Asians.<sup>12</sup>

Classification	BMI (kg/m <sup>2</sup> )	Risk of co-morbidities	
		Waist circumference	
		< 90 cm (men) < 80 cm (women)	≥ 90 cm (men) ≥ 80 cm (women)
Underweight	< 18.5	Low (but increased risk of other clinical problems)	Average
Normal range	18.5-22.9	Average	Increased
Overweight:	≥ 23		
At risk	23-24.9	Increased	Moderate
Obese I	25-29.9	Moderate	Severe
Obese II	≥ 30	Severe	Very severe

**Fig 5.** Table co-morbidities risk associated with different levels of BMI and suggested waist circumference in Adults Asians<sup>12</sup>

The measurement results show that the BMI statuses obese1 and obese2 are the most common groups; 11.32% of participants are at risk based on BMI, 54.72% are classified as obese 1, and 33.96% are classified as obese 2. All participants had a risk of comorbidities based on BMI and waist circumference calculations. The risk of severe and very severe comorbidities in this study is the largest group, with some falling into the category of increased 9.43%, moderate 3.77%, severe 52.83%, and very severe 33.96%.

**Table 4.** Co-morbidities risk associated with different levels of BMI and suggested waist circumference

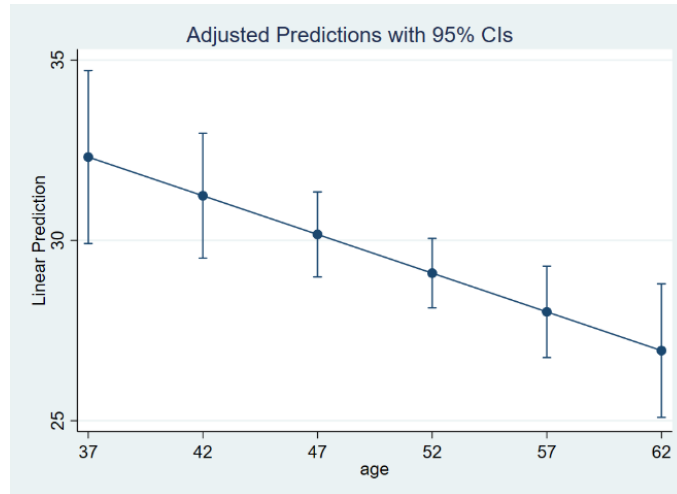
Classification	n	%
Risk of co-morbiditis		
increased	5	9.43
moderate	2	3.77
severe	28	52.83
very severe	18	33.96
total	53	100
BMI statuses		
at risk	6	11.32
obese 1	29	54.72
obese 2	18	33.96
total	53	100

Based on age and BMI, it was found that the younger the age, the greater the change in BMI. The median age in the at-risk group was 54.17 years; in the obese 1 group, it was 52.07 years; in the obese 2 group, it was 49.78 years.

**Table 5.** Differences in mean age values based on BMI status

	Median	mean	SD
Age (at risk)	54	54.17	6.46
Age (obese 1)	52	52.07	7.02
Age (obese 2)	50.5	49.78	5.1

The changes in BMI were analyzed using linear regression. The results show a decrease in BMI based on the age range of 37-62 years in this study, contrary to the general opinion that the older you are, the fatter you are. We need to know whether the decrease in weight (the numerator for BMI) is due to disease or loss of muscle mass.

**Fig 6.** BMI Prediction Based on Age

### 2.3 Discussion

Both generalized and abdominal obesity are associated with increased risk of morbidity and mortality. The main cause of obesity-related deaths is CVD, for which abdominal obesity is a predisposing factor. It is unclear which anthropometric measure is the most important predictor of risk of CVD in adults – BMI, waist circumference, waist-hip ratio, or even hip circumference.<sup>13</sup> BMI has traditionally been the chosen indicator by which to measure body size and composition and to diagnose underweight and overweight. However, alternative measures that reflect abdominal adiposity, such as waist circumference, waist-hip ratio, and waist-height ratio, have been suggested as being superior to BMI in predicting CVD risk. This is based largely on the rationale that increased visceral adipose tissue is associated with a range of metabolic abnormalities, including decreased glucose tolerance, reduced insulin sensitivity and adverse lipid profiles, which are risk factors for type 2 diabetes and CVD.<sup>13</sup> Providing topics regarding chronic diseases is urgent so that the elderly understand how to prevent and treat them and the promotional efforts that can be made to treat chronic diseases. Early detection, healthy food, maintaining body weight, and exercise can support disease prevention.

Elderly people are also expected to understand that chronic diseases take quite a long time, so treatment cannot only be done in the short term but requires ongoing treatment. The three most common chronic diseases in society, namely hypertension, diabetes mellitus, and coronary heart disease, need to be well understood by the elderly so that they will be involved in efforts to prevent and manage them. By being given the right education, elderly people are encouraged to modify their lifestyle and risk factors that can make their disease worse. Good knowledge will also enable them to carry out better early detection. An expanded and better-trained workforce for older adults is also needed, including enhancing the competence of all healthcare providers<sup>7</sup>, including posyandu cadres. Strengthening the role of public health is also needed<sup>7</sup>. In this case, one of them is Posyandu. Posyandu is expected to focus more on aging services and programs. An age-friendly public health system creates community levels where older adults can live safely, healthfully, and productively. Examples of programs and policies that can be implemented are to ensure access to good food for older adults, exercise, social engagement, and education. If all these aspects are addressed proactively, we can improve the quality of life of the elderly.<sup>7</sup>



### III. CONCLUSION

The elderly face several health problems, especially those related to chronic diseases such as hypertension, diabetes mellitus, and coronary heart disease. Problems faced by the elderly include a lack of knowledge about disease and its treatment and access to health services. Several strategies that can be implemented to increase the independence of the elderly and improve their quality of life are by increasing the knowledge and skills of the elderly and health workers who treat the elderly, regarding disease and its management, including through education and improving the skills of the elderly.

### IV. ACKNOWLEDGMENTS

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