

# The elderly knowledge improvement of balanced nutrition in Patangpuluhan, Yogyakarta

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## ABSTRACT

**Introduction:** Elderly is a vulnerable group to body function impairment and diseases. Although these conditions are considered normal aging results, the elderly's health level should be maintained. The application of balanced diet principles is one of the ways to reduce the risk and improves the health quality of the elderly. In this regard, the education program about balanced diet principles to enhance the group's knowledge is essential to support a healthier lifestyle for the elderly.

**Methods:** We conducted an experimental quantitative study in an elderly group in Patangpuluhan, Yogyakarta. The inclusion criteria were: Elderly aged >50 years old and live in Patangpuluhan. The data was analyzed using the Wilcoxon test for paired groups. This education program aimed to improve the elderly group's knowledge of balanced nutrition to maintain the elderly health state. There were 30 participants, most of whom were women (90%).

**Results:** The pre and post-test analysis results showed a 17 points significant increment ( $p=0,001$ ) in participants' knowledge (21%) compared to the pre-test score. Question topics that got the two highest score improvements were the duration of psychical activity and the purine-contains food groups (21,7 points).

**Conclusion:** This education program could raise elderly knowledge of balanced nutrition. This program should be applied regularly based on the elderly need for health and nutrition-related information. The male elderly also has to be encouraged to actively participate in community-based education to improve their knowledge of elderly health.

**Keywords:** Elderly Nutrition; Balanced Nutrition Guidelines; Degenerative Diseases.

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## INTRODUCTION

The Elderly is defined as a person aged 60 years and beyond.<sup>1</sup> In this age, the aging process is happening. The aging process is a biological phenomenon that has characteristics of social, physical, and psychological changes in someone's life. These alterations generally bring some adverse effects on the elderly lifestyle and health. Therefore, an appropriate nutrition intake for the elderly is essential to maintain a good aging process. The inappropriate eating habit might accelerate degenerative diseases such as type II diabetes, atherosclerosis, malnutrition, and heart diseases.<sup>2</sup>

Based on the Indonesian Basic Health Survey result (2018), 63,5% of the Indonesian elderly had hypertension, while 5,7% had diabetes mellitus (DM), and other degenerative diseases. In addition, during the Covid-19 pandemic, the elderly is counted as the highest risk

of Covid-19's severity and mortality.<sup>3</sup> Also, there are other changes in the elderly: a decrease in physical strength, memory, hearing, sight, and immunity besides body balance and gastrointestinal disorders.<sup>4</sup>

Daerah Istimewa Yogyakarta (DIY) is one region with the highest life expectancy in Indonesia. Furthermore, based on the population census in 2017, the life expectancy in Yogyakarta city was 74,3.<sup>5</sup> However, those phenomena brought consequences, including the rise of degenerative diseases caused by aging.<sup>6</sup> This non-communicable disease also became a problem in Patangpuluhan, a region under the Wirobrajan Primary Health Care working area. Based on the report of the ten highest health problems in this primary health care, hypertension and diabetes mellitus were among the top two highest cases in 2015.<sup>7</sup>

In this regard, to improve the elderly health status, an education program is essential. The more education programs

are conducted, the more nutrition knowledge and literacy improve. This condition will lead to better eating habits.<sup>8</sup> The elderly were advised to eat a variety of food types with improving fruit and vegetable intake, sufficient water intake, and consumption restriction to fatty, sweet, flour, high sodium, and high purine foods.<sup>9</sup> The elderly are also suggested to do physical activity for at least 30 minutes/day.<sup>10</sup>

Based on the importance of nutrition education to improve elderly knowledge of balanced nutrition, we conducted a program entitled "A Balanced-nutrition Education for Elderly" at Patangpuluhan Subdistrict, Yogyakarta. This program aimed to raise their understanding of balanced nutrition for the elderly to maintain their health status.

## METHOD

The education program was conducted offline through on-site presentation

and discussion in 120 minutes. The course material was about a balanced diet in elderly: sugar, sodium, and fat restriction, physical activities, fruit and vegetable consumption, and the physical function alteration of the elderly. The material was delivered by the researcher. The material was developed based on the balanced nutrition guidelines and elderly health modules published by the Indonesian Ministry of Health. The community services process started with the initial discussion with the program partner about the problem in the targeted group. Further, we decided on the topic and method. The knowledge increment was assessed using the balanced diet knowledge questionnaire, and then the pre and post-test results were analyzed. The questionnaire used for pre and post-test results was the same.

## RESULT

### Participant's characteristics

Based on the presence form analysis, the total number of participants was 30, and only 10% were men (Figure 1).

### Participants' knowledge of balanced nutrition

There were 23 of the total participants who filled out both the pre and post-test questionnaires. Based on the results, there were 17 (21,9%) points of knowledge improvement (Figure 2). This improvement was statistically significant based on the Wilcoxon paired test result ( $p < 0,05$ ) (Table 1).

Furthermore, the biggest increase in knowledge was marked in the physical activity duration and high purine food question items by 21,74 points. However, the two items got the same pre- and post-test scores (Figure 3; □ Post-test; □ Pre-test).

## DISCUSSION

The assessment of this program showed a positive result with a rate increase of 17,3 points or 21,9% from its pre-test score. It is similar to the results of a systematic review that stated a health education intervention could improve the elderly's knowledge, behavior, and physical state.<sup>15</sup> The result also shows that most participants

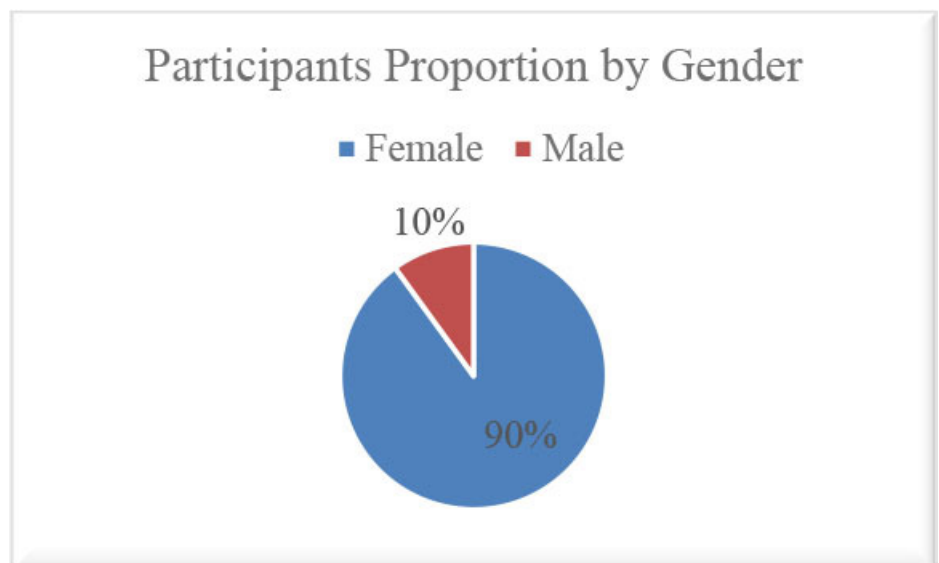


Figure 1. Participants' proportion by gender.

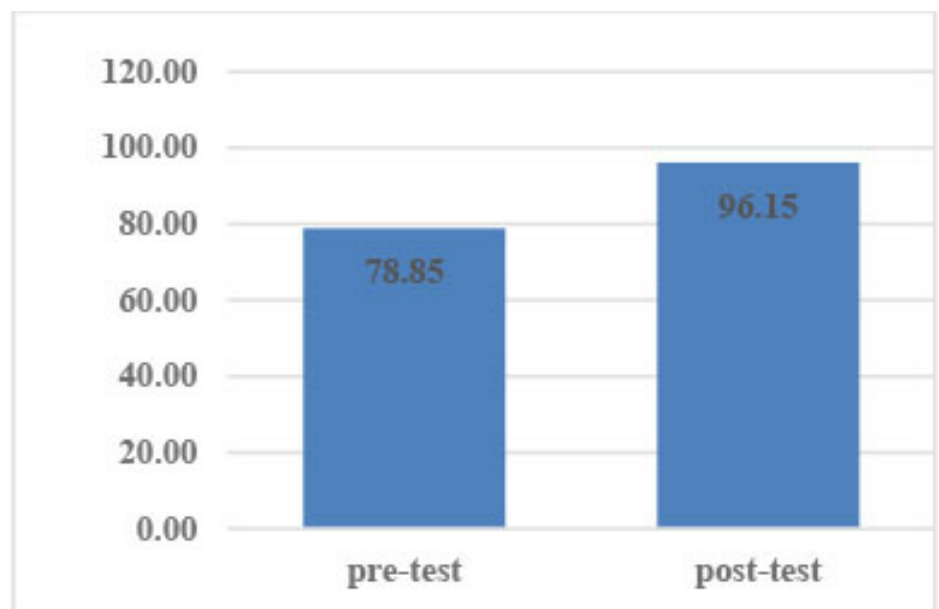


Figure 2. Comparison between pre and post-test score result.

Table 1. Wilcoxon-test result

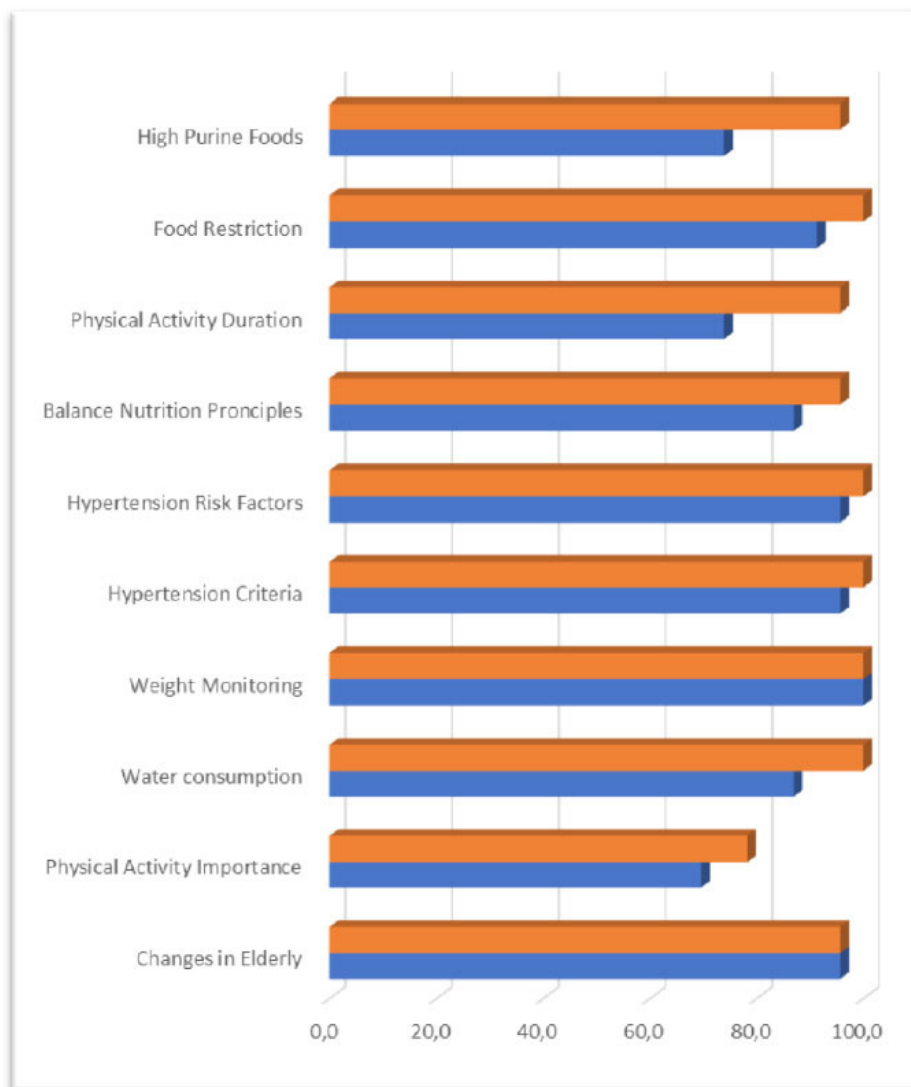
	Mean $\pm$ SD		P
	Pre-test	Post-test	
Balanced Diet Knowledge	78,85 $\pm$ 0,92	96,15 $\pm$ 0,72	0,001*

\*Significant ( $p < 0,05$ )

understand the importance of physical activity. However, 75% of them did not know the exact recommended duration. The literature stated that physical and cognitive decrease is a common problem in the elderly, and physical activity has a therapeutic role. Furthermore, it prevents and works as a therapy for the occurring problem.<sup>16</sup> The Indonesian Health Ministry recommends elderly to do

physical activity for at least 30 minutes a day, with a minimum frequency of three times a week.<sup>4</sup>

The importance of health assistance is based on increased medical, psychological, economic, and health problems in the elderly. The assistance should be delivered as early as a person enters the elderly phase by emphasizing risk and protective factors.<sup>10</sup> This reason aligns with the



**Figure 3.** The bar chart comparison between pre and post-test score result in each question.

balanced nutrition education for the elderly to improve their health status.

Based on the WHO prediction, globally, the number of elderly will rise twice from its percentage in 2015 (12%) to 22% in 2050. Furthermore, the increase in the elderly total number is along with the rise in health risks in this population. At the biological level, aging is an effect of molecular and cellular damage that happen throughout time. These damages lead to a physical and mental capacity decrease and a higher risk of mortality and morbidity. The elderly common health problems are decreased hearing and vision capability, neck and back pain, osteoarthritis, lung disease, diabetes, depression, and dementia.<sup>11</sup>

The majority of the participants were

women. This finding is in line with the study result of another study that women elderly are more active in health education participation. The high morbidity and longer life expectancy in the women group might be the reason.<sup>12</sup> Conversely, women are more sensitive to pain and considerate to their health condition, so they are more active in seeking information or help (consultation).<sup>13,14</sup>

Besides physical alteration, gout arthritis is a health problem commonly found in the elderly, caused by the abnormality in the body's purine metabolism and characterized by recurrent hyperuricemia and joint inflammation. Although knowing the effect, the Indonesian elderly still consume high-purine foods.<sup>17,18</sup> This study result also

shows low knowledge of purine contains foods group. Another study conducted in Cangkringan also stated that of 109 participants, only 37% of them had a good knowledge of gout arthritis.<sup>19</sup>

In general, the elderly in this region were enthusiastic and actively involved in the elderly health program, so they gave full attention to the speaker. This condition explains why their knowledge improves significantly. However, this study has limitations, including limited time and resources to process the ethical clearance and validity and reliability test. Based on the discussion above, the elderly knowledge of balanced nutrition and health maintenance is essential. Then, making a sustainable education program (long-term program) is highly recommended. The topic delivered is also adjusted to the knowledge needed by the elderly.

## CONCLUSION

The implemented Community Service Program can increase participants' knowledge about balanced nutrition in the elderly. This educational program is expected to be carried out on an ongoing basis to obtain a more optimal increase in knowledge.

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## CONFLICT OF INTERESTS

There is no potential conflict of interest in this community service and publication

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