

# Health Education for Hamlet Heads: Initiation of Prevention of Non-Communicable Diseases in The Community

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**Abstract.** Throughout the world, non-communicable diseases (NCDs) have become one of the biggest health problems of the 21st century. Non-communicable diseases (NCDs) are the main cause of death in Indonesia. In addition, NCDs contribute to Disability Adjusted Life Years (DALYs) lost due to the increase in death and disability rates related to NCDs. Health education is needed to increase public awareness of the incidence of NCDs. This quasi-experimental study with a pre-post design aims to examine the effectiveness of health education in increasing knowledge related to NCDs in 16 hamlet heads. This study was conducted in July 2024 in Sitimulyo Village to all hamlet heads. The education provided is related to preventing NCDs, especially hypertension, diabetes mellitus, stroke, and coronary heart disease. The Wilcoxon Signed Ranks test with an alpha of 5% was used to determine the effectiveness of providing education. The minimum-maximum score before education is 20-100, and after education the minimum-maximum score is 60-100 with the average score after education (72.6) being higher than before education (63.8) and there is no difference in median (60) with  $p=0.159$ . Although the health education provided was able to increase the minimum and average score of hamlet heads' knowledge before and after education, this increase was not significant.

**Keywords:** health education; health problem; knowledge; non-communicable diseases.

## 1 Introduction

Non-communicable diseases (NCDs) are one of the global health problems that continue to increase from year to year, especially in the 21st century [1]. The most common non-communicable disease problems include hypertension and diabetes mellitus [2], [3]. Non-communicable diseases are one of the causes of more than 70% of global deaths [1]. In addition, NCDs contribute to Disability Adjusted Life Years (DALYs) lost due to the increase in death and disability rates related to NCDs [1], [4]. In 2019, NCDs were reported to play a role in 572,723 cases and 505,142 cases of death in men and women, respectively. In addition, NCDs also contributed to more than 17 million DALYs in men and nearly 15 million DALYs in women [1].

Unhealthy lifestyles and inappropriate diets contribute to the increased incidence of various non-communicable diseases. Therefore, a health education approach is important to reduce the burden on the state due to non-communicable diseases [2]. Health education is a solution to improve a person's understanding of disease, especially in preventing and treating disease and also preventing disease complications [5]. Health education accompanied by discussions and questions and answer sessions is one health education effort that can be used to increase knowledge of subjects related to disease prevention and treatment [6], [7]. Health education related to the incidence of hypertension carried out by counseling methods using power points media was able to increase the knowledge of the people of Karangbendo Hamlet, Banguntapan, Bantul by 9.87 points from 87.13 to 97.00 [8].

Health education in Sitimulyo Village, Piyungan District, Bantul Regency, Yogyakarta, is important to be done as a preventive measure for non-communicable diseases. As far as the researchers know, health education has been widely conducted to the community or cadres, but there has been no health education conducted to the headman or leader at the Padukuhan level, especially to hamlets leader (Dukuh). The Dukuh is one of the figures respected by the community because he/ she is part of the government's elite [9]. Increasing knowledge of the head of the hamlet (Dukuh) is expected to be a gateway to increasing community knowledge. This study examines the effectiveness of health education in increasing the knowledge of the head of the hamlet (Dukuh) regarding the prevention of non-communicable diseases.

## 2 Method

The type of this research is quasi-experimental with a pretest-posttest design without a control group. The research design can be seen in Figure 1. The research was conducted in July 2024 in Sitimulyo Village, Piyungan District, Bantul Regency, Yogyakarta. This study is a population study involving all heads of hamlets in Sitimulyo Village, with a total of 16 heads of hamlets involved.



**Figure 1:** Research Design

Description:

Pretest : knowledge measurement before health education

X : intervention in the form of health education for the prevention of non-communicable diseases

Posttest : knowledge measurement after health education

The non-communicable disease prevention health education delivered in this study included: a) definition of non-communicable diseases; b) hypertension (definition, risk factors, signs and symptoms, classification, appropriate diet); c) diabetes mellitus (definition, risk factors, signs and symptoms, complications, appropriate diet); d) stroke (definition, risk factors, signs and symptoms, complications, prevention and treatment, appropriate diet); e) coronary heart disease (definition, risk factors, signs and symptoms, complications, prevention and treatment, appropriate diet).

The pretest-posttest was conducted to measure the subject's knowledge between before and after health education. Knowledge measurement uses a list of closed statements with correct and incorrect answer options. The statements consisted of favorable and unfavorable statements. On a favorable statement, the subject will get a score of 20 when choosing the “true” answer and a score of 0 when having a “false” answer. Conversely, on unfavorable statements, the subject will get a value of 0 when choosing the “true” answer and a value of 20 when choosing the “false” answer. The list of pretest and posttest statements can be seen in Table 1.

**Table 1.** Pretest and Posttest List of Statements

No.	Statements	Key Answer	Description
1	Non-communicable diseases (NCDs) are diseases that are not caused by transmission of vectors, viruses, and bacteria but are mostly caused by behavior and lifestyle	True	Favorable
2	Tuberculosis (TB), Acute Respiratory Infections (ARI), and diarrhea are the three main NCD problems	False	Unfavorable
3	NCD risk factors include: smoking, physical inactivity, lack of vegetable and fruit consumption, and alcohol consumption	True	Favorable
4	Optimal blood pressure is <130/80 mm Hg	False	Unfavorable
5	Diabetes mellitus occurs when the random blood glucose level is >200 mg/dL or fasting blood glucose is >125 mg/dL	True	Favorable

To determine the effectiveness of health education on changes in subject knowledge, statistical testing was carried out using the Wilcoxon Signed Ranks test with a significance level of 95%. However, previously, a data normality test was conducted using Shapiro-Wilk to determine the level of data distribution.

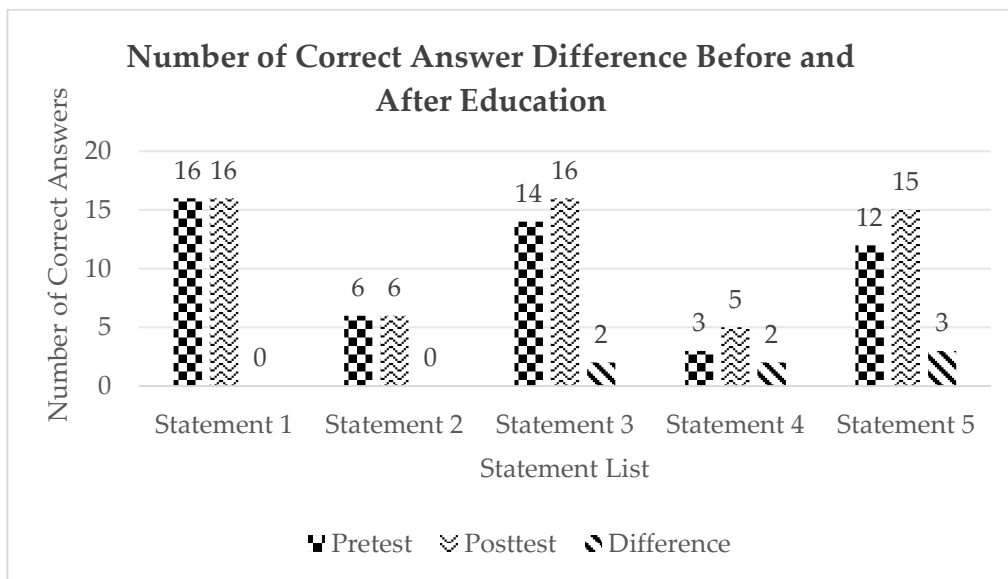
### 3 Results and Discussion

There are 21 hamlets in Sitimulyo Village, but only 16 heads of hamlets attended the education activities, with two females and 14 males. There was an increase in the minimum score of subject knowledge between before education (20) and after education (60), with the maximum score of subject knowledge both before and after education being 100. The mean subject knowledge before education was 63.8, and there was an increase of 8.8 points to 72.6 after education. However, there was no difference in the median score between before and after education, which was 60 with a  $p=0.159$  (Table 2).

**Table 2.** Effect of Health Education on Subject Knowledge Score

Time of measurement	Knowledge Scores		p
	Median	Minimum-Maximum	
Before education (pretest)	60	20-100	0.159
After education (posttest)	60	60-100	

Based on item analysis, there was an increase in the number of statements answered correctly between pre- and post-education, although statistically, this increase was not significant (Figure 2). All subjects were able to answer correctly regarding the definition of non-communicable diseases (statement 1), and there was an increase in understanding regarding risk factors for non-communicable diseases (statement 3), with all subjects answering correctly at the end of the measurement (posttest). Statements that were still often answered incorrectly were related to the main types of non-communicable disease problems (statement 2) and blood pressure classification (statement 4). At the time of the final measurement (posttest), more than 90% of the subjects were able to answer correctly regarding the symptoms of diabetes mellitus (statement 5).



**Figure 2.** Number of Correct Answer Differences Before and After Education

Developing the quality of health services needs to be done effectively, efficiently, and integrated, especially for the community. One of the actions to develop the quality of health services can be done through health education. Health education is expected to increase the knowledge of education targets [10].

The results of this study are not similar to previous research, which states that counseling activities with lecture and question-and-answer discussion methods are effective in increasing respondents' knowledge. There was an increase of 1.4 points from 7.7 to 9.1 after counseling

[6]. In previous studies, not only lecture and question-and-answer discussion methods were used, but also leaflets, banners, and PowerPoint media [6], [11], [12]. While in this study only used PowerPoint media. Another factor that causes insignificant changes in knowledge is the material provided. In previous studies, the material presented only focused on one non-communicable disease material [5], [6], [8]. At the same time, this study focuses on several types of non-communicable diseases.

Educational media also determines the success rate of education. Education conducted to 33 elderly people in Padukuhan Cepoko, Ngrambe District, Ngawi Regency, with educational media in the form of leaflets showed an increase in the good knowledge category by 45.5% [5]. Another study also showed that education conducted to cadres showed that there was an increase in cadre knowledge in the good category by 26% after education using booklet media [10]. Education conducted for junior high school students showed that the use of videos was effective in increasing students' knowledge in implementing health protocols with an increase in scores by 2.28 points [13]. Health education using digital poster media is proven to increase the subject's knowledge of the material provided [14], [15]. Education related to breast self-examination (SADARI) using digital posters can increase knowledge scores by 11.27 [14]. Meanwhile, education for young athletes using digital posters that can be distributed through various social media can increase the minimum knowledge score of the subject from 33 to 60, with an average knowledge score increasing from 65 to 79 [15].

This study has limitations on the media used in health education. Further studies are needed regarding the use of other media as an effort to increase the knowledge of the head of the Sitimulyo Village. In addition, the educational materials provided should focus on one health material and not directly combine several health materials.

#### **4 Conclusions**

Health education using lectures, discussion, and question-and-answer methods with PowerPoint media was able to increase the minimum value and average value of knowledge of the head of the Sitimulyo Village, although this increase was not statistically significant.

#### **5 Acknowledgments**

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