ANALYSIS OF HYPERTENSION RISK FACTOR IN THE COMMUNITY: A CASE STUDY IN THE COMMUNITY OF BATURETNO VILLAGE, DAMPIT DISTRICT, MALANG REGENCY

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ABSTRACT

Hypertension is one of the non-communicable diseases which has been identified as the main cause of premature death in the world. In 2020, the number of people with hypertension in Malang Regency reached 704,698 people, making Malang Regency the third-highest hypertension rate regency in Java. In Dampit District, the prevalence of hypertension was 3.31% with 1,019 residents were diagnosed with this disease. Better management of hypertension is needed, considering the high morbidity and mortality caused by the disease. This study aimed at determining the main gap in knowledge, attitude, and practice about hypertension; as well as investigating the effect of health promotion on knowledge about hypertension of the residents of Baturetno Village, Dampit District, Malang Regency. We employed a pre-experimental one-group pretest post-test design. The study was conducted on 11-18 January 2022, involving 50-82 samples who were selected through consecutive sampling. This study consisted of 2 stages. The first stage used the questionnaire to identify the gap in the knowledge, attitude, and practice about hypertension. The result was then analyzed using Chi-Square, then the main problem was selected using the Nominal Group Technique. In the second stage, we developed a health promotion to address issues selected in the first stage. Wilcoxon was used to analyzing the impact of the promotion on respondents' knowledge. We found that the main risk factor for hypertension in Baturetno Village was the low level of knowledge regarding the use of hypertension drugs. We found a significant increase in the level of knowledge after health promotion was delivered through roleplay and simulation.

KEYWORDS

Hypertension, Malang, Non-Communicable Diseases, Promotion, Knowledge

INTRODUCTION

Non-communicable diseases (NCDs) are defined as chronic diseases that are not caused by infection, but by a combination of genetic, physiological, environmental, and habitual factors. Non-communicable diseases have contributed to the deaths of 41 million people in the world per year, equivalent to 71% of all global causes of death. The main contributor to death by NCDs is cardiovascular diseases (17.9 million people every year) [1], such as hypertension.

Globally, WHO estimates that the prevalence of hypertension is 22% of the world's population, with Southeast Asia occupying the 3rd position with a prevalence of 25% of the total population [2]. The prevalence of hypertension in Indonesia reaches 34.1% with an estimated number of cases of 63 million people. The prevalence of hypertension in East Java is the third highest among Indonesia's provinces, at the rate of 36.2% [2]. At the Malang Regency level, the estimated number of people aged 15 years with hypertension is 793,082 [13]. In terms of mortality, 400 thousand of Indonesians died due to hypertension in 2018 [3]. Further, it is reported that hypertension places third in the cause of death in Indonesia in all age groups, accounting for 6,83% of total deaths. To make this matter worse, it is predicted that the prevalence of hypertension globally will rise from 639 million in 2000 to 1.15 billion cases in 2025. Furthermore, as many as 50% of hypertension patients are unaware that they have hypertension [4].

Unquestionably, hypertension is a major problem in public health in developed and developing countries. Although hypertension drugs have been discovered about thirty years ago, hypertension remains a public health concern [5]. As a matter of fact, hypertension cannot be cured, but it is

controlled by managing risk factors, reducing episodes of symptoms, or reducing the chance of complications [6]. Risk factors for hypertension can be categorized into modifiable and non-modifiable risk factors. Modifiable risk factors include obesity, low physical activity/inactive lifestyle, high salt consumption, smoking history, and excessive alcohol consumption. While the risk factors that cannot be modified include gender, age over 65 years, race, family history of hypertension, and genetic factors as well as the presence of aggravating disease [7,8].

Sufficient knowledge, as well as good attitude and practice about hypertension and its risk factors, are important for the individual to manage his/her hypertension. Therefore, this study aimed at determining the main gap in knowledge, attitude, and practice about hypertension; as well as investigating the effect of health promotion on knowledge about hypertension of the residents of Baturetno Village, Dampit District, Malang Regency

MATERIALS AND METHODS

This study employed a pre-experimental, one-group pretest post-test design. We carried out the study at Baturetno Village Hall, Dampit District, Malang Regency, East Java Province, Indonesia. The study consisted of 2 stages, namely the pre-intervention and intervention stages.

Pre-Intervention Stage

The pre-intervention stage of this study was carried out on January 11, 2022. This stage aimed at determining the main gap in knowledge, attitude, and practice about hypertension. We included 82 residents of Baturetno Village in the study using consecutive sampling. The inclusion criterion was people who were diagnosed with hypertension. In accordance with The Eight Joint National Committee (JNC 8), we defined hypertension as systolic blood pressure ≥130 mmHg and/or diastolic blood pressure ≥80 mmHg [9]. Respondents who were not willing to participate in our study were excluded.

To obtain data from respondents, we used a research-administered questionnaire. This questionnaire-filling strategy was chosen due to the limited ability of the respondents to read and understand Bahasa Indonesia. The pre-intervention questionnaire was prepared based on the literature related to hypertension and has been adapted to related research studies. The independents variables of the study at the pre-intervention stage included gender, age, recent education history, occupation, history of hypertension, adherence to medication, measurement of body mass index (BMI), hypertension staging, blood sugar assessment, cholesterol levels, family history of hypertension, history of smoking or exposure to cigarette smoke, history of consuming alcohol, history of consuming foods high in sodium and potassium, history of consumption of foods high in saturated fat/cholesterol, history of consuming salt, history of consuming vegetables and fruit, history of physical activity, respondents' access to health insurance, history of check-ups with health facilities, history of hypertension education, history of using hormonal contraception, stress conditions, and level of knowledge of respondents.

The level of knowledge of respondents was obtained from 10 questions related to hypertension. Each correct answer will be given 1 point, while the incorrect answer will be scored 0. If the total knowledge score was <6, the level of knowledge was regarded as "poor"; if the total score was 6-8, the level was "sufficient", and finally if the total score was >8, the level of knowledge was regarded as "good". Respondents' attitudes and practices being evaluated were intensity, regular treatment at health facilities, physical activity, and diets (salty foods, fruits, vegetables, saturated fat foods). Smoking habits, alcohol, and stress control were assessed using the Perceived Stress Scale [2, 7, 8]. The dependent variable was the hypertension stage, which was categorized into stage 1 hypertension, stage 2 hypertension, and hypertension crisis. The hypertension stage classification was based on JNC 8 [9].

The results of the questionnaire were tabulated in Microsoft Excel Worksheet format, followed by data analysis. Initially, the data of respondents' characteristics, knowledge, attitudes, and related history of respondents were analyzed descriptively, presented with frequency and percentage of each variable. The data were then further analyzed using the Chi-Square test to determine the relationship between the independent variables with the hypertension stage. The main gap in

knowledge, attitude, and practice related to hypertension was determined by the Nominal Group Technique.

Intervention Stage

The intervention stage was carried out on January 18, 2022.The purpose of this stage is to measure and compare the level of knowledge of respondents before and after health promotion. The number of respondents was 50 people who were selected using consecutive sampling.

We developed the content and the delivery method of health promotion based on the result of the pre-intervention stage. In terms of content, we explained the definition, symptoms, prevention, and management of hypertension, such as a well-balanced diet and also the importance of taking anti hypertensive drugs regularly

Large group discussion was chosen to deliver health promotion to 50 respondents, followed by simulation, roleplay, interactive question and answer, and quizzes with prizes. In the large group discussion, pictures and materials related to hypertension were presented to respondents using power points. We used Indonesian Ministry of Health guidelines to develop the material [10]. Afterward, the simulation using mini-drama was used to describe the risk factors that cause hypertension, symptoms of hypertension, complications of hypertension, control regularity, and taking anti-hypertensive drugs. The drama was performed using the local language or terms that were familiar to the people in Baturetno Village. The simulation was also supported by the use of props such as balloons to illustrate the condition of blood vessels in a state of hypertension.

To assess respondents' knowledge level, we sent out 10 questions before and after the health promotion. The similar method to the questionnaire in the pre-intervention stage was used to score and categorize the results. The data from the pretest-post test were then tested for its normality using the Kolmogorov Smirnov test. Afterward, a comparative test was carried out with the Paired T-test if the data distribution was normal or using the Wilcoxon non-parametric test if the data distribution was not normal.

The research process can be seen in figure 1.

RESULTS AND DISCUSSION

Pre-Intervention Stage Results

Characteristics of Pre-Intervention Research Respondents

Table 1 described the characteristics of respondents in the Pre-Intervention Stage Results. In total, 50 people meet the inclusion criteria in Baturetno Village. The majority of respondents were women (88%), never attended formal school (38%), were farmers (56%), and had no previous history of hypertension (66%). The predominant age group was 66-75 years (30%). In terms of hypertension stage, the majority of respondents had stage 2 hypertension (60%,) followed by stage 1 hypertension (24%) and hypertensive crisis (1%).

Respondents' Hypertension Knowledge Level

With regards to hypertension knowledge level, we found out that as many as 74% of research respondents had poor knowledge, 22% had sufficient knowledge, and only 4% of respondents had good knowledge about hypertension. The most frequent incorrect answers were on the question item "blood can be managed by managing stress" (82%), followed by "high blood pressure can cause complications to other organs" (70%); then by "anti-high blood pressure drugs should be consumed even though I feel no symptoms of hypertension" (68%). Respondents also answered incorrectly mostly on these question items: "to manage high blood pressure it is not enough just to take medicine" (68%), followed by "reducing salty diet is one of the efforts to reduce high blood pressure" (58%); "an example of a symptom of high blood pressure is dizziness (58%); and lastly "patients with high blood pressure may not have symptoms" (50%).

Analysis of Risk Factors and Characteristics of Respondents on the Stage of Hypertension

Further analysis with the Chi Square test was carried out to assess the effect of sociodemographic characteristics and risk factors on the stage of hypertension. We found that the level of knowledge related to hypertension has an effect on the stage of hypertension with a p-value of 0.034. It can be concluded that the level of knowledge about hypertension is one of the important modifiable factors for intervention.

Problem Priority Analysis

Determining the priority of the problem in this study was carried out using the Nominal Group Technique method (Table 2). From Nominal Group Technique, the lack of knowledge about hypertension became the main priority for the intervention stage.

Intervention Stage

We found that there was an increase in the level of respondents' knowledge about hypertension before and after the intervention as shown in Figure 2.

Out of the 50 respondents, 37 respondents (74%) had poor knowledge, 11 respondents (22%) had sufficient knowledge and 2 respondents (2%) had good knowledge before health promotion. After the delivery of health promotion, it was found that the level of knowledge of respondents increased, in which as many as 26 respondents (52%) had sufficient knowledge and 24 respondents (48%) had good knowledge.

To determine the significance of the difference between the level of knowledge before the intervention and after the intervention, a difference test was used. Before the difference test, Kolmogorov Smirnov was conducted and the results showed p=0.000 before and after health promotion (p<0.05), which means that the data distribution was not normal. Wilcoxon test was then chosen for the difference test. It was found that giving health promotion significantly increased the knowledge score after the intervention (p < 0.05) with the result p = 0.000. It can be concluded that the intervention in using large group discussion, roleplay, and simulation significantly increased the level of knowledge about hypertension in respondents.

In this study, it was found that the highest number of respondents who took part in Posbindu and met the inclusion criteria were women (88%) with the largest age group at the age of 66-75 years (30%). It can be assumed that women experience hypertension more than men do. This is due to the influence of the estrogen hormone level. This hormone protects blood vessels from damage. The level of estrogen will decrease when women stop menstruating, making older women more susceptible to hypertension [11]. As hypertension is associated with stress, women are also more prone to stress due to work-family conflict. The multiple roles as a worker, a wife, and a mother may induce stress and contribute to the incidence of hypertension [12]. Another reason why more women were involved in this study is that women have better health awareness compared to their men counterparts. According to the research of Primary et al. in 2019, women tend to be more concerned about their health, thus they seek medical examinations [13].

Based on the Chi-Square test, it was found that the respondent's level of knowledge had a significant effect on the stage of hypertension (p-value =0.034). Hypertension rarely shows signs and symptoms at an early stage. The absence of significant symptoms & complaints may give the patients a false perception that they are healthy and their blood pressure is normal. Without a good level of knowledge about hypertension, the patients will not regularly check their blood pressure, thus hypertension will remain undiagnosed and the disease may progress.[14]. Hypertension itself can give symptoms that vary in each individual and often the symptoms are not specific or resemble other diseases [15]. This is why hypertension is said to be the silent killer because it often does not give any symptoms and tends to be left uncontrolled [16]. Blood pressure that is left high for a long time can cause damage to other organs such as stroke (for the brain), coronary heart disease (for the heart's blood vessels), and left ventricular hypertrophy (for the heart muscle). Complications of stroke are often the cause of death for someone who has hypertension [16, 17].

In the intervention stage, we conducted interactive health promotion using simulation methods and the use of props, role play, and interactive question and answer. After the intervention, the respondent's level of knowledge increased significantly as showed by the increase in the post-test score compared to the pre-test (p = 0.00 with p <0.05).

Health promotion is a process of communication and behavior change through education. The main goal is to provide empowerment to individuals and communities, which will help them to have a healthier lifestyle. To achieve this goal, appropriate methods and media are needed. The more senses are used to capture the message from the promotion, the better the knowledge gained. The use of various tools and media will help deliver messages better [18]. To change one's behavior, the method of demonstration and experiment is most suitable [19].

The use of interactive methods in this health promotion also plays a role in increasing one's knowledge about hypertension. Many researchers conclude that there is a positive relationship between an interactive, applied learning approach and higher cognitive-affective outcomes. Interactive learning leads to better absorption and retention of information. Not only is it more effective, but it also provides a variation of the usual lecture-based extension and thus provides an applied and practical aspect to the theory being taught [20].

Interactive health promotion may provide a unique experience for the community. With new and interesting experiences, people's interest and motivation to recognize and implement healthy lifestyles will increase. The planning and development of interactive health promotion media shall consider the age, gender, and culture to increase the acceptance of the recipients. [21].

The learning process will be also more effective if the learner is not a passive recipient of knowledge, but is a proactive personality in the whole learning process. Active learning is possible when the recipients feel a connection between previous knowledge and new knowledge. Applied learning can be achieved through chat, role-play, and case studies. Simulation is another technique used to teach useful learning concepts using applied learning. According to Yardley-Matwiejczuk (1997), role-playing places people in "as-if" situations through simulations and actions depending on certain events and circumstances so that different behaviors, roles, and arguments directly influence and deepen the learning experience. Learning in role playing is facilitated by observing and acting out a series of events that occur in each situation. Role-playing helps a person to understand the dilemma in the situation and highlights the values of interpretation, which is impossible to learn in the conventional lecture mode of teaching [20].

The level of knowledge and understanding of hypertensive patients related to their disease can support the success of therapy so that blood pressure can be controlled properly. The more the patient understands the disease, the more aware the patient is of maintaining a lifestyle, and regularly taking medication, and the level of patient compliance will also increase [21].

The limited time compelled the researcher to use a questionnaire instrument to obtain data. Since the questionnaire involve choices for respondents' answers, the problem could not be explored deeper. In addition, the majority of respondents were not well educated, they were unable to read and write and can only speak Javanese. This language barrier may result in perception bias. Time constraints also result in researchers being only able to evaluate the immediate output of the health promotion, but not the outcome in the distant future.

CONCLUSIONS AND RECOMMENDATIONS

The main risk factor for hypertension in Baturetno Village is the low level of knowledge about hypertension. Health promotion using roleplay in the form of mini-dramas, simulations using simple teaching aids, and effective question and answer can improve knowledge about hypertension. However, further evaluation is needed regarding commitment to attitude and behavior change. It is necessary to carry out regular promotion, as well as proper education about hypertension to all levels of society and age groups.

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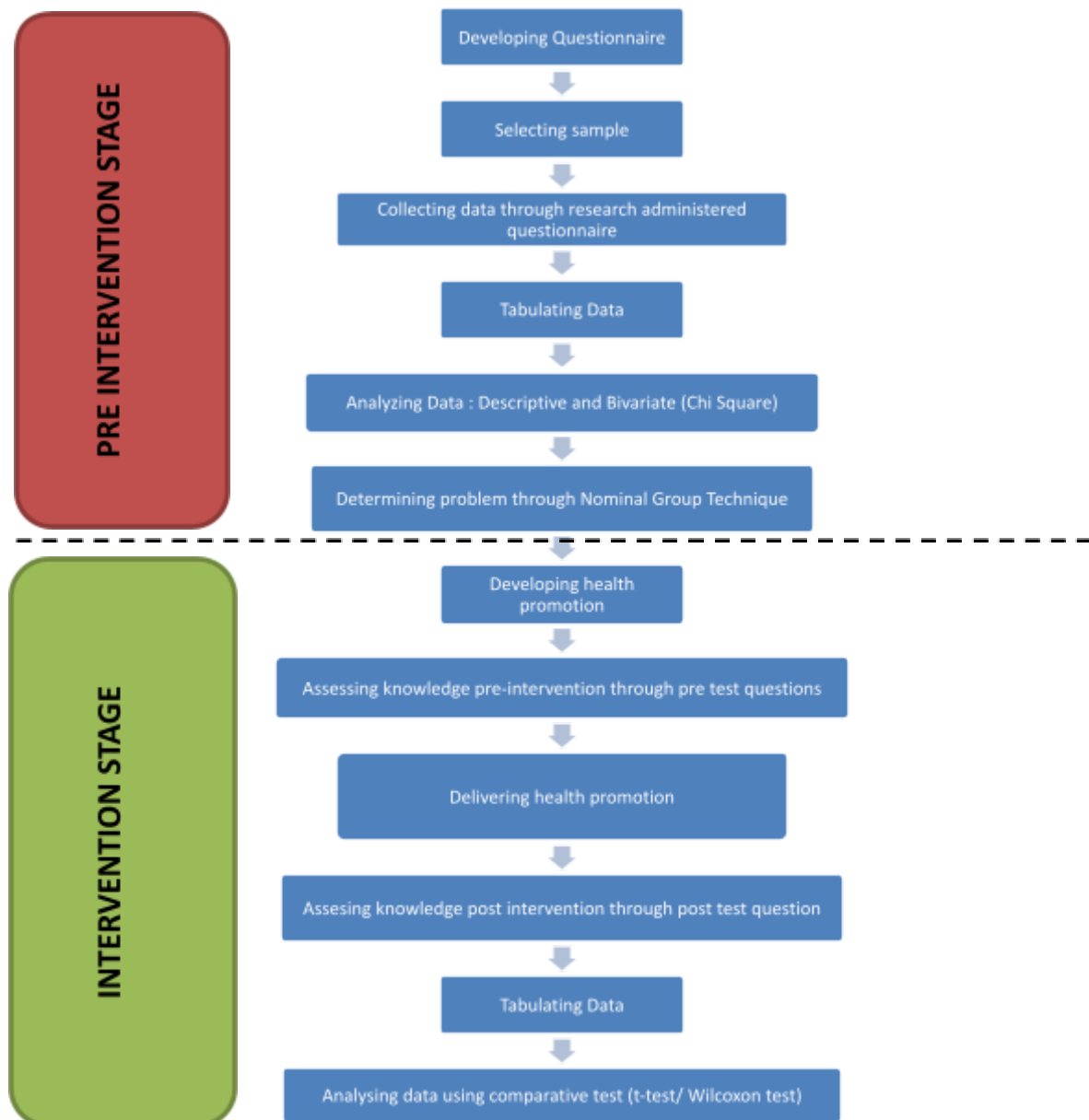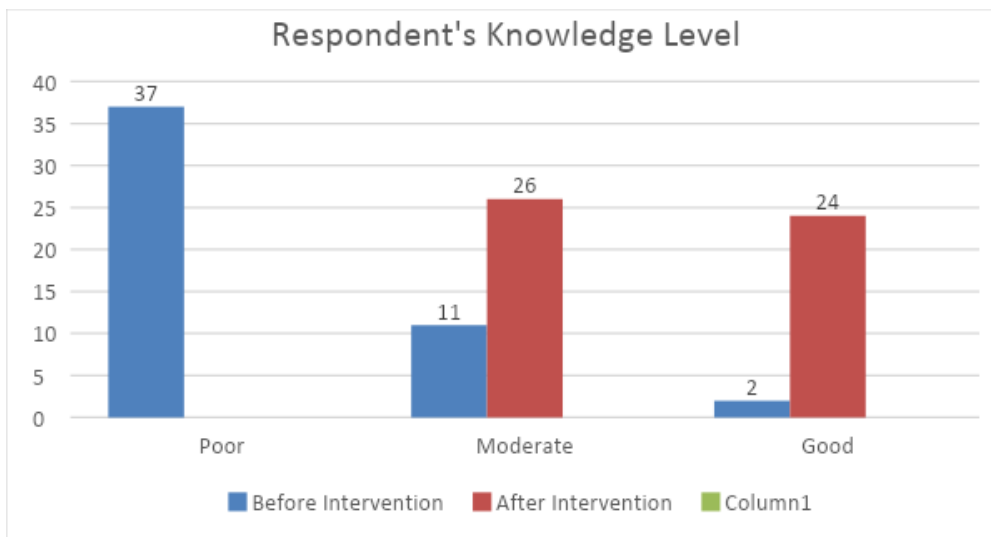
Figure 1. Research Process Stage

Figure 2.Proportion of Knowledge Level of Hypertension Before and After Intervention

Source: primary data, 2022

Table 1.Demographic Characteristics of Respondents

Characteristics	n	%
Gender		
Man	6	12
Woman	44	88
Highest level of education		
No formal education	19	38
Elementary school graduate	15	30
Middle school graduate	8	16
High school graduate or Equivalent	8	16
Bachelor/Master/Doctorate Degree	0	0
Age		
25 - 35 years	0	0
36- 45 years old	8	16
46 - 55 years old	11	22
56 - 65 years old	12	24
66-75 years old	15	30
76-85 years old	4	8
Job status		
Unemployed	10	20
Housewife	4	8
Farmer	28	56
Village Officer	7	14
Trader	1	2
Previous history of hypertension		
Hypertension	17	34
No Hypertension	33	66

Table 2. Results of Chi Square Analysis of Risk Factors and Characteristics of Respondents on Events

Parameters	*P- Value*	Interpretation
Age	0,061	There is no effect of age on the incidence of HT
Gender	0,499	There is no effect of gender on the incidence of HT
Level of education	0,294	There is no effect of education level on the incidence of HT
Body mass index	0,579	There is no effect of BMI on the incidence of HT
Smoking Activities	0,113	There is no effect of smoking on the incidence of HT
Physical Activity	0,091	There is no effect of physical activity on the incidence of HT
Consumption of High Cholesterol Foods	0,144	There is no effect of cholesterol consumption on the incidence of HT
Consumption of Foods High in Sodium	0,402	There is no effect of consumption of high-sodium foods on the incidence of HT
Daily salt consumption	0,803	There is no effect of daily salt consumption on the incidence of HT
Consumption of vegetables and fruit	0,199	There is no effect of consumption of vegetables and fruits on the incidence of HT
Regularly Taking HT Drugs	0,20	There is no effect of routinely taking HT drugs on the incidence of HT
History of Diabetes Mellitus	0,119	There is no effect of a history of DM on the incidence
Current Blood Sugar Value	0,231	There is no effect of GDS on the incidence of HT
Knowledge Level Related to Hypertension (Pretest Score)	0,034	There is an effect of the level of initial knowledge (pretest) on the incidence of HT

Source: Data processed in 2022

Table 2.Determination of Priority Problems with the Nominal Group Technique Method

No	Problems	Number of Voters	Priority
1.	As many as 100% of respondents have insufficient **knowledge related to hypertension.**	I,I,I,I,II	1
2.	As many as 83.3% of respondents **did not seek treatment or stopped taking anti-hypertensive drugs because there were no complaints** and 16.7% of respondents were found to have poor adherence to treatment while 79.6% **had not received anti-hypertensive treatment.**	II,II,II,II,III	2

| 3. | A total of 40.7% of respondents **have obesity status with BMI > 23 kg/m²**. | II, III,III,III,III | 3 |
| 4. | As many as 50% of respondents have **family members/coworkers who smoke.** | IV,IV,IV,IV,IV | 4 |

Sumber: Data Processed in 2022

Table 3.The Results of the Kolmogorov-Smirnov Normality Test Analysis of Respondents' Knowledge Before and After Intervention

Parameters	*P-Value*	Interpretation
Pre-Test	0.000	Data distribution is not normal
Post-Test	0.000	Data distribution is not normal

Source: data processed in 2022

Table 4.Results of the Wilcoxon Signed Rank Test of Respondents' Knowledge Before and After the Intervention

Parameter (Pre-Post Test)	N	Interpretation
Negative Ranks	0[a]	There is no decrease (reduction) from pre-test scores to post-test scores
Positive Ranks	50[b]	There are 50 respondents who experienced an increase in knowledge after the intervention (as seen from the increase in post-test scores)
Different Test Results	P = 0.000	Significant results so that the hypothesis is accepted

a. Post-Test < Pre-Test

b. Post-Test > Pre-Test

Source: data processed in 2022