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ANALYSIS OF RISK FACTORS FOR THE INCIDENT OF HYPERTENSION IN PARTICIPANTS OF THE CHRONIC DISEASE MANAGEMENT PROGRAM (PROLANIS)

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ABSTRACT
Hypertension is a non-communicable disease that often appears without symptoms. It is said to be hypertension if blood pressure is ≥ 140/90 mmHg. Objective: This study aims to determine the factors that contribute to the incidence of hypertension in prolanis participants in the Sindangkerta health center working area, Cianjur Regency. The method in this research is quantitative research using a cross-sectional approach. The population in this study were all prolanis participants at the Sindangkerta Community Health Center, Cianjur Regency. Data collection in this study used primary data through questionnaires and secondary data through data on prolanis participants in the Sindangkerta health center working area, Cianjur Regency, identity card, data on diagnosed hypertension and HbA1c examination data on prolanis patients. Data analysis used the chi-square test with a degree of significance (α) = 0.05. The results showed that there was a significant relationship between the variables age (p = 0.011), gender (p = 0.001), family history of hypertension (p = 0.015), nutritional status (BMI) (p = <0.001), smoking history (p = 0.039), physical activity (p = 0.015), history of alcohol consumption (p = 0.010), high salt diet (p = 0.022) and history of diabetes mellitus (p = 0.001) with the incidence of hypertension in chronic disease management program participants (prolanis) in the working area of the Sindangkerta Community Health Center, Cianjur Regency.

Keywords: hypertension; prolanis; risk factors

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INTRODUCTION

Hypertension is a major public health disorder in the world and is the most common risk factor for cardiovascular disease and is the main cause of premature death worldwide (Adrian, 2019). According to the World Health Organization (WHO), an estimated 1.28 billion adults aged 30-79 years worldwide suffer from hypertension. The data also shows that as many as 46% of people with hypertension are not aware of their condition and only 42% of hypertension cases are diagnosed and treated (World Health Organization, 2023). Based on the Riskesdas which is a national health research baseline in 2018, the number of cases of hypertension in Indonesia was 63,309,620 people. The prevalence of high blood pressure in women (36.85%) is higher than in men (31.34%), where the elderly are the most hypertensive sufferers, namely the late elderly (55.23%), early elderly (45, 32%) and late adulthood (31.61%). The prevalence of hypertension based on the results of blood pressure measurements in the population aged 18 years was 39.6%, an increase compared to the 2013

Riskesdas results, namely 29.4%≥ (Health Service, 2020). The highest prevalence of hypertension based on measurement results in the population aged 18 years according to provinces is West Java (39.60%), East Kalimantan (39.30%), and West Kalimantan (36.99%)≥ (RI Ministry of Health, 2019). West Java is the province with the highest number of hypertension sufferers, where the districts/cities with the highest prevalence of hypertension sufferers are Ciamis (49.62%), Cianjur (48.09%), and Kuningan Regency (Health Department, 2020). Based on research Susanti et al., (2020)shows that age is significantly associated with hypertension, which according to research Widiana & Ani, (2017), the proportion of hypertension is higher in the elderly (55.0%) than in adults (50.0%). Study Falah, (2019)explained that there is a significant relationship between gender and hypertension, in line with research Sulistiyani & Tuku, (2018) where more men experience hypertension and according to research Rosadi & Hildawati, (2022) women who experience more hypertension (Yuriah et al., 2022).

Study Dismiantoni et al., (2020) there is a correlation between smoking and a hereditary history of hypertension. Dismiantoni et al., (2020) also explained that there was no significant correlation between smoking history and hypertension, but there was a correlation between obesity and hypertension. Study Dismiantoni et al., (2020) shows that there is a relationship between obesity and smoking with the incidence of hypertension Sayeed et al., (2015) stated that one of the factors of hypertension that is significantly related is a family history of hypertension. Additionally, research Saputra & Anam, (2016) shows that people's lifestyles such as high sodium consumption are risk factors for hypertension and according to Widiana & Ani, (2017) there is a significant relationship between diabetes mellitus and hypertension (Yuriah & Kartini, 2022). Yunitasari et al., (2019) explained that there was no significant relationship between physical activity and the incidence of hypertension but there was a significant relationship between stress and the incidence of hypertension (Muthoharoh et al., 2022). Meanwhile in research Ayukhaliza, (2020) stated that there was no significant relationship between a history of alcohol consumption and the incidence of hypertension. On the other hand, research Maulidiyah, (2019) explains that there is a relationship between physical activity and nutritional status (BMI) with the risk of hypertension.

Based on data from the Cianjur Regency health service in 2021, the estimated number of hypertension sufferers aged 15 years is 782,294 cases from 47 health centers in Cianjur Regency (Health Department, 2021). Based on Cianjur Regency health center profile data in 2022, the number of hypertension cases in 47 health centers spread throughout Cianjur Regency increased compared to 2021, namely from 785,294 cases to 820,820 cases. The estimated number of hypertension sufferers aged 15 years based on data from community health centers in Cianjur district is, Sindangkerta community health center 18,706 cases, Sukanagara community health center 17,605 cases and Tanggeung community health center 16,135 cases. Community health centers as primary health care play a very important role in finding cases of hypertension with early detection activities as an effort to prevent hypertension (Health Department, 2018). The Sindangkerta Health Center is one of the First Level Health Facilities (FKTP) located in Sindangkerta Village, Pagelaran District, Cianjur Regency with a working area divided into 8 villages. Based on disease recapitulation data at the Sindangkerta health center in 2022, hypertension is the first place with the most cases, namely 1,225 cases during 2022 (Health Service, 2022). BPJS Health as the organizer of the National Health Insurance (JKN) program provides health efforts including promotive, preventive, curative and rehabilitative services.

There are three promotive and preventive strategies implemented by BPJS Health Insurance, namely promotive and preventive strategies for healthy participants (health education), contraception (KB) services, and immunization services), promotive and preventive strategies for at-risk participants (primary health screening and secondary, early detection of cancer), and a program on tackling non communicable diseases (Chronic Disease Management Program/Prolanis) (Health Insurance Administering Agency, 2020). The Chronic Disease Management Program (Prolanis) is a health service system and proactive approach that is implemented in an integrated manner involving participants, health facilities and BPJS Health which focuses on hypertension and type 2 diabetes mellitus. With the presence of the Chronic Disease Management Program (Prolanis) participants can be encouraged to people with chronic diseases achieve optimal quality of life in terms of 75% of registered participants who come to first level health facilities having "good" results on special checks for hypertension and type 2 diabetes mellitus according to the relevant clinical guidelines, so that they can prevent the emergence of disease complications and can benefit from costs effectively and rationally (Health Insurance Administering Agency, 2018) The aim of this study was to determine the factors that contribute to the incidence of hypertension in prolanis participants in the Sindangkerta health center working area, Cianjur Regency. HbA1c examination in prolanis patients.

METHOD

This type of research is quantitative research, using analytical observational studies with a cross-sectional research design. The number of samples in this study was 65 prolanis participants in the work area of the Sindangkerta Community Health Center, Cianjur Regency. The sampling technique in this research was total sampling. The dependent variable is history of hypertension and the independent variables are age, gender, family history of hypertension, nutritional status (BMI), history of smoking, physical activity, history of alcohol consumption, high salt diet and history of diabetes mellitus. Data collection uses primary data and secondary data, where primary data is obtained from respondents by filling out a questionnaire which includes the variables studied consisting of age, gender, family history of hypertension, smoking history, physical activity, history of alcohol consumption, high eating patterns. salt, history of diabetes mellitus, history of hypertension and results of measurements of body weight and height. Secondary data in this study is data on prolanis participants obtained from identity card, data on diagnosed hypertension and HbA1c examination data on prolanis patients. Data collection in this study used primary data through questionnaires and secondary data through data on prolanis participants in the Sindangkerta health center working area, Cianjur Regency, identity card, data on diagnosed hypertension and HbA1c examination data on prolanis patients. The statistical test used is the chi-square test which is included in the non-parametric test. If it does not meet the requirements of the chi-square test then use Fisher's exact test. To prove the hypothesis, the significance value or significance level is 95% and the number error rate = 5% or (0.05). The research results are then presented in table form and explained using narrative to provide an overview and clarify the research data presented.

RESULTS

Table 1, it can be seen that the number of research respondents was 65 people and they were prolanis participants. Based on age category, the majority of respondents were elderly, namely 49 people (75.4%). Based on gender category, the majority of respondents were women, namely 57 people (87.7%). Based on the category of history of hypertension, the majority of respondents had a history of hypertension, namely 55 people (84.6%). Based on the family history of hypertension category, the majority were respondents who did not have a family

history of hypertension, namely 48 people (73.8%). Based on the nutritional status (BMI) category, the majority of respondents were not obese, namely 51 people (78.5%). Based on the smoking history category, the majority of respondents had a history of active or passive smoking, 55 people (84.6%). Based on the physical activity category, the majority were respondents who rarely did activities, namely 48 people (73.8%). Based on the alcohol consumption history category, the majority were respondents who had no history of alcohol consumption, namely 61 people (93.8%). Based on the high salt diet category, the majority of respondents had a high salt diet, namely 52 people (80%). Based on the category of history of diabetes mellitus, the majority of respondents who did not have a history of diabetes mellitus were 60 people (92.3%).

Table 1.

Frequency Distribution of Research Respondent Variables

Variable	n = 65	
	f	%
Age		
Adult (26-45 years)	16	24.6
Elderly (≥ 46 years old)	49	75.4
Gender		
Man	8	12.3
Woman	57	87.7
History of Hypertension		
Yes	55	84.6
No	10	15.4
Family History of Hypertension		
Yes	17	26.2
No	48	73.8
Nutritional Status		
Obesity	14	21.5
Not Obese	51	78.5
Smoking History		
Yes	55	84.6
No	10	15.4
Physical Activity		
Yes	17	26.2
No	48	73.8
History of Alcohol Consumption		
Yes	4	6.2
No	61	93.8
High Salt Diet		
Yes	52	80.0
No	13	20.0
History of Diabetes Mellitus		
Yes	5	7.7
No	60	92.3

Table 2, it can be seen that the variables age, gender, family history of hypertension, nutritional status, smoking history, physical activity, history of alcohol consumption, high salt diet, and history of diabetes mellitus are related to the incidence of hypertension in prolanis participants in the working area of the Sindangkerta Community Health Center, Cianjur district.

Table 2.
Relationship between age, gender, family history of hypertension, nutritional status, history of smoking, physical activity, history of alcohol consumption, high salt diet, and history of diabetes mellitus with the incidence of hypertension in prolanis participants

Variable	History of Hypertension				OR (95% CI)	p value
	Yes	%	No	%		
Age						
Elderly (≥46 years old)	45	91.8%	4	8.2%	6,750 (1,601-28,455)	0.011
Adult (26 - 45 years)	10	62.5%	6	37.5%		
Gender						
Man	3	37.5%	5	62.5%	17,333 (3,166-94,908)	0.001
Woman	52	91.2%	5	8.8%		
Family History of Hypertension						0.015
Yes	11	64.7%	6	35.3%	0.167 (0.040-0.695)	
No	44	91.7%	4	8.3%		
Nutritional Status						
Obesity	5	35.7%	9	64.3 %	90,000 (9,379-863,587)	< 0.001
Not Obese	50	98.0%	1	2.0%		
Smoking History						
Yes	49	89.1%	6	10.9%	5,444 (1,187-24,966)	0.039
No	6	60.0 %	4	40.0%		
Physical Activity						
Yes	11	64.7%	6	35.3%	0.167 (0.040-0.695)	0.015
No	44	91.7%	4	8.3%		
History of Alcohol Consumption						0.010
Yes	1	25%	3	75%	0.043 (0.004-0.475)	
No	54	88.5%	7	11.5%		
High Salt Diet						
Yes	47	90.4%	5	9.6%	5,875 (1,380-25,011)	0.022
No	8	61.5%	5	38.5%		
History of Diabetes Mellitus						0.001
Yes	1	20.0%	4	60.0%	0.028 (0.003-0.291)	
No	54	90.0%	6	10.0%		

DISCUSSION

The Relationship Between Age and the Incident of Hypertension in Prolanis Participants

The most respondents who had a history of hypertension were in the elderly age group, namely 45 respondents, while in the adult age group there were 10 respondents. Based on statistical tests that have been carried out at an alpha of 5%, the p value = 0.011 (0.05). These results show that there is a significant relationship between elderly age and the incidence of hypertension. The results of this research are in accordance with several previous studies. Oliveros' (2020) research shows that age is an important risk factor associated with hypertension. The relationship between age and hypertension is seen as a universal condition resulting from aging which is a continuous process whose results can reduce the function of the entire organ systemp < (Oliveros et al., 2020). This research is also in line with research

conducted by Amanda & Martini, (2018) which states that there is a significant relationship between age and the incidence of hypertension (Amanda & Martini, 2018). Age > 59 years is a risk factor for hypertension, where at that age you have a 2.61 times greater risk of developing hypertension (Yuriah et al., 2023). Similar results were also shown by research which stated that there was a significant relationship between age and hypertension (Widjaya et al., 2018).

According to (Aprillia et al., 2023) and (Ramayani et al., 2023) research, a total of 13 studies were included in this systematic review and meta-analysis to show the prevalence of xerophthalmia. A study conducted in Hararge region of Eastern Ethiopia showed that the prevalence of night blindness among preschool-age children was 16.5% in 1991. Based on three studies conducted in 1993, the prevalence of night blindness ranged from 4.2% in Southwest Ethiopia to the highest prevalence of 17% in Oromia region, central Ethiopia. Three studies conducted in 1996 indicated that the prevalence of night blindness was 0.9% in the Tigray region, 1.2% in the Southern region [26], and 8.4% in the Harari region, whereas in studies conducted in 1997, it was 0.8% in Tigray region [8] and 3.2% in Oromia region. In this study it is very clear that age influences the incidence of hypertension. Hypertension is most commonly experienced by the elderly age group (≥46 years) as many as 49 respondents (75.4%) followed by the adult age group (26 - 45 years) as many as 16 respondents (24.6%). The elderly group is the group that most easily experiences structural changes in the arteries which greatly influence the occurrence of hypertension. Changes in the structure and function of blood vessels, such as narrowing of the lumen of blood vessels and decreased elasticity of arteries, thereby reducing the working capacity of arteries. Atherosclerosis is increasing, especially in individuals who have unhealthy lifestyles. This condition can cause an increase in systolic and diastolic blood pressure, resulting in an increase in blood pressure.

The Relationship between Gender and the Incident of Hypertension in Prolanis Participants

In general, the majority of respondents in this study were female. The highest incidence of hypertension occurred in women with 52 respondents, while with men there were 3 respondents. Based on statistical tests that have been carried out at an alpha of 5%, the value obtained is $p = 0.001$ ($p < 0.05$). These results indicate that there is a significant relationship between gender and the incidence of hypertension. Several other studies have pros and cons to this research. One study that is in line with this research is a study conducted by Falah, (2019) showing that there is a significant relationship between gender and the incidence of hypertension with OR = 0.407, which means that women have a lower risk factor for hypertension According to Yodang and Nuridah (2019), the prevalence of hypertension is progressively increasing in both sexes. The increase was higher in men up to age 64 years. However, at age ≥ 65 years when women have experienced post-menopause, the rate of hypertension increases in women (Yodang & Nuridah, 2019). When women enter the postmenopausal period, estrogen hormone levels will decrease. This hormone protects the heart because it functions to increase or decrease levels of lipoprotein density. This decrease in estrogen levels can cause an increase in cholesterol. This results in the risk of atherosclerosis which can increase blood pressure significantly in women (Riyadina, 2019).

The Relationship Between Family History of Hypertension and the Incident of Hypertension in Prolanis Participants

In general, 17 respondents (26.2%) had a family history of hypertension. Respondents who had a family history of hypertension and a previous history of hypertension were 11 respondents (64.7%), while respondents who had a family history of hypertension and no

previous history of hypertension were 6 respondents (35.3%). Based on the results of statistical tests that have been carried out at an alpha of 5%, the value of p = 0.015 (p < 0.05) is obtained.These results indicate that there is a significant relationship between a family history of hypertension and the incidence of hypertension. The results of this study are in line with research by Musfirah & Masriadi, (2019) which shows that there is a significant relationship between family history and the incidence of hypertension. Respondents who have a family history of hypertension are 5.5 times more at risk of developing hypertension (Musfirah & Masriadi, 2019).

Family history risk factors are one of the factors that are included in the category of risk factors that cannot be modified. Through this factor, hypertension becomes a hereditary disease. A person's risk of experiencing hypertension will increase if there are parents or close relatives who suffer from hypertension. Hereditary diseases are diseases caused by changes in the genetic substance, namely DNA, whether partial or complete changes. This disorder can be caused by mutations in one gene, mutations in several genes, a combination of gene mutations and environmental factors or by chromosomal damage (NIH, 2018). The most common studies of the relationship between heredity and hypertension involve genes acting on the renin-angiotensin-aldosterone system. This system functions to produce hormones that regulate blood pressure as well as fluids and salts in the body. The researchers assume that variations in these genes may disrupt blood pressure control processes that contribute to the development of hypertension. Another gene that is associated with hypertension is a gene for blood vessels.

The relationship between nutritional status and the incidence of hypertension in Prolanis participants

In this study, 5 respondents (35.7%) were obese and had a history of hypertension, while 9 respondents (64.3%) were obese and had no history of hypertension. Based on the results of statistical tests that have been carried out at an alpha of 5%, the value of p = <0.001 (p <0.05) is obtained.These results indicate that there is a significant relationship between nutritional status and the incidence of hypertension. Several studies are in line with this research, namely research conducted by Riza (2019) which shows that there is a significant relationship between obesity and hypertension (Riza et al., 2019). This research is also in accordance with research conducted by Maulidina (2019) which shows that there is a relationship between nutritional status and the incidence of hypertension (Maulidina et al., 2019).

The results obtained in this study are important for prolanis participants, especially those who are obese, to know that obesity is a risk factor that can influence an increase in blood pressure. Apart from that, Prolanis participants must also be able to regulate their diet and intake of nutrients that enter the body so that they are able to achieve an ideal body mass index. This is done as an effort to improve the quality and quantity of health.

The Relationship between Smoking History and the Incident of Hypertension in Prolanis Participants

In general, 55 respondents (84.6%) had a history of smoking out of a total of 65 respondents. The majority of respondents are passive smokers, most of which are female respondents. Most of the respondents who became passive smokers were because their parents, husbands, children or relatives who lived together in the same house were active smokers. Respondents who had a history of smoking and a history of hypertension were 49 respondents (89.1%), while respondents who had a history of smoking and no history of hypertension were 6 respondents (10.9%). Based on the results of statistical tests carried out at an alpha of 5%, the

value obtained was p = 0.039 (p < 0.05). These results indicate that there is a significant relationship between smoking history and the incidence of hypertension.

Several studies are in line with this research, namely research conducted by Umbas (2019) which shows that there is a significant relationship between smoking and hypertension with a p value = 0.016 (Umbas et al., 2019). This research is also in accordance with research conducted by Runturambi (2019) that there is a significant relationship between smoking habits and hypertension (Runturambi et al., 2019). Research by Ni'mah, (2019) also shows that there is a relationship between active and passive smoking and the incidence of hypertension (Ni'mah, 2019). Smoking behavior is a risk factor for hypertension that can be changed. Smoking increases the inflammatory response by inducing vasomotor dysfunction, causing endothelium dysfunction, proliferation of smooth muscle, platelets and thrombohemostatic dysfunction, which can lead to the process of atherosclerosis. The chemicals contained in cigarettes are very dangerous for health, for example carbon monoxide and nicotine. The relationship between smoking and hypertension lies in the substances contained in cigarettes.

The results obtained in this study are important for prolanis participants, especially those who have a history of smoking, both active and passive smokers, to know that this is a risk factor that can influence an increase in blood pressure. Apart from that, Prolanis participants must also have the motivation to stop smoking, by diverting their attention when they have the urge to smoke with positive things and always protecting themselves when in an environment contaminated with cigarette smoke (using a mask).

The Relationship Between Physical Activity and the Incident of Hypertension in Prolanis Participants

Based on the data in table 2, there were 17 respondents (26.2%) who did physical activity for 30 minutes/day or 3x a week, while those who did physical activity <30 minutes/day or <3x a week were 48 respondents (73, 8%). Based on the results of statistical tests that have been carried out at an alpha of 5%, the value of p = 0.015 (p < 0.05) is obtained. These results indicate that there is a significant relationship between physical activity and the incidence of hypertension. Several studies that are in line with this research, namely research conducted by Chasanah (2022), show that there is a significant relationship between physical activity and the incidence of hypertension with p value = 0.029 < 0.05 (Chasanah & Sugiman, 2022).

The elderly have the greatest prevalence of hypertension because many of them experience limitations in carrying out activities, one of which is because they have a history of certain diseases so they are unable to actively carry out physical activities that require a lot of energy, even light physical activities that are usually done every day. Most of the time is spent resting, sitting, lying down or just small physical activities carried out at home

Physical activity is one of the external risk factors for hypertension or a factor that can be changed. Lack of physical activity will affect heart rate. This can cause the heart rate to increase further, so that the heart muscle has to work harder during contractions. The bigger and more often the heart muscle pumps, the greater the pressure on the arteries. This condition will cause an increase in blood pressure (Widiana & Ani, 2017). The results obtained in this study are important for prolanis participants, especially those who rarely do physical activity, to know that this is one of the risk factors that can influence an increase in blood pressure. Apart from that, prolanis participants must also be able to manage their time to carry out regular physical activity in order to increase overall heart efficiency. This is done as an effort

to improve the quality and quantity of health so that Prolanis participants have awareness of healthy living behavior in controlling the risk of hypertension.

The Relationship between History of Alcohol Consumption and Hypertension in Prolanis Participants

In general, 4 respondents (6.2%) had a history of alcohol consumption and 61 respondents (93.8%) had no history of alcohol consumption. Respondents who had a history of alcohol consumption and a history of hypertension were 1 person (25%), while respondents who had no history of alcohol consumption and had a history of hypertension were 54 respondents (88.5%). Based on the results of statistical tests that have been carried out at an alpha of 5%, the value of $p = 0.010$ ($p < 0.05$) is obtained. These results indicate that there is a significant relationship between a history of alcohol consumption and the incidence of hypertension. Several studies are in line with research in South Nias conducted by Sarumaha & Diana (2018) where in this study alcohol was statistically proven to have an effect on the incidence of hypertension (Sarumaha & Diana, 2018). A similar thing was also explained in Mayasari's (2019) research which stated that there was a significant relationship between alcohol consumption and hypertension (Mayasari et al., 2019). Based on the data obtained in this study, there is a significant relationship between a history of alcohol consumption and the incidence of hypertension, however, respondents who did not have a history of alcohol consumption actually had a greater history of high blood pressure, namely 54 respondents (88.5%). This is because hypertension is a multifactorial disease, where alcohol consumption is not the only causal factor and is not the main factor causing hypertension. Increasing alcohol consumption over a long period of time will have an effect on increasing cortisol levels in the blood so that the activity of the renin-angiotensin aldosterone system (RAAS) will increase, namely the hormonal system that regulates the balance of blood pressure and fluids in the body.

The Relationship between a High Salt Diet and the Incident of Hypertension in Prolanis Participants

Based on the data in table 2, there were 52 respondents (80%) who had a high salt diet, while 13 respondents with a low salt diet were 13 respondents (20%). Respondents who had a diet high in salt and had a history of hypertension were 47 respondents (90.4%), while respondents who had a diet high in salt and had a history of hypertension were 8 respondents (61.5%). Based on the results of statistical tests carried out at an alpha of 5%, a P value of 0.022 ($p < 0.05$) was obtained. These results show that there is a significant relationship between a high salt diet and the incidence of hypertension. Several studies that are in line with this research conducted by Farapti (2020) obtained results that there was a significant relationship between salt consumption and the incidence of hypertension (Farapti et al., 2020). The study also found that excessive consumption of salty foods is a risk factor for hypertension. This research is also relevant to research conducted by Robby, Soestijo and Marchianti, (2018) which found that salt consumption had a positive effect on hypertension levels (Robby et al., 2018).

Based on Riskesdas (2018), West Java occupies the first position as a province with a proportion of the habit of consuming salty food (food that is predominantly salty or contains a high salt content) among the population aged 3 years, namely 54.1% with the habit of consuming salty food once. /day. Theoretically, sodium consumption affects blood pressure. Consuming high amounts of sodium and insufficient potassium intake contribute to increased blood pressure. People with higher salt intake have higher blood pressure. Systolic blood pressure in people with high salt intake increases by approximately 4.58 mmHg per 1000 mg

24 hour sodium excretion (Astriana et al., 2023). Based on the results of observations in the field, the majority of respondents in this study had the habit of eating salted fish as a side dish or consuming rice mixed with table salt. These foods are often consumed because they are affordable and easy to obtain and are associated with low economic income. So the results obtained from this research are important for Prolanis participants to follow a low salt diet, starting from paying attention to the low salt/sodium content of food consumed.

The Relationship Between a History of Diabetes Mellitus and the Incident of Hypertension in Prolanis Participants

In general, 5 respondents (7.7%) had a history of diabetes mellitus, while 60 respondents (92.3%) had no history of diabetes mellitus. Respondents who had a history of diabetes mellitus and a history of hypertension were 1 person (20%), while respondents who had a history of diabetes mellitus and no history of hypertension were 4 people (60%). Based on the results of statistical tests carried out at an alpha of 5%, the value of $p = 0.001$ ($P < 0.05$) was obtained. These results indicate that there is a significant relationship between a history of diabetes mellitus and the incidence of hypertension. Several studies are in line with this research, namely research conducted by Julianti (2021) using the literature review method. The screening results found that there were 9 journals that were relevant and could be used as references. Another study conducted by Grossman and Grossman, (2018) where the results showed that reducing blood glucose in diabetes mellitus sufferers played a very important role in lowering blood pressure (Grossman & Grossman, 2018). In addition, research conducted by Jia and Sowers (2021) shows that hypertension and diabetes are the end results of metabolic syndrome. People with diabetes have a greater chance of experiencing high blood pressure or hypertension (Jia G & Sowers JR, 2021). Referring to the American Diabetes Association (ADA) 2017, two out of three individuals with diabetes experience hypertension. Diabetes mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia or increased blood glucose levels that occur due to abnormalities in insulin secretion, insulin action or both (Perkeni, 2021). The results obtained in this study are important for prolanis participants, especially those with a history of diabetes mellitus, to know that this is a risk factor that can influence an increase in blood pressure. Apart from that, prolanis participants must also adopt a healthy lifestyle by consuming nutritionally balanced foods and limiting consumption of foods that contain high levels of sugar/glucose.

CONCLUSION

Based on the research results, it was found that there was a significant relationship between the variables age (p value = 0.011), gender (p value = 0.001), family history of hypertension (p value = 0.015), nutritional status (BMI) (p value = <0.001) , history of smoking (p value = 0.039), physical activity (p value = 0.015), history of alcohol consumption (p value = 0.010), high salt diet (p value = 0.022), history of diabetes mellitus (p value = 0.001) with incidence of hypertension in participants of the chronic disease management program (prolanis) in the work area of the Sindangkerta Community Health Center, Cianjur Regency. For the Community Health Center, it is hoped that they will be able to evaluate the prolanis program which is carried out once a month and be more active in providing education about risk factors for hypertension using interesting audio-visual teaching aids so that participants do not get bored. Participants who do not come to participate in activities in a row will be given a home visit, notification via SMS Gateway and education to their families so that patients are motivated to take part in prolanis activities. For Rollanis participants, they are expected to care more, motivate each other and actively participate in every activity so that they can maintain their health and increase the quantity of their health status. For future researchers, it is hoped that they can develop and add other risk factors that have not been discussed in this

study so that the research is richer in information, and complete the research by means of more in-depth interviews using more specific questionnaire questions regarding hypertension risk factors in chronic disease management program participants (prolanis).

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