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Original Research

The Relationship Between Cultural Food of Metuakan and Megibung with the Incidence of Hypertension at Karangasem I Health Center, Karangasem District, Bali, Indonesia

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ABSTRACT

Background: Hypertension, a non-communicable disease, is defined by a systolic pressure of ≥ 140 mmHg and/or a diastolic pressure of ≥ 90 mmHg. Factors contributing to hypertension include alcohol consumption and diets high in salt and saturated fats. This study aims to explore the relationship between community cultural practices and the occurrence of hypertension. **Methods:** This study employed a quantitative correlational approach with a cross-sectional design. A probability sampling technique, specifically stratified random sampling, was used to select 90 participants who met the inclusion and exclusion criteria. Data analysis was conducted using the Spearman Rank correlation test. **Results:** The findings revealed that most respondents' cultural practices were categorized as poor (29 participants, 32.2%), followed by normal (17 participants, 18.9%), good (16 participants, 17.8%), very poor (15 participants, 16.7%), and very good (13 participants, 14.4%). Regarding hypertension severity, the majority of respondents experienced grade 1 hypertension (61 participants, 67.8%), while 29 participants (32.2%) had grade 2 hypertension. The study identified a significant relationship between community culture and hypertension incidence, with a p-value of 0.000. **Conclusion:** This study underscores the importance of increasing public awareness and educating hypertension patients about cultural practices that elevate the risk of hypertension, such as consuming alcohol and diets rich in salt and saturated fats.

Keywords: Community culture; hypertension; blood pressure

1. INTRODUCTION

Culture and humans are two things that cannot be separated because humans and culture together make up life. Culture is defined as a way of life owned by a group that develops a certain lifestyle through different learning processes that are passed down from generation to generation and are most appropriate to their environment. Culture is a pattern of basic assumptions with shared goals, values and beliefs.(1)

According to Koentjaraningrat (1923-1999), culture is the entire system of works, ideas, actions and feelings created by humans in social life which they make as their own.(1) Culture is the result of human work, feelings and

creation, namely the entire complex way of life including belief, art, knowledge, customary law, morals and other habits acquired by humans as members of society. The cultural element consists of three forms, namely the first as ideas, ideas, values and regulatory norms, the second as structured human activity in a community, and the third in the form of objects made by human labor.[1]

The island of Bali has a rich cultural heritage that has been passed down from generation to generation and is still maintained today. Every district in Bali has many traditions, one of which is Karangasem Regency. The most prominent culture in Karangasem is the metuakan culture.

Karangasem Regency is one of the places in Bali that produces the most palm wine drinks. This can be seen from the sugar palm plants which are used as raw material for palm wine which occupy most of the plantation areas in Karangasem Regency. Tuak is an alcoholic drink that is not only drinkable, it is also used for religious ceremonies in Hinduism.[2] People's habit of consuming palm wine has become a phenomenon in people's lives. One example is the expression metuakan which describes the activity of drinking palm wine in the corner of a stall that sells palm wine in the village.[3]

Apart from metuakan, Karangasem is famous for its megibung tradition. The megibung tradition is one of the tourist attractions in Karangasem Regency, namely as cultural tourism. Megibung is a group meal consisting of six people who use one container or place containing rice and side dishes in one place. The megibung tradition in Karangasem Regency began when the King of Karangasem expanded to Karajaan Lombok. When resting he encouraged soldiers to eat together in a circular position called megibung. Basically, the types of dishes from the megibung tradition are satay, fried food, brengkes, sequence, limpet, gubah, lawar, tum, balung, timbungan, oret, semuwuk, komoh and ares.[4]

Most of the people in the Karangasem area, the foodstuffs that are processed every day contain saturated fat, such as processed pork and foods that are high in salt, for example fish that are prepared by salting, dipping, and onion chili sauce which is part of the people's daily menu.

Excessive consumption of alcohol, foods that are high in salt and saturated fat, without balancing it with a healthy lifestyle can cause health problems. The impact of consuming alcohol, salty foods and foods high in saturated fat is the risk of developing hypertension.

Hypertension is a non-communicable disease (NCD) or often called the "silent killer" and is a major health problem that continues to grow throughout the world.[5] Hypertension is a disease that is a very dangerous world threat. Hypertension is defined as a non-communicable disease, namely systolic pressure ≥ 140 mmHg and diastolic pressure ≥ 90 mmHg. According to the World Health Organization (2022), high blood pressure, also known as hypertension, is a medical condition that can increase the risk of brain, kidney, heart and other diseases.[6] The number of high blood pressure sufferers aged 30 - 79 years is estimated to double between 1990 and 2019, namely around 650 million to 1.28 billion. It is recorded that more than one billion hypertension sufferers aged 30 - 79 years live in low and middle income countries.[7]

Judging from research data, hypertension cases continue to increase. The prevalence of hypertension among people in Indonesia according to National Riskesdas data (2018) obtained through measurement methods at ages ≥ 18 years is 34.1%.[1] Based on Bali Province Riskesdas data (2018), the prevalence of blood pressure measurement results in residents aged ≥ 18 years according to Regency/City, there are 29.9% of Balinese people suffering from hypertension. According to data from Riskesdas Bali Province in Karangasem Regency, 35.3% of people suffer from hypertension.[8]

According to Karangasem Regency health profile data in (2022), hypertension sufferers in Karangasem Regency in 2022 numbered 42,310 people with a percentage receiving health services of 23,025 people or (54.42%).[9] There are 12 health centers in Karangasem Regency. The estimated number of hypertension sufferers aged over 18 years consists of Manggis I Community Health Center with 3,079 hypertension sufferers, Manggis II Health Center 1,583 people, Sidemen Health Center 3,385 people, Selat Health Center 4,046 people, Rendang Health Center 4,092 people, Bebandem Health Center 4,703 people, Abang I Health Center 3,066 people, Abang II Health Center 3,315 people, Kubu I Health Center 2,399 people, Kubu II Health Center 3,625 people, Karangasem I Health Center 5,485 people, and Karangasem II Health Center 3,532 people. Based on these data, the highest number of hypertension sufferers aged over 18 years is in Karangasem Regency, namely in the working area of Karangasem I Community Health Center, the total

number of hypertension sufferers is 5,485 people, with the number of men being 2,718 people and women being 2,767 people with the percentage receiving services. health as much as (46.02%).[9] Hypertension causes damage to the cerebral blood vessel endothelium. Narrowing of blood vessels causes intracranial blood supply to decrease, causing ischemia which causes cerebral vasodilation and headaches.[10]

Uncontrolled hypertension often causes complications such as stroke. Stroke is a neurological disease in adults and the elderly, seen from the high number of emergency situations, this disease is the main cause of disability and death. WHO explains that stroke is the third largest cause of death in the world. According to research regarding the relationship between social culture and the quality of life of hypertension sufferers among the Dayak ethnic group in Pampang Village, Samarinda. It was found that there is a relationship between social culture and the quality of life of hypertension sufferers in the Dayak ethnic group. His research explains that the social culture adopted determines the low quality of life for both men and women because culture has a gender-based division of labor system and laws and moral codes which are the pillars of society.[11]

According to research by Meylin Memah et al (2019) regarding the relationship between smoking habits and alcohol consumption and the incidence of hypertension at the Kombi Health Center, Kombi District, Minahasa Regency, it is explained that there is a relationship between alcohol consumption and the incidence of hypertension in patients at the Kombi Health Center, Kombi District, Minahasa Regency. Kombi Community Health Center patients are included in the level I hypertension group (46.9%) because patients at Kombi Community Health Center have a habit of consuming alcoholic drinks and this has been a tradition for generations.[12]

According to Fiola Salsabila Irwanto et al (2023), the relationship between fat and sodium consumption patterns and blood pressure in female hypertensive patients of Minangkabau ethnicity explains that there is a relationship between fat intake and blood pressure in female hypertensive patients of Minangkabau ethnicity. Consuming too much saturated fat will increase LDL levels, which eventually accumulate in the body and cause atherosclerosis, which can result in increased blood pressure and volume, known as hypertension.[13] Based on the background that has been described, researchers are interested in conducting research on the relationship between community culture and the incidence of hypertension in the work area of the Karangasem I Health Center, Karangasem Regency in 2024.

2. METHODS

2.1 Study Design

The research method used in this research is a correlational quantitative method using a respondent characteristics questionnaire and a community culture questionnaire as research instruments. This questionnaire was created by the researchers themselves and tested for validity and reliability. The results of the validity test carried out on 30 respondents in the work area of the Bebandem Community Health Center, Karangasem Regency using SPSS were declared valid. The results of the reliability test on the community culture questionnaire show that Cronbach's alpha 0.793 means a statement the questionnaire was declared reliable. The respondent characteristics questionnaire contains demographic data, questions regarding data characteristics consisting of age, gender and education. The community culture questionnaire contains 10 statements about community culture that support the occurrence of hypertension with statement criteria consisting of positive and negative statements. Positive statements with a score of very often (5), quite often (4), sometimes (3), almost never (2), never (1). Statements with negative scores are very often (1), quite often (2), sometimes (3), almost never (4), never (5). This research was conducted in the Karangasem I Community Health Center Working Area, Karangasem Regency. Karangasem I Health Center covers 5 villages, namely Bug-Bug Village, Pertima Village, Subagan Village, Padangkerta Village, and Karangasem Village. Karangasem I Health Center is located on Jalan Raya Perasi, Pertima Village, Karangasem Regency, Bali Province. The working area of the Karangasem I Community Health Center is ± 47.36 km^2. Karangasem I Health Center is ± 1.5 km from the city center with a travel time of 10 – 15 minutes.

2.2 Population

The population in this study were hypertension sufferers in the Karangasem I Community Health Center working area, as many as 900 people who met the inclusion criteria, namely hypertension sufferers

who were willing to become respondents in the Karangasem I Community Health Center working area, Karangasem Regency. Systolic blood pressure ≥ 140 mmHg and diastolic ≥ 90 mmHg. 30-70 years old and communicate in Indonesian. Meanwhile, the exclusion criteria in this study were having stroke complications, having difficulty reading and writing, and not living in the working area of the Karangasem I Community Health Center.

2.3 Data Collection

From the total population after being calculated using the Slovin formula, the number of samples used was 90 people who were counted in each village with details, namely Bug-Bug village with 27 respondents, Pertima village with 11 respondents, Subagan village with 27 respondents, Padangkerta village with 3 respondents, and Karangasem village with 22 respondents.

2.4 Data Analysis

Data analysis carried out in this research was carried out in two ways, namely univariate analysis and bivariate analysis. Univariate analysis in this study was obtained from age data, education data, employment data, community culture data and hypertension data. Bivariate analysis in this study aims to determine the relationship between community culture and the incidence of hypertension in the Karangasem I Community Health Center working area using the Spearman rank correlation test.

2.5 Ethical Approval

This research has received ethical approval from the Denpasar Polytechnic Health Research Ethics Commission with reference number DP.04.02/F.XXXII.25/0347/2024.

3. RESULTS

Based on Table 1, it can be seen that the majority of respondents were aged 66-70 years, 29 people (32.2%), 55 people (61.1%) were female and 33 people had an elementary school education (36.7%). Based on age frequency data, the majority of hypertension sufferers were aged 66-70 years, namely 29 people (32.2%).

Table 1. Characteristics of research respondents based on age, gender, and education

No.	Characteristics		Frequency (n)	Percentage (%)
1	Age			
		30-35	4	4.4
		36-45	11	12.2
		46-55	20	22.2
		56-65	26	28.9
		66-70	29	32.2
2	Gender			
		Male	35	38.9
		Female	55	61.1
3	Education			
		Elementary school	33	36.7
		Junior high school	15	16.7
		Senior high school	20	22.2
		Diploma/bachelor	22	24.4
	Total		90	100.0

Based on Table 2, it shows that the community culture is known to have a bad culture, namely 29 people (32.2%). Based on Table 3, it shows that the highest blood pressure of respondents was in the level 1 hypertension category, namely 61 people (67.8%).

Based on Table 4, it shows that very good culture mostly occurs in respondents with grade 1 hypertension as many as 13 people (14.4%) and very bad culture is mostly classified as grade 1 hypertension as many as 8 people (8.9%). After carrying out the Spearman rank test, the p-value was obtained, namely 0.000, so it can be said that there is a significant relationship between community culture and blood pressure. The r value or correlation coefficient is 0.519, which means that the direction of the relationship is positive, indicating that the relationship between the two variables is in the same

direction, meaning that the better the culture of the community, the better the blood pressure of the community and vice versa, if the culture of the community is worse, the worse the blood pressure of the community.

Table 2. Distribution of community culture in hypertension sufferers

Community culture	Frequency (n)	Percentage (%)
Very good	13	14.4
Good	16	17.8
Normal	17	18.9
Bad	29	32.2
Very bad	15	16.7
Total	90	100.0

Table 3. Blood pressure in hypertension sufferers

Blood pressure	Frequency (n)	Percentage (%)
Grade 1 hypertension	61	67.8
Grade 2 hypertension	29	32.2
Total	90	100.0

Table 4. Relationship between Community Culture and the Incident of Hypertension

Community Culture	Grade 1 hypertension		Grade 2 hypertension		Total		*p*	*r*
	n	%	n	%	n	%		
Very good	13	14.4	0	0	13	14.4	0.000	0.519
Good	16	17.8	0	0	16	17.8		
Normal	15	16.7	2	2.2	17	18.9		
Bad	9	10.0	20	22.2	29	32.2		
Very bad	8	8.9	7	7.8	15	16.7		
Total	61	67.8	29	32.2	90	100.0		

4. DISCUSSION

Based on research conducted by Casmuti and Fibriana (2023) about the relationship between excessive fat consumption and the incidence of hypertension in the working area of the Kedungmundu Health Center, Semarang City, there is a significant relationship between excessive fat consumption and the incidence of hypertension.[14] There is also a significant relationship between consuming alcohol and consuming excess salt and the incidence of hypertension in the working area of the Kedungmundu Health Center, Semarang City.

Excessive sodium content is one of the causes of high blood pressure. Consuming foods that are high in salt causes sodium to be absorbed into the blood vessels, causing water retention and increasing blood volume. This causes hypertension. Excessive sodium intake can cause excessive release of natriouretic hormone which will indirectly increase blood pressure.[15]

Another factor that causes hypertension is consuming alcoholic drinks. Consuming alcohol over a long period of time will increase cortisol levels in the blood resulting in increased activity of the renin-angiotensin aldosterone system (RAAS). The renin-angiostenin aldosterone system (RAAS) is a hormone system that regulates the balance of blood pressure and fluids in the body. A person who consumes alcohol excessively causes the volume of red blood cells in the body to increase. This will increase blood viscosity which can increase blood pressure.[16] Consumption of high amounts of alcohol over a long period of time causes alcohol-induced cardiomyopathy, heart failure, arrhythmias, and atherosclerosis through various

mechanisms. Hypertension causes organ damage along with other major cardiovascular risk factors, including diabetes and dyslipidemia. Therefore, the effects of alcohol on these metabolic variables pose a serious threat to the cardiovascular risk of hypertension patients.[6]

Excessive fat consumption increases LDL cholesterol levels in the body and can cause high blood pressure. Plaque buildup occurs when cholesterol sticks to blood vessels. Blockage of blood vessels or atherosclerosis is caused by plaque. Atherosclerosis can cause blood vessels to become inelastic, disrupting blood flow throughout the body, increasing blood volume, and increasing the risk of hypertension.[16]

Researchers assume that culture and traditions are still a habit carried out by people in the Karangasem area. Of the various cultures in Karangasem Regency, what causes hypertension is consuming alcoholic drinks, consuming foods that are high in salt and saturated fat. Consuming alcoholic drinks or palm wine has become a tradition in the Karangasem area, namely metuakan. The impact of consuming excessive alcohol is the risk of developing hypertension. Alcohol can increase cortisol levels in the blood so that blood volume increases. Increased blood volume causes increased work of the heart to pump blood, causing hypertension. Apart from palm wine, fish prepared by pindang is a food that is high in salt. Consuming salt or the large amount of sodium content in food consumed by people is one of the causes of hypertension because excessive sodium results in an increase in sodium concentration in the extracellular fluid so that the body tries to normalize it by pulling the intracellular fluid out, so that the volume of the extracellular fluid increases.[17] The increase in extracellular fluid volume causes an increase in blood volume which causes hypertension. Consuming foods that are high in saturated fat such as pork can also cause hypertension because consuming fat can increase cholesterol levels in the blood vessels. Cholesterol that accumulates in the blood vessels will form plaque which causes the blood vessels to narrow, causing hypertension. Lack of knowledge about hypertension, treatment, and unhealthy diets has resulted in a high prevalence of people suffering from hypertension. One way to prevent hypertension is to check your blood pressure regularly and adopt a healthy lifestyle such as eating healthy food, information about regular exercise, and increasing information about hypertension through the media and health agencies.[18,19] Health education regarding hypertension and regular health screening examinations by health workers can help reduce the prevalence of people suffering from hypertension.

The limitation of this research is that the measurement of subject variables was carried out during the examination so it was not possible to determine changes in subjects from time to time. Measurement of community culture and the incidence of hypertension is carried out only once at a certain time, so it cannot be identified whether there is a change in the relationship between these two variables at different times.

5. CONCLUSION

Based on the research results, it can be concluded that community culture has a significant relationship with the incidence of hypertension in the Karangasem I Community Health Center Work Area, Karangasem Regency in 2024. The majority of respondents suffered from grade 1 hypertension, 61 people. (67.8%). The community culture of most hypertensive patients has a bad culture, numbering 29 people (32.2%) because the community is happy consuming alcohol, foods high in fat and salt. There is a relationship between societal culture and gender and education respondents with a p-value <0.05 and there is no significant relationship between community culture and age with a p-value of 0.060. It is recommended that future researchers include additional variables that may influence events, such as age, psychosocial stress, and physical activity.

Ethical Approval

This research has received ethical approval from the Denpasar Polytechnic Health Research Ethics Commission with reference number DP.04.02/F.XXXII.25/0347/2024.

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Competing Interests

All the authors declare that there are no conflicts of interest.

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Underlying Data

Derived data supporting the findings of this study are available from the corresponding author on request.

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