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Controlling Obesity and Hypertension: Policies Oriented towards Behavior Change

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Abstract:

Background: Hypertension and obesity are emerging as significant non-communicable disease threats that can be addressed through behavioral changes.

Objective: This research aimed to develop policies to control hypertension and obesity among secondary school teachers.

Methods: A qualitative research approach using a descriptive study design was employed involving 21 research participants. Data were collected through interviews and observations, and height and weight measurements were taken to determine the body mass index. Five thematic areas were explored: 1) snack consumption, 2) sleep habits, 3) family health history, 4) exercise habits, and 5) health complaints in the last 6 months. Information obtained from participants was assessed for validity, guided by a logical, participant-centered theoretical framework. Thematic analysis was conducted for data analysis.

Results: This study has revealed a trend among the participants, *i.e.*, 10 study participants were with systolic blood pressure exceeding 139 mmHg and diastolic blood pressure exceeding 90 mmHg. Fifteen participants were classified as obese, while 2 participants were categorized as overweight. Consumption of fried snacks emerged as the most common unhealthy dietary pattern among most of the participants. Unhealthy dietary patterns, such as consumption of fried snacks, and health problems, including hypertension, obesity, and musculoskeletal complaints, contribute to the risk of non-communicable diseases in the school teacher population.

Conclusion: Adopting preventive measures and a healthy lifestyle are essential to reduce health problems.

Keywords: Behavior change, Exercise, Hypertension, Health lifestyle, Obesity control policy, Snack consumption.

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1. INTRODUCTION

According to WHO data, the highest cases of hypertension are found in low and middle-income countries, and it is a leading cause of death [1, 2]. The same situation applies in Indonesia, where hypertension ranks first as the cause of death. It is estimated that 70 million Indonesian citizens are affected by hypertension. The Ministry of Health of the Republic of Indonesia predicts that 3 out of 10 adult individuals experience hypertension [3]. Most hypertension-related deaths occur because a significant number of patients do not experience symptoms. As mentioned in the literature, hypertension patients often do not feel symptoms even though their blood pressure is high. It is estimated that half of the hypertension patients are unaware of their condition [4]. This is dangerous because undetected early symptoms in patients can lead to serious issues, making hypertension difficult to control and affecting other health problems, such as stroke, cardiovascular diseases, kidney disease, and death.

Hypertension disease is a health problem that is often found in teachers. More than 33% of teachers in eight rural schools were reported to suffer from hypertension [2]; the prevalence of hypertension has been reported to be around 29.28% from 220 teacher samples aged 41-50 in Bahir Dar city [5]. It is reported that work factors, stress, and job expectations cause physical and mental health disruptions, chronic diseases, and teachers' disrupted quality of life [2, 6]. Hypertension has become a global health issue. This chronic medical condition is characterized by an increase in blood pressure within the arteries, causing an increase in the cardiovascular system's pressure.

Many factors have been suggested to cause hypertension, such as age, high-salt diet, low physical activity, obesity, alcohol consumption, and smoking habits [1, 2, 7]. Lifestyle changes, like increased consumption of processed food, which has become a common habit in society today, further contribute to the growing obese population. A study at a higher education institution in Indonesia showed that those with a routine snacking habit and low physical activity had obesity [8]. Excess body fat contributes to disruptions in metabolic processes and blood vessel function, and low physical activity increases the risk of obesity and other related diseases [9].

The correlation between obesity and hypertension is very clear and has been proven by many researchers [10]. Around 80% of teachers have been reported to experience obesity [2]. There are numerous studies on hypertension, but there is no specific research related to policies, especially targeting school teachers and focusing on behavior with respect to the multiple factors affecting it.

The behavior studied in this research included diet management, exercise habits, and sleep habits, which can be controlled by individuals. This study has focused on modifying policies that influence behavioral changes for controlling hypertension and obesity among school teachers. It is worrying if hypertension is not managed, as the hypertensive population may continue to rise without controlled treatment [3]. Thus, the implementation of comprehensive policies focusing on lifestyle modification among school teachers can contribute significantly to hypertension control.

2. MATERIALS AND METHODS

2.1. Participants

The study participants were high school teachers in Deli Serdang Regency, one of the regencies in North Sumatra Province, Indonesia. Study plan was conducted from December 2022 to March 2023.

The participant recruitment process did not employ quota sampling or stratification based on demographic characteristics. Participants exhibited diversity and were categorized according to ethnicity, education level, gender, or place of residence. According to the literature, this is done to ensure diverse data for the discussion of research findings [11]. The research study was conducted after obtaining permission from the school authorities. Prior to this, the research team sent a letter and explained the study objectives, thereby establishing a positive rapport between the researchers and participants.

The list of teachers at the school in question demonstrated the presence of 42 teachers. Appropriate participation in line with data needs was ensured by referring to the method reported in the literature by Donelly [12] that sampling technique is used to determine the research informants based on the criteria set by the researcher. The researcher set the informant criteria as follows: 1) willing to be a research informant; 2) not on work leave; 3) not pregnant or breastfeeding, and being present at the research location during the research period; 4) suffering from obesity or hypertension. There were 21 teachers who met the inclusion criteria, including 3 key informants, *i.e.*, 1 school principal, 1 vice principal, and 1 administrative responsible person. Supporting teacher informants accounted for 18 teachers. All informants completed the consent forms for participation. This research study received approval from the ethics committee of the Institute of Health Science “Maluku Husada” with the reference number 078/KEPK/STIK/I/2023.

2.2. Semi-structured Interview

Data collection methods included interviews and observations. Data collection interviews are a guided interview instrument. The interviewers were members of the research team, all female, having a master's degree in Public Health. The interviews were conducted using a questionnaire prepared by the research team, based on the literature [8]. The researchers had previously attended workshops on qualitative research methods. Each interview with the participants lasted 10-15 minutes and was followed by measuring the body mass index. The interview results were returned to the participants for comments or revisions.

The main themes revealed in the research study included 1) snack consumption, 2) sleep habits, 3) family

health history, 4) exercise habits, and 5) health complaints in the past six months. According to the literature, descriptive studies reveal participants' experiences to uncover important information needed to draw conclusions [11, 12]. Other literature has explained that descriptive studies are exploratory activities to describe and explain social phenomena related to the studied problem [13]. The five main themes were developed during the interviews.

Observational data collected included body height, body weight, waist circumference, and blood pressure. For determining the category of hypertension, the criteria of the Ministry of Health of the Republic of Indonesia were referred to, namely systolic blood pressure above 139 mmHg and diastolic blood pressure above 90 mmHg [14].

The instruments used to collect observational data included a GEA Microtoise, a digital body weight scale called “glass electronic personal scale” by KRIS, a measuring instrument for body height, a waist circumference measuring device called OD235, and the OMRON blood pressure digital 7121J device. Interviews and observations were conducted at the workplace.

2.3. Data Analysis

Qualitative data analysis was carried out based on thematic content. The thematic analysis process encompassed the following steps: 1) transcribing interview data, 2) noting the meaning of informants' responses, 3) identifying data (participant responses) with similar meanings, 4) grouping the data, and 5) organizing categories in an Excel program.

The analysis of the data was ensured to be conducted in a valid and understandable manner, providing useful information. The literature explains that the validity of qualitative data content, including its authenticity and credibility, is based on the reviewer's assessment and experience [15]. The information obtained from the informants must be credible to the reader. Findings must be appropriate theoretically and logically, and the content analysis should be focused on theory and informant responses [16]. According to the literature, the data obtained from the interviews take the form of explanations and descriptions, which undergo content analysis, triangulation of sources, and theoretical orientation (theoretical triangulation) before drawing conclusions. Informant explanations that do not support the research theme are eliminated, and the results are displayed in a table. In this study, the Body Mass Index (BMI) classification referred to the Ministry of Health of the Republic of Indonesia [17], namely 1) underweight (< 18.5); 2) normal body weight (18.5 – 22.5); 3) overweight (23 – 24.5); 4) obesity I (25 – 29.9); and 5) obesity II (≥ 30).

Interviews were conducted individually to ensure privacy and participant comfort in sharing their experiences. Prior to the interviews, participants were provided with information about the research objectives, enabling them to understand the relevance of their experiences related to behavior, obesity, and hypertension. The duration of each interview ranged from 45 to 60 minutes. With participants' consent, the interviews were audio-recorded and subsequently transcribed verbatim (supplementary material).

3. RESULTS

A total of 21 junior high school teachers participated in the study (Table **1**).

Table 1. Characteristics, body mass index (BMI), and blood pressure of study participants (n=21).

Study Participants	Age (year)	Length of Work (year)	Gender	Waist Circumference (cm)	BMI	Category	Blood Pressure (mmHg)
1	51	28	Female	80	22,6	Normal	111/70
2	47	24	Female	80	22,2	Normal	161/106
3	43	18	Female	82	27,5	Obesity I	122/81
4	37	15	Female	92	34,1	Obesity II	125/88
5	25	1	Female	90	27,4	Obesity I	117/70
6	50	25	Female	91	33,9	Obesity II	156/98
7	40	16	Female	89	28,5	Obesity I	152/92
8	51	25	Female	105	28,4	Obesity I	173/105
9	45	18	Female	98	31	Obesity II	208/107
10	26	2	Female	100	32,4	Obesity II	108/74
11	51	28	Female	90	27,7	Obesity II	148/82
12	52	29	Female	87	26,5	Obesity I	187/109
13	49	26	Male	82	17,8	Normal	177/126
14	40	16	Female	96	26,8	Obesity I	128/94
15	45	18	Male	84	24,9	Overweight	186/121
16	41	18	Female	83	24,9	Overweight	120/73
17	40	18	Female	89	27,4	Obesity I	141/89
18	52	29	Female	87	232	Normal	123/111
19	50	27	Female	98	23,8	Normal	158/108
20	47	25	Female	83	22	Normal	100/66
21	61	35	Male	112	33	Obesity II	122/89

Note: Source: primary data, 2023.

Table 2. The outcome of the thematic analysis.

Theme	Sub-theme	Findings
Snack consumption	Frequency of snack consumption	Fried food is consumed at school break time (very often). Some consume the same type of fried snack at home (informants 2, 3, 4, 7, 8, 9, 10, 13, 14, 15, 16, 18, 19, 20, 21).
	Favorite snacks and food	- Fried snacks, including fried bananas and others of the same kind (informants 2, 3, 5, 4, 7, 8, 9, 10, 13, 14, 15, 16, 18, 19, 20, 21). - Sweet cakes and bread (informants 1, 2, 5, 15, 18, 21). - Meatballs (informant 10).
Sleeping habits	Sleeping time	- Regular bedtime at 10.00 pm (informants 1, 2, 3, 5, 6, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21). - Bedtime after 11.00 pm (informants 4, 7, 10).
	Midnight waking habit	- Waking up during the middle of the night, between 02.00 – 03.30 am (informants 3, 5, 8, 11, 15, 19, 20). - Waking up at 04.30 am (all informants).
	Sleep quality	- No sleep disturbances or discomfort during sleep (all informants). - Deep, comfortable sleep (all informants).
Family health history	Parents with a history of hypertension	Parents with a history of hypertension (informants 2, 3, 8, 9, 14,15,16).
	Parents with a history of diabetes	Parents with a history of diabetes (informants 4, 6, 10,13,14,15, 16, 19).
Exercise habits	Regular exercise	- None of the informants mentioned engaging in regular exercise (informants 1 – 20).
	Outdoor activities	- Some informants (informants 2, 3, and 14) reported walking while accompanying their children during school activities or in leisure time.
Health complaints in the last 6 months	Complaints of pain or discomfort	- Joint pain and swelling in hands and feet: several informants (1, 4, 6, 9, 10, 12, 17, 18, 19, 20, 21) reported experiencing this issue. - Headache, neck pain, shoulder pain, lower back pain, and buttock pain (informants 1, 7, 15, 17, 20).
	Previous health issues	- Informant 11 has been diagnosed with the disease by a doctor and reported to regularly take prescribed medication. - The remaining informants did not report any serious illnesses or hospitalizations.

Note: Source; primary data, 2023.

Based on the research findings derived from the thematic analysis of the 21 study participants investigated, several key findings emerged; 15 participants were identified as obese. Among these 15 obese participants, 10 were hypertensive, while the remaining 7 had normal blood pressure, and of the 11 participants with hypertension, 8 were classified as obese, while the remaining 3 had normal body weight. The primary finding was that the majority of the study participants exhibited both obesity and hypertension.

Based on the thematic analysis (Table **2**), five main themes emerged in this research work: snack consumption, sleep habits, family health history, physical activity, and health complaints within the last 6 months.

3.1. Theme 1: Snack Consumption

About 20 out of 21 informants reported consuming fried snacks. Most of them (15) regularly consumed these snacks during their afternoon break. Six informants mentioned consuming other types of snacks, such as cakes, and one person mentioned eating sausages. This has indicated a significant unhealthy eating pattern among the participants.

3.2. Theme 2: Sleep Habits

Three informants had irregular and late sleep patterns (past 11:00 pm). Seven informants reported waking up during the night, and all participants stated they did not experience any sleep disturbances. In theme 2, the focus was on sleep habits and time management. The research results suggested that sleep habits and time management are related to individual sleep health and sleep quality. Thus, observing sleep habits and setting sleep schedules are necessary to analyze health issues and individual fatigue conditions.

3.3. Theme 3: Family Health History

Seven informants reported their parents to have high blood pressure, and four of them reported to have high blood pressure and a family history of high blood pressure. On the other hand, three other informants did not have high blood pressure but had a family history of high blood pressure. This highlights the role of genetic factors and family health in understanding the causes and effects of high blood pressure on individuals. Analyzing family health history can provide a more detailed understanding and help address health issues in the community. Understanding genetic risk factors may assist in designing more targeted screening programs or developing tailored prevention strategies for individuals with a family history of hypertension.

3.4. Theme 4: Physical Activity

All participants reported to not engage in regular physical activity. Only 3 informants mentioned doing light exercise by walking in the open area, as they participated in school activities with their children. The research results show that regular exercise and physical activity can influence the risk of high blood pressure and obesity. The lack of participants exercising regularly is an

interesting finding and suggests the need for further research, as well as potential interventions to increase physical activity levels.

3.5. Theme 5: Health Complaints in the last 6 Months

A total of 11 informants experienced musculoskeletal issues, such as pain and stiffness. There were 5 informants who complained of neck and back pain. There was only 1 informant who was sick and was hospitalized because of a diagnosis of glandular disease. Most of the participants consumed fried snacks, and some of them also experienced musculoskeletal problems. Consuming foods rich in fat has been reported as risky as it may lead to inflammation and impaired muscle function. On the other hand, musculoskeletal disorders are associated with low physical activity or too heavy physical activity related to strength and muscle mass.

4. DISCUSSION

4.1. Obesity, Hypertension, and Snack Consumption

The research findings have revealed several observations related to the health conditions of the participants. Firstly, ten out of 21 participants suffered from high blood pressure, and 15 categories of overweight and obesity I and II were found among the participants. This indicates that a high prevalence of obesity and high blood pressure existed among the studied participants. Our findings have been found to be relevant to the literature stating that obesity and high blood pressure have a significant correlation. Obesity has been reported to be closely related to the risk of cardiovascular diseases [10, 18-20]. Obesity has also been associated with increased intravascular volume and cardiac flow [21]. The study conducted by Shariq [22], proved that weight loss supports blood pressure reduction by 1 mmHg per kg of weight loss, with a linear decrease of 6 mmHg in blood pressure for a 10 kg weight loss.

Secondly, the research findings have highlighted that 20 out of 21 participants consumed fried snacks and 15 of them regularly consumed fried snacks. Of the 15 participants who consumed snacks, 7 of them were hypertensive, 6 of them were obese, and 2 others were of normal weight and had normal blood pressure. This observation of the participants has been found to be relevant to the number of participants experiencing obesity. The findings have provided an insight into the participants' lifestyle factors, such as eating habits, contributing to their health conditions. In addition, socioeconomic status and high income have also been reported to be significantly associated with obesity [23].

The research findings obtained here have been found to be relevant to the literature stating that high blood pressure is associated with obesity prevalence [18]. The recent COVID-19 pandemic has had a significant impact on unhealthy eating habits, increasing blood pressure and obesity [24]. Unhealthy eating behavior changes among adolescents occurred during the pandemic. They consumed energy-dense foods and sugary drinks while using computers [25].

4.2. Obesity, Hypertension, and Exercise Habits

The research findings have revealed 15 informants to experience obesity and none of the informants engaged in exercise. Several studies have mentioned that obesity is related to physical activity and exercise habits. The imbalanced food consumption and sedentary lifestyle (lack of physical activity) increase obesity prevalence [26]. Observing the relationship between exercise habits and high blood pressure and obesity is important because physical activity has a significant impact on heart health and body weight. Regular exercise can help maintain blood pressure within normal limits and reduce the risk of high blood pressure. Additionally, exercise helps boost metabolism, burn calories, and strengthen muscles, all of which play a role in controlling body weight. When someone has a sedentary lifestyle or lacks exercise, the risk of high blood pressure and obesity increases.

Regular exercise also helps in managing body weight, as it burns calories and increases fat metabolism. High blood pressure and obesity have a complex relationship with lifestyle factors, including eating habits and physical activity levels. A lack of regular exercise can lead to excessive body fat accumulation, which in turn can increase the risk of high blood pressure. This is in line with the research findings by Li *et al*. [27], who found moderate physical activity to be associated with a lower risk of high blood pressure. Therefore, understanding individual exercise habits in the context of research is crucial to determine how this factor influences heart health and body weight, as well as to design appropriate interventions for preventing and managing high blood pressure and obesity. The environment and facilities also impact physical activity levels. In urban areas, the presence of facilities, such as open green spaces, has a positive effect on physical activity and encourages healthier lifestyle choices. Previous researchers have explained that city dwellers engage in activities, like walking and moderate sports at facilities, like parks and open green spaces [28].

In a research study conducted in Saudi Arabia [29], energy-dense eating habits and excessive calorie and protein consumption were reported to be more common among diabetes patients. A survey of 222 school teachers in Bahir Dar found that those with higher eating habits were 5 times more likely to experience high blood pressure [5]. Policies aimed at reducing sugary drink consumption, increasing the intake of fruits and vegetables, and promoting the consumption of whole grains can help combat childhood obesity [30].

The findings thus emphasize the importance of monitoring and implementing preventive measures for obesity to reduce the occurrence of serious health consequences. The high consumption of fried snacks is associated with health risks, such as obesity and high blood pressure, which should be considered in health intervention programs. Regulating fried snack consump-

tion and replacing it with the intake of fruits can help control obesity. The literature has shown respondents with higher obesity prevalence, higher education levels, and better nutrition knowledge to have healthier eating habits and better overall health [31].

Moving forward, 11 participants reported experiencing musculoskeletal disorders, cramps, and weakness. This finding has highlighted a significant issue related to the musculoskeletal system for most participants, negatively impacting their overall quality of life, and thus necessitating proper prevention efforts. The literature explains that an increased Body Mass Index (BMI) is a risk factor for musculoskeletal disorders [32].

Lastly, the findings have shown that 15 participants faced obesity problems, with 10 of them also suffering from high blood pressure and daily fried food consumption. This situation provides an overview of the prevalence of weight-related issues among the studied population, being associated with snack consumption habits and high blood pressure. Therefore, prevention and intervention measures aimed at addressing weight issues are crucial in maintaining the health of the participants.

In the context of the research findings that have reported musculoskeletal complaints, particularly the 11 participants experiencing cramps and weakness, as well as the 5 participants reporting back and neck pain, the relationship between hypertension and obesity can be analyzed from several intellectual perspectives. Firstly, musculoskeletal issues, like cramps and weakness, are often linked to a lack of physical activity or a sedentary lifestyle. Insufficient physical activity is a risk factor for the development of obesity, which in turn can increase the risk of hypertension. Low levels of physical activity can lead to reduced muscle mass and strength, resulting in poor body posture stability and increased risk of musculoskeletal injuries.

Secondly, back and neck pain complaints are also often associated with a sedentary lifestyle and poor body posture. This can be an indicator of an imbalance in physical activity and poor body posture habits, which can contribute to an increased risk of obesity and hypertension. Additionally, obesity itself can cause increased pressure on the spine and muscle structures, which can then increase the risk of back and neck pain complaints.

4.3. The Implications for Health Policies and Practices

To address the issue of school teachers consuming unhealthy fried snacks daily during their breaks, it is essential to implement policies and promote healthy lifestyle practices in schools. School leaders can encourage the promotion of school nutrition policies, such as having meals with teachers and students every Friday and bringing a complete meal of vegetables, side dishes, and fruit, and working with parents of students to support the program of consuming fruits and vegetables every day.

This can help create a supportive environment for the school community, including teachers, students, and staff, leading them to adopt healthy behaviors aligning with global health targets. By reducing the prevalence of hypertension by 33% as a part of global efforts to prevent non-communicable diseases [4], schools can play a significant role in improving overall health and well-being. As mentioned by Bailey [33], healthy lifestyle policies and initiatives should be promoted within educational institutions to encourage healthier choices and contribute to achieving global health objectives. Hypertension treatment is less effective through medication; therefore, it is important to emphasize changes in lifestyle factors [34]. One of the indicators mention edin Healthy People 2030 is hypertensive people with controlled blood pressure, physical activity, and muscle strengthening [35].

The consumption of fried snacks and the occurrence of muscle cramps or stiffness can be explained as an unhealthy eating habit. Fried snacks are often high in saturated fats, low in fiber, and deficient in other essential nutrients. The consumption of high-saturated fat foods is associated with an increased risk of inflammation in the body. Chronic inflammation can affect muscle function, leading to cramps and stiffness, as it influences the nervous system's response and muscle contractions.

Fried snacks are also typically high in salt and low in vital vitamins and minerals. Deficiencies in certain nutrients, such as magnesium, can increase the risk of muscle cramps. Insufficient nutrient intake can also lead to imbalances in the nervous system and muscle contractions that may cause cramps or stiffness. Therefore, the consumption of fried snacks that are high in saturated fats and salt and low in nutrients can contribute to muscle-related issues, like cramps and stiffness, through various mechanisms associated with an unhealthy diet. Conversely, adopting a healthy eating pattern that focuses on nutrient-rich foods can help maintain muscle health and reduce the risk of such issues.

In line with the Ministry of Health of the Republic of Indonesia's recommendation, promoting healthy food options, such as reducing the consumption of foods containing oil and fat and avoiding or reducing processed and high-preservative foods [6, 36], is essential. Fast food and junk food contain high calories, fat, and low fiber [37], which can lead to obesity. A higher obesity rate has been found among those who consume fast food and junk food. Low physical activity is also associated with obesity. The literature states that regular physical activity, with the right duration and frequency, is beneficial for blood pressure control. Consistent physical activity strengthens the heart, improving blood circulation and preventing fluid retention [38].

Several strategies have been developed to manage hypertension and obesity, including education, promotion, and community health interventions. The goal of these programs is to increase public awareness and understanding of the importance of a healthy lifestyle for preventing hypertension and obesity. Additionally, policies focusing on prevention and risk management of health issues can help reduce the incidence of hypertension and obesity. Literature highlights increasing healthy food

consumption through interventions for taste enjoyment, diet, and health [39].

4.4. Local and National Recommendations

Some recommendations for implementing measures at the local and national levels are as follows:

1) Schools should ensure the provision of healthy food and beverages from canteens to teachers, education staff, and students. They can also organize programs for optimizing diet in collaboration with parents, focusing on a diet rich in fruits and vegetables, and low in sodium.

2) Light physical activity programs must be implemented at the regional as well as national levels, such as daily 10-15 minute exercise sessions at school. Regular physical activity of at least 150 minutes, such as moderate-intensity walking, must be performed by the individuals.

3) A regular sleep schedule must be implemented by the individuals to regulate the circadian rhythm. It is also better to stop all activities during rest time. The schools can also ensure the availability of a restroom.

4) The Ministry of Health, through Primary Health Centers, should establish integrated service posts at the district level to monitor obesity, control hypertension, and prevent infectious diseases. Health screening programs for families at risk or families with a history of hypertension must be organized.

CONCLUSION

Based on the findings, it is inferred that unhealthy eating patterns, such as frequent snacking, especially fried snacks during break time, are commonly associated with health issues, like obesity, hypertension, and musculoskeletal complaints. If left unaddressed, these can further contribute to health problems, such as an increased risk of infectious diseases. Preventive actions and healthy lifestyle changes are needed to reduce the risk of these health issues among the population.

Schools are advised to implement policies, including replacing fried snacks with fruits and conducting group exercise sessions at least once a week. Informants are encouraged to undergo health check-ups and laboratory tests at available health facilities to address muscle and skeletal pain complaints, control body weight within the ideal range, and regulate bedtime to no later than 10:00 pm.

Studies on obesity, eating habits, and hypertension among educators can contribute to academic knowledge and, ultimately, the research findings can guide the development of tailored interventions to promote healthy lifestyles and reduce the prevalence of hypertension and obesity among the educators. These findings highlight the importance of considering the relationship among musculoskeletal issues, pain complaints, and physical activity in the context of developing preventive strategies and interventions to reduce the risk of hypertension and obesity. It is recommended to conduct similar studies by expanding the geographical and demographic scope. Quantitative and qualitative methods can be integrated to provide a more comprehensive understanding of the phenomenon studied, and by doing so, the additional factors mediating the relationship between obesity and hypertension can be identified.

ABBREVIATION

BMI	=	Body Mass Index

AUTHORS' CONTRIBUTION

DA and EB contributed to the study conception and design; FS and W collected the data; TU performed data analysis and interpreted the results; ZA, D, and EA wrote the paper. All authors have reviewed the results and approved the final version of the manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This research study received approval from the Ethics Committee of the Institute of Health Science "Maluku Husada" with the reference number 078/KEPK/STIK/I/2023.

HUMAN AND ANIMAL RIGHTS

All procedures performed in studies involving human participants were in accordance with the ethical standards of institutional and/or research committee, and with the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

Informed consent was obtained from the participants.

STANDARDS OF REPORTING

COREQ guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The research data are not available to the public for the purpose of maintaining the confidentiality of informants.

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None.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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SUPPLEMENTARY MATERIAL

Supplementary material is available on the Publisher's website.

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