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The Relationship Between Fatty Food Consumption Habits and Physical Activity on the Incidence of Coronary Heart Disease at the Haji Provincial Hospital in East Java

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ABSTRACT

Noncommunicable diseases (NCDs) are the leading cause of death and health problems worldwide. According to the WHO, cardiovascular disease accounted for 32% of all deaths in 2019. Based on the results of the 2023 Indonesian Health Survey (SKI), 0.85% of heart disease cases were diagnosed by doctors. The purpose of this study was to determine the relationship between fatty food consumption and physical activity with the incidence of coronary heart disease in outpatients at the Haji Provincial Hospital in East Java. This study used an analytical research design with a cross-sectional approach involving 48 participants. Data were collected through questionnaires and interviews with outpatients at the Haji Provincial Hospital in East Java. Statistical results using the Chi-square test showed a significant relationship between the habit of consuming fatty foods and the incidence of coronary heart disease (p = 0.009) as well as a relationship between physical activity and the incidence of coronary heart disease (p = 0.002). It can be concluded that the risk of coronary heart disease is influenced by fatty food consumption habits and physical activity. Therefore, the quality of life of CHD patients can be improved by improving diet and physical activity.

Key Messages:

- Consumption of fatty foods in the unhealthy category is associated with an increased risk of coronary heart disease (CHD).
- Regular physical activity acts as a protective factor against CHD.
- The relationship between unhealthy fat consumption habits, physical activity levels, and CHD incidence shows that lifestyle is a major determinant of cardiovascular health.
- Prevention of CHD can be achieved through reducing the consumption of saturated fats and increasing physical activity.
- Education and intervention to improve habits of consuming fatty foods and physical activity are very important in efforts to reduce the incidence of CHD.

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INTRODUCTION

Noncommunicable diseases (NCDs) are a major factor contributing to high mortality rates and the global health burden. These conditions are also known as degenerative diseases, which have become a public health problem in the 21st century due to their long-term impact on health, care, and treatment (1) (2). In general, the development of NCDs occurs slowly in a person's body and can worsen if triggered by certain factors. The World Health Organization (WHO) classifies NCDs as diseases that tend to have a long recovery period. These diseases are often referred to as silent killers because they do not show life-threatening symptoms in the early stages, thus potentially threatening the lives of sufferers. Their prevalence continues to increase every year.

Cardiovascular disease (CVD) is a health disorder that affects obesity, blood lipids, blood sugar, and blood pressure (3). CVD is often associated with various complications such as heart disease, stroke, cerebrovascular disease, and others, which are the leading causes of death and a major challenge to global public health. One of the most common and deadly forms of CVD is coronary heart disease (CHD). Artery narrowing or atherosclerosis is caused by the buildup of thickened plaque. This thickening of plaque reduces blood supply to organs, thereby inhibiting blood flow from the arteries to tissues that need oxygen and nutrients. Regular consumption of high-fat foods causes the buildup of fat and cholesterol, which obstructs blood supply to the heart due to blockages in the coronary artery walls. Regular physical activity of at least 150 minutes per week and reducing prolonged sitting are recommended for patients with coronary artery disease (4)(5). Low levels of physical activity are known to contribute to the risk of death from coronary heart disease.

The World Health Organization (WHO) released data estimating that 17.9 million people, or 32% of all global deaths in 2019, died from cardiovascular disease (3). According to the 2023 Indonesian Health Survey (SKI), there were 877,531 cases of heart disease based on doctor's diagnoses, with the highest prevalence in the Special Region of Yogyakarta at 1.67% and the lowest in West Sulawesi at 0.385% (6). East Java had a prevalence of 0.88%. Coronary heart disease at the East Java Provincial General Hospital ranked third among the seven most common diseases in the first six months with 5,273 cases and was the top clinic in terms of patient visits. Based on the data found, the researchers were interested in discussing the relationship between fatty food consumption habits and physical activity with the incidence of coronary heart disease at the East Java Provincial General Hospital, so that it is hoped that it will provide a clearer understanding.

METHODS

This study is an analytical study using a cross-sectional approach, which is a method used at the same time to examine the relationship between fatty foods and physical activity on the incidence of CHD in outpatients at the Haji Provincial Hospital in Surabaya (7). This study was conducted at the Heart Clinic of the Haji Provincial Hospital in East Java, located on Jalan Manyar Kertoadi, Sukolilo District, Surabaya, East Java. This study was conducted from October 2024 to February 2025. The population in this study were outpatients who visited the Heart Clinic of the East Java Provincial Haji Hospital in the last three months, namely May 2024 to July 2024, totaling 153 people. The sample in this study consisted of outpatients at the East Java Provincial Haji Hospital Cardiology Clinic who met the specified characteristics, namely patients who were willing to be respondents, were fully aware, and agreed by signing an informed consent form. The Isaac and Michael formula was used as a measurement tool to determine the number of samples in this study, resulting in 48 samples with a 10% margin of error and a proportion of 0.5 (8) relative to the population.

This study used accidental sampling as the sampling technique, which is a technique for determining samples based on chance, namely any patient who happened to meet the researcher and met the criteria as a data source. However, the possibility of obtaining unrepresentative samples is a weakness of this technique (9)(10). Data collection was obtained through interviews and questionnaires on personal identity, fatty food consumption habits using the SQ-FFQ form, and physical activity using the PAR form, which were included in the primary data. Meanwhile, secondary data was sourced from official documents of the East Java Provincial Haji Hospital regarding the number of outpatients registered at the heart clinic. Univariate analysis was performed to define the quality of characteristics

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based on the variables studied, while bivariate analysis was performed to identify the relationship between independent variables and dependent variables, namely the relationship between fatty food consumption habits and the incidence of CHD and the relationship between physical activity and the incidence of CHD. The statistical test used was the Chi-Square test.

RESULTS

The research conducted in February 2025 at the Heart Clinic Polyclinic of Haji Regional Hospital, East Java Province, involving 48 samples that met the criteria as respondents was successfully collected and presented in detail in Table 1. This table provides an overview of the distribution of respondents based on respondent characteristics.

Table 1. Respondent Characteristics

Variables	n	%
Age		
30-40 years	4	8.3
41-50 years	5	10.5
51-60 years	20	41.7
61-70 years	15	31.2
>70 years	4	8.3
Total	**48**	**100**
Gender		
Man	14	29.1
Woman	34	70.8
Total	**48**	**100**
Work		
Not working/housewife	33	68.8
Self-employed	6	12.5
Private sector employee	2	4.2
civil servant	0	0
Indonesian National Armed Forces/Indonesian National Police	0	0
Other	7	14.5
Total	**48**	**100**
Medical History		
Hypertension	40	83.8
Dyslipidemia	0	0
Diabetes mellitus	3	6.2
Obesity	0	0
Other	5	10.5
Total	**48**	**100**
Nutritional status		
Thin	3	6.2
Normal	18	37.5
More	27	56.2
Total	**48**	**100**

Source: Primary Data, 2025

Based on data collected from 48 samples in this study, the majority of respondents were aged 51-60 years (41.7%). Age is a factor in the occurrence of coronary heart disease. Increasing age between 40 and 60 years is associated with a fivefold increase in myocardial infarction (11). Based on gender, women had the highest percentage at 70.8%. Based on occupation, the majority of respondents were unemployed/housewives, with a percentage of 68.8%. Based on medical history, the majority of

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respondents had a history of hypertension (83.8%). Based on nutritional status, the category with the highest percentage was 56.2%.

Table 2. Frequency Distribution of Heart Disease Status

Heart Disease Status	n	%
CHD	33	68.8
Non-CHD	15	31.2
Total	**48**	**100**

Source: Primary Data, 2025

Based on the table above, the number of frequency distribution data of respondents based on nutritional status in the heart polyclinic of Haji Regional Hospital, East Java Province, has the highest percentage in the CHD category with a percentage of 68.8%, while in the non-CHD category it has a percentage value of 31.2%.

Table 3. Frequency Distribution of Fatty Food Habits

Heart Disease Status	n	%
Good	18	37.5
Not good	30	62.5
Total	**48**	**100**

Source: Primary Data, 2025

Based on the results of the research that has been conducted, the number of data on the frequency distribution of respondents based on fatty food habits in the heart polyclinic of Haji Regional Hospital, East Java Province, was obtained for 48 respondents. The highest frequency of fatty food habits was in the category of unhealthy fat intake, namely 30 people (62.5%), while 18 people (37.5%) had the good category.

Table 4. Distribution of Physical Activity Frequency

Heart Disease Status	n	%
Light	32	66.7
Heavy	16	33.3
Total	**48**	**100**

Source: Primary Data, 2025

Based on the research that has been conducted, the number of frequency distribution data of respondents based on fat intake in the heart polyclinic of Haji Regional Hospital, East Java Province, has the highest percentage in the light physical activity category with a value of 66.7%, while in the heavy activity category it has a percentage of 33.3%.

Table 5. Cross Tabulation of the Relationship between Fatty Food Habits and the Incidence of CHD

Fatty Food Habits	CHD Incident				Total		*p-value*
	CHD		Non-CHD				
	n	%	n	%	n	%	
Good	8	16,7	10	20,8	18	37,5	
Not good	25	52,1	5	10,4	30	62,5	0.009
Total	33	68,8	15	31,2	48	100	

Source: Primary Data, 2025

Based on the results of research conducted on 48 samples, 25 people (20.6%) had poor fatty food habits and coronary heart disease. The results of the analysis of the relationship between fatty food habits and the incidence of CHD using the chi-square test obtained a p-value of 0.009 < 0.05. It can be concluded that there is a relationship between fatty food habits and the incidence of CHD.

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Table 6. Cross Tabulation of the Relationship between Physical Activity and the Incidence of CHD

Physical Activity Category	CHD Incident				Total		*p-value*
	CHD		Non-CHD				
	n	%	n	%	n	%	
Light	27	56,2	5	10,4	32	66,7	
Heavy	6	12,5	10	20,8	16	33,3	0.002
Total	33	68,8	15	31,2	48	100	

Source: Primary Data, 2025

Based on the results of the research data that has been conducted, there are 33 samples out of 48 samples, as many as 27 samples have light activity of 22.0% with coronary heart disease status. The significant relationship between physical activity and CHD incidence with the chi square test value has a p-value of 0.002 < 0.05.

DISCUSSION

Based on Table 1, the majority of respondents were in the 51-60 age group (41.7%). Studies (12)(13) state that more respondents aged 59-64 experienced CHD. Age is one factor that cannot be avoided. Plaque accumulates in the same place as we age. These chemicals then stick to the walls of blood vessels, causing plaque buildup and narrowing of the arteries, which reduces the flow of oxygen-rich blood to the heart and can cause coronary artery blockages. Uncontrolled health history factors that cause coronary heart disease are the main causes of this disease (11). The 2023 Indonesian Health Survey (SKI) results based on the characteristics of heart disease diagnosed by doctors in the gender category show that women have a higher percentage than men. The American Heart Association (AHA) states that 1/3 of adult women suffer from coronary heart disease with a higher mortality rate than men (14).

A study (15) states that women aged ≤ 50 years have several factors contributing to the incidence of CHD. Women who suffer from coronary heart disease at the age of 65 have a two times higher risk of developing CHD in their first-degree relatives. Syibatu (2019) states that employment is one way to improve the quality of life for patients. The majority of the 48 respondents, namely 68.6%, were housewives or unemployed. This situation was due to the fact that the majority of respondents were women aged between 51 and 60 years. In the study (16), it was argued that income and employment can improve the quality of life of CHD patients. According to research, people with hypertension have a 2.667 times higher risk of developing CHD (17).

In addition, research shows a link between coronary heart disease and a history of hypertension (18). Hypertension will lead to atherosclerosis, which, if left untreated, will result in myocardial infarction. Over time, arteries gradually become damaged due to continuously high blood pressure. Fat buildup on the artery walls causes the arteries to harden, which narrows the lumen of the blood vessels and leads to coronary heart disease (CHD) (17). Individuals who are obese have a 1.21 times higher risk of CHD. In a study (19), it was found that 20 respondents (58.8%) were obese. The Indonesian Internal Medicine Association (PAPDI) states that obesity increases the risk of CHD fourfold, regardless of gender (20).

In Table 3, the majority of respondents had unhealthy fatty food habits (62.5%). This has been adjusted based on the amount, type, and frequency of fat intake in their daily lives. This fact is due to the respondents' frequent consumption of fried foods more than once a day. In line with the research conducted by (21), the results showed that 85.6% of respondents with poor fat intake were due to the frequent use of high-fat foods sourced from cooking oil. Based on a literature study conducted by (22), CHD sufferers are predominantly individuals who have a fat intake that exceeds their needs. High fat levels can increase cholesterol levels in the blood, forming deposits on the walls of blood vessels, which causes coronary heart disease (23).

One factor contributing to CHD is lack of physical activity. More than half (66.7%) of respondents in this study were categorized as having low levels of physical activity. Physical activity affects an individual's nutritional status. 56.2% of respondents were overweight. The risk of coronary heart

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disease can be reduced through physical activity. According to (Mora et al., 2007) in (12), this supports the idea that exercise can monitor weight changes, reduce sympathetic nervous activity, and improve organ performance, all of which enable regular blood circulation.

According to Table 5, respondents who consumed unhealthy fatty foods (20.6%) were at greater risk of developing CHD than individuals who had healthy fatty food consumption habits (12.4%). These results indicate that fatty food consumption is associated with the incidence of CHD. Based on the results of the chi-square test analysis, a p-value of 0.009 was obtained, which is less than the significance threshold of 0.05. Thus, the more frequently respondents consume fatty foods, the higher the tendency for coronary heart disease to occur. Based on the fact that 80% of blood cholesterol is formed during the day and 20% comes from food, this study supports the hypothesis that consuming too much fat will have an impact on blood cholesterol levels and body weight.

Based on the data in Table 6, there were 27 samples with light activity (22.0%) with coronary heart disease, while 6 samples had heavy activity (11.0%) with coronary heart disease. The chi-square test analysis yielded a p-value of 0.002 (<0.05), indicating a significant correlation between physical activity levels and the incidence of coronary heart disease in outpatients at the Haji Provincial General Hospital in East Java. These results are in line with studies (24)(25)(21) which state that there is a significant relationship between physical activity and the risk of CHD. Consistent physical activity will increase HDL levels in the blood. HDL has an effect on lowering triglycerides and cholesterol levels in the blood.

CONCLUSION

This study revealed a significant association between fatty food consumption habits and physical activity with the incidence of coronary heart disease (CHD) among outpatients at the East Java Provincial Haji Hospital. These findings underscore the need for practical interventions, particularly nutrition education and the promotion of regular physical activity at the primary health care level, to reduce modifiable risk factors for CHD. Future research should adopt a case-control or cohort design with larger and more representative samples, and incorporate clinical biomarkers such as lipid profiles and blood pressure measurements to strengthen causal inference.

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CONFLICTS OF INTEREST

The author declares that there is no potential conflict of interest, either financial or non-financial, that could influence the results of this study. The entire research process and report writing were conducted independently without intervention from any party.

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