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Assessment of Coronary Heart Disease Risk Among Medical Faculty Members Using The Jakarta Cardiovascular Score (JAKVAS)

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ABSTRACT

Coronary heart disease (CHD) is a condition caused by the narrowing of the coronary arteries, leading to reduced blood flow to the heart. It is the leading cause of death globally and continues to increase, particularly in developing countries such as Indonesia. In Banten Province, the prevalence of heart disease is reported at 1.4%. Unhealthy lifestyle habits among the general population, including those within academic communities, can raise the risk of CHD and negatively impact quality of life. This study aimed to detect early CHD risk using the Jakarta Cardiovascular Score (JAKVAS) among the academic community of FKIK UNTIRTA to raise awareness and encourage preventive measures. An analytical observational method with a cross-sectional study design was employed. Consecutive sampling was used to assess the relationship between CHD risk factors listed in the JAKVAS as independent variables and CHD risk as the dependent variable. The results showed that 86.7% of the academic community at FKIK UNTIRTA were in the low-risk category, 4.44% in the moderate-risk category, and 8.89% in the high-risk category. The proportion of respondents with high blood pressure was 25.6%, BMI ⩾26.00 was 23.3%, smoking history was 20%, diabetes mellitus history was 5.6%, and those aged over 49 years and male were 13.3%. A significant relationship was found between increased CHD risk and factors such as age, gender, blood pressure, BMI, smoking history, and diabetes mellitus. Among these, smoking history (OR 14.458) and BMI (OR 6.685) were the most dominant risk factors. These findings suggest the need to improve awareness among the population regarding cardiovascular health and promote the adoption of healthier lifestyles to reduce future risk.

Key Messages:

- This study is one of the first to apply the JAKVAS for assessing CHD risk within an academic population in Indonesia. It highlights the tool's applicability in educational institutions, providing early risk stratification among relatively young and educated individuals. By identifying key modifiable risk factors particularly smoking and hypertension as dominant contributors to CHD risk, the study emphasizes the urgency of preventive interventions tailored to academic communities.

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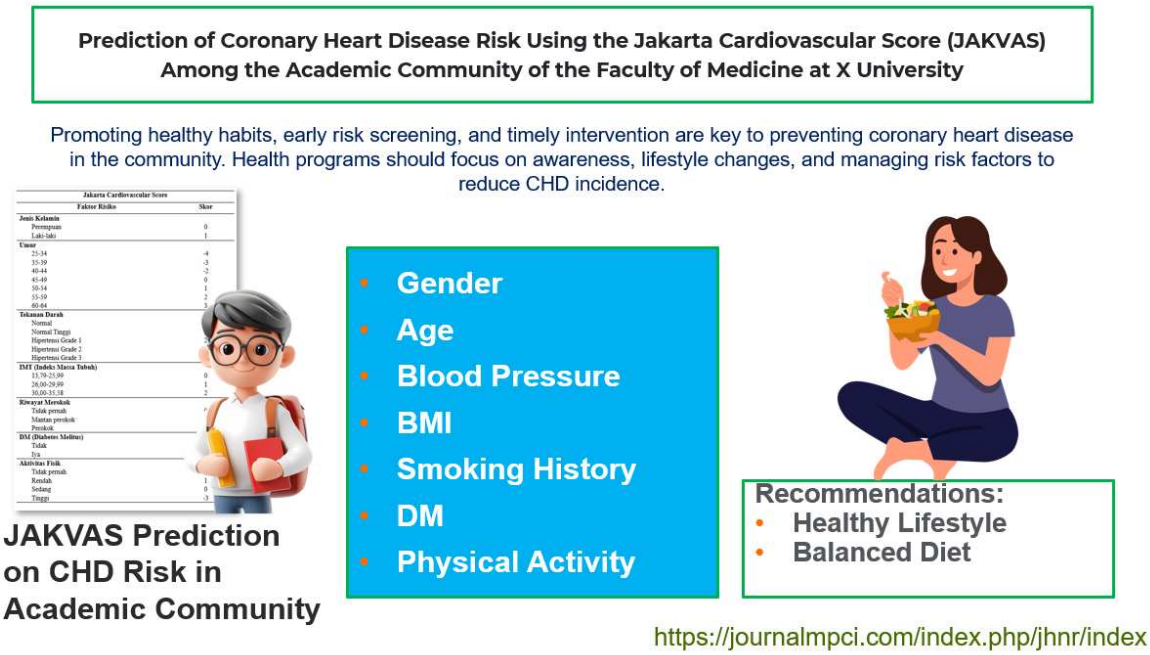
GRAPHICAL ABSTRACT



INTRODUCTION

Coronary heart disease (CHD) is one of the persistent diseases causing death worldwide. According to data from the World Health Organization (WHO), cardiovascular diseases are one of the leading causes of death globally (1). CHD can occur in both developed and developing countries. According to the Global Burden of Disease (GBD), the global prevalence of CHD reaches 154 million cases, accounting for 32.7% of the total cardiovascular disease burden worldwide and 2.2% of the overall global disease burden (2). According to WHO, the death toll from heart disease is expected to continue rising, reaching 23.4 million by 2030, with developing countries predicted to be the main contributors (3). Based on Riset Kesehatan Dasar (Riskesdas) 2018 from the Ministry of Health, the prevalence of heart disease in the Indonesian population is 1.5%, meaning 15 out of every 1,000 people have heart disease (4). Although this percentage is relatively small, the absolute number of sufferers is very high, with a prevalence of 4.2 million people recorded in 2021. Banten province has a prevalence rate of approximately 1.4% of the population. According to Riskesdas 2018, one of the main risk factors contributing to CHD in Indonesia includes hypertension, with a prevalence of 34.1% among adults, as well as diabetes mellitus (DM) with a prevalence of 10.9% in Indonesia (4). According to the Perhimpunan Kardiologi Indonesia (PERKI), the number of heart disease patients in Indonesia is estimated to be around 2 million, with specific data from Riskesdas 2018 showing 2,784,064 cases (4,5). This increase may be attributed to unhealthy lifestyles such as lack of physical activity, poor dietary habits, dyslipidemia (abnormal blood fat levels), obesity, and smoking habits. According to data from Badan Penyelenggara Jaminan Sosial (BPJS), eight types of catastrophic diseases are the primary burden on the Jaminan Kesehatan Nasional (JKN) program (6). As of December 31, 2023, heart disease ranks first as the disease with the highest treatment costs, amounting to IDR 17.629 trillion, and has the highest number of cases at 20,037,280 (6).

In the adult population, especially among workers who tend to have a sedentary lifestyle, there is an increased risk of coronary heart disease. A study conducted by the World Heart Federation (WHF) showed that a sedentary lifestyle is a significant independent risk factor for coronary heart disease. The study explained that a sedentary lifestyle contributes up to 20% to the increased incidence of cardiovascular diseases (7). Additionally, work stress, irregular eating habits, and psychological stress also serve as additional risk factors, particularly for formal workers, including staff or employees of an organization. Research from the American Heart Association (AHA) further explains that hypertension, DM, dyslipidemia, and obesity are dominant risk factors that accelerate the development of coronary heart

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disease, especially in individuals with a less active lifestyle (8). Many workers live this lifestyle, with limited physical activity due to work demands that are mostly static and involve prolonged sitting, combined with unhealthy eating habits, which can significantly worsen cardiovascular conditions (8).

The Jakarta Cardiovascular Score (JAKVAS), a relatively new important tool for assessing cardiovascular risk, which was specifically developed in Indonesia to better reflect the unique genetic, lifestyle, and environmental factors for the Indonesian population that distinct from Western populations. (9). Unlike Western-based models like the Framingham Risk Score, JAKVAS was designed with Indonesia's population characteristics in mind, such as physical activity and smoking cessation, providing a more accurate assessment of CHD risk within the country. JAKVAS has demonstrated promising results, with a sensitivity of 77.9%, specificity of 90%, a positive predictive value of 92.2%, and a negative predictive value of 72.8% (10,11). Research comparing JAKVAS with other risk scores like Framingham and SCORE in predicting CHD among stable angina patients in Indonesia found that JAKVAS had a higher area under the curve (AUC) value of 0.70, compared to 0.64 for Framingham and 0.65 for SCORE. These indicates that JAKVAS may be more effective in stratifying cardiovascular risk in the Indonesian context (12). Despite these strengths, there is a notable gap in the use of JAKVAS in academic settings. While many studies have applied it to older adults or clinical patients, there is limited research on how well it can predict CHD risk in younger, seemingly healthier populations like university students and staff.

The academic community often remains overlooked in cardiovascular risk assessments, despite its potential for early intervention, as lifestyle habits formed during this period can have long-lasting health effects. Furthermore, while studies have documented the prevalence of cardiovascular risk factors like smoking and hypertension, few have connected these factors to an early, proactive screening model specifically targeting academic settings. Despite its proven advantages in clinical populations, there remains a research gap in the application of JAKVAS among non-clinical groups. Faculty and university staff, particularly in medical schools, often face work-related stress and sedentary lifestyles that may increase cardiovascular risk. Unfortunately, this group has received limited attention in epidemiological studies using JAKVAS. This research gap is critical, as universities are hubs for young adults who are at an age when lifestyle habits start to develop and set the stage for long-term health outcomes. By addressing this gap, the present study aims to apply JAKVAS in an academic setting to evaluate the cardiovascular risk profile of its academic community. This research will provide valuable insights into early detection of CHD risk in a population that has been largely overlooked in existing literature, contributing to more targeted health interventions and preventive measures in Indonesian academic environments.

METHODS

This study is an analytical observational research using a cross-sectional study design, this approach provides a snapshot of the current status of risk factors and CHD prevalence within the target population at a specific point in time. This method is suitable for identifying associations between variables but does not establish causality. By using this design, the study aims to determine the proportion of individuals at low, moderate, and high risk of CHD based on their exposure to various risk factors, allowing for the identification of trends and patterns within the academic community. The study is conducted at the Sultan Ageng Tirtayasa University campus, Banten Province. The sampling technique used is consecutive sampling, where subjects are selected in sequence based on their presence and according to the inclusion criteria set by the researcher. This technique is employed because it allows the researcher to easily gather relevant data according to the research requirements, making the data collection process more efficient.

Data collection used JAKVAS, which evaluates risk factors including age, sex, smoking history, physical activity, blood pressure, BMI, and diabetes status. All measurements followed standardized procedures for consistency and replicability. Blood pressure was measured with a calibrated digital sphygmomanometer. Participants were seated with arms at heart level; measurements were taken after a five-minute rest. If initial readings varied, up to three were taken at one to two-minute intervals, and the average was recorded. Minor discomfort from cuff inflation was the only possible side effect. BMI was calculated using weight and height measurements. A calibrated scale measured body weight, while a stadiometer was used to measure height with participants standing upright, barefoot, and looking straight

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ahead. BMI was determined using the formula: weight (kg) / height (m^2), then classified based on WHO guidelines. Random blood glucose (RBG) was measured using a glucometer and sterile lancets. A fingertip blood sample was collected, and a drop of blood was placed on a test strip inserted into the glucometer. Results were recorded in mg/dL or mmol/L. As fasting was not required, data collection was supported by a clinical interview to screen for symptoms of DM, known as the "5Ps": polyuria, polydipsia, polyphagia, weight loss, and pruritus. Participants reporting one or more symptoms were further evaluated. Each JAKVAS parameter was assigned a score based on its contribution to CHD risk. The total score ranged from -7 to 18 and was categorized as low risk (<1), moderate risk (2–4), or high risk (≥5). All instruments used were calibrated beforehand, and procedures were designed for reproducibility in similar study settings.

The sample for this study comprised all members of the academic community at the Faculty of Medicine and Health Sciences, Sultan Ageng Tirtayasa University (FKIK UNTIRTA), who were willing to participate and met the predetermined inclusion criteria. To ensure the adequacy of the sample size, a descriptive categorical formula was employed to estimate the required number of participants based on prevalence data. Using a 95% confidence level (Za = 1.96), a proportion (P) of 0.378 derived from previous research, and a margin of error (d) of 10%, the minimum required sample size was calculated as follows: $N = \{(Za^2 \times P \times (1-P)) / d^2\} = \{(1.96^2 \times 0.378 \times 0.622) / 0.01\} = 90$. Thus, the minimum adequate sample size for this study was determined to be 90 participants. A consecutive sampling method was used, in which subjects who met the inclusion criteria were recruited sequentially as they became available during the data collection period. This non-probability sampling technique is appropriate for observational studies and was chosen to ensure efficient recruitment and to facilitate the collection of relevant data in a practical and timely manner. By employing this method, the study aimed to achieve a representative sample from the FKIK UNTIRTA academic population to support the validity and generalizability of the findings.

Data collection in this study employed the JAKVAS, a validated tool designed to assess CHD risk in the Indonesian population. The data were then processed using IBM SPSS Statistics version 26.0 for its reliable and comprehensive statistical functions. Analysis was conducted in three stages. First, univariate analysis described the distribution of variables, including CHD risk levels (dependent variable) and individual risk factors (independent variables), producing descriptive statistics such as frequencies and percentages. Second, bivariate analysis examined the relationship between each risk factor and CHD risk level using the Chi-square test with a 95% confidence interval ($p < 0.05$). A significant p-value indicated a meaningful association, helping to identify individual risk factors directly linked to elevated CHD risk. Finally, multivariate analysis assessed the combined impact of multiple independent variables on CHD risk classification by entering them into a predictive model. This analysis determined the most influential factors contributing to increased CHD risk among the academic community at FKIK UNTIRTA. The use of a structured assessment tool like JAKVAS and advanced statistical software like SPSS ensured methodological rigor, accuracy, and reproducibility throughout the research process. The stepwise analytical approach also provided a clear understanding of both individual and combined risk factor contributions, which is essential for targeted prevention strategies. Overall, this methodology enabled the identification of key CHD risk determinants, offering valuable insights for early intervention and health promotion efforts within the academic setting.

This study involving human participants adhered to ethical standards and was approved by the appropriate institutional ethics committee. Ethical clearance was obtained prior to data collection to ensure participants' rights, safety, and dignity were protected. All participants received a thorough explanation of the study's purpose, procedures, and potential risks. Participation was voluntary, and informed consent was obtained in writing. The consent form detailed the study's nature and participants' rights, ensuring informed, non-coerced involvement. To maintain confidentiality, all data were anonymized and securely stored, with no personal identifiers linked to the dataset. Only the principal investigator had access to raw data, and results were reported in aggregate to prevent identification of individuals. Institutional approval was granted by the FKIK UNTIRTA Medical Study Program, and formal permission was obtained before conducting the research. These ethical measures were essential to ensure participant protection and research integrity.

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CODE OF HEALTH ETHICS

The Health Research Ethics Committee of the Faculty of Medicine, Universitas Sultan Ageng Tirtayasa, provided ethical approval for this study. (Approval number: No. 45 /UN43.20/KEPK/2025)

RESULTS

All 90 respondents from the FKIK UNTIRTA academic community at Campus A Pakupatan met the inclusion criteria and were included in the analysis to determine their characteristics.

Table 1. Distribution of Respondent Characteristics (N=90)

Characteristics	n	%
Gender		
Female	48	53.3
Male	42	46.7
Age (Years)		
≤34	70	77.8
35-39	5	5.56
40-44	4	4.44
45-49	3	3.33
50-54	3	3.33
55-59	5	5.56
60-64	-	0
Blood Pressure		
Normal	65	72.2
High-Normal	15	16.7
Hypertension Grade 1	7	7.8
Hypertension Grade 2	2	2.2
Hypertension Grade 3	1	1.1
Body Mass Index (BMI)		
13,79-25,99	65	72.2
26,00-29,99	22	24.4
30,00-35,58	3	3.3
Smoking History		
Never	70	77.8
Former smoker	8	8.9
Current smoker	12	13.3
Diabates Mellitus		
No	87	96.7
Yes	3	3.3
Physical Activity		
None	5	5.6
Low	36	40
Moderate	28	31.1
High	21	23.3
Total	90	100

Table 1. shows that among the 90 respondents, 48 were female (53.3%) and 42 male (46.7%). Most were aged ≤34 years (77.8%). Blood pressure measurements indicated that 72.2% had normal levels. BMI results showed 72.2% had a normal weight (BMI 13.79–25.99). Regarding smoking status, 77.8% had never smoked, 8.9% were former smokers, and 13.3% were active smokers. A total of 96.7% did not have diabetes. Physical activity levels varied: 5.6% reported none, 40% low, 31.1% moderate, and 23.3% high activity.

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Table 2. The relationship between CHD risk factors and CHD risk level based on JAKVAS (bivariate analysis) (N=90)

Variable	CHD Risk				N	%	p-value
	Low risk		Moderate-high risk				
	n	%	n	%			
Gender							
Female	46	51.13	2	2.22	48	53.3	**0.011**
Male	32	5.6	10	11.1	42	46.7	
Age							
≤49	77	85.6	7	7.78	84	93.4	**<.001**
>49	1	1.11	5	5.56	6	6.6	
Blood Pressure							
Normal	60	66.7	5	5.56	65	72.3	**0.011**
High Normal-Hypertension	18	20	7	7.78	25	27.7	
Body Mass Index							
<26,00	60	66.7	5	5.56	65	72.3	**0.011**
≥26,00	18	20	7	7.78	25	27.7	
Smoking History							
Never	66	73.3	4	4.44	70	77.7	**<.001**
Smoker	12	13.3	8	8.89	20	22.3	
Diabetes Mellitus							
No	78	86.7	10	11.1	88	97.8	**0.016**
Yes	0	0	2	2.2	2	2.2	
Physical Activity							
None-Low	35	38.9	7	7.8	42	46.7	**0.835**
Moderate-High	43	47.8	5	5.5	48	53.3	

Based on table 2, this study found several significant associations between risk factors and increased CHD risk based on JAKVAS. Age was significantly associated with CHD risk ($p < .001$), with individuals over 49 years showing a much higher proportion of moderate-to-high risk. Gender also showed a significant association ($p = 0.011$), where males had a higher CHD risk compared to females. Elevated blood pressure was significantly linked to increased CHD risk ($p = 0.011$), as was higher BMI, where individuals with BMI ≥26.00 (overweight/obese) had a greater proportion of moderate-to-high risk ($p < .001$). Smoking history emerged as a dominant risk factor ($p = 0.011$), with both current and former smokers showing higher CHD risk than non-smokers. DM was also significantly associated with CHD risk ($p = 0.016$), with diabetic respondents more likely to fall into moderate-to-high risk categories. In contrast, no significant association was found between physical activity and CHD risk ($p = 0.835$).

Table 3. Bivariate Analysis Results

Risk Factors	p-value
Gender	**0.011**
Age	**<.001**
Blood Pressure	**0.011**
BMI	**0.011**
Smoking History	**<.001**
DM	**0.016**
Physical Activity	**0.835**

Table 3. initial analysis showed that all risk factors were significantly associated with CHD risk ($p < 0.05$), except for physical activity ($p = 0.835$). However, physical activity was still included in the multivariate model due to its potential relevance to CHD risk, despite lacking significance in the bivariate analysis.

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Table 4. Multivariate Analysis Results

Variable	B	p-value	OR
BMI	1.900	0.014	6.685
Smoking History	2.671	<.001	14.458

A multivariate logistic regression was performed on seven identified variables to assess their association with CHD risk. Using backward elimination, non-significant variables were removed step by step to simplify the model and improve accuracy. The final model retained two significant predictors: BMI (p = 0.014, B = 1.900, OR = 6.685) and smoking history (p = <.001, B = 2.671, OR = 14.458) (Table 4). This indicates that BMI over 26.00 increases CHD risk by 6.7 times, and a history of smoking increases it by 14.4 times, assuming other variables are constant. The model showed good fit based on the Hosmer-Lemeshow test (p = 0.513), indicating no significant difference between observed and predicted values.

DISCUSSION

Based on the findings in this study, overall characteristics of respondents reflect the general condition of the productive-age population in an academic setting, marked by a relatively healthy lifestyle. However, several risk factors still require further promotive and preventive interventions. This study aligns with the findings of Siti Fadlilah et al., which state that age, sex, smoking behavior, and BMI are key factors strongly correlated with the risk of cardiovascular diseases, including CHD (13).

Gender is a key factor influencing CHD risk, as shown in this study. Of 90 respondents, 78 (86.7%) had low risk, while 12 (13.3%) had moderate to high risk. Women showed lower risk overall—46 out of 48 (51.1%) had low risk, with only 2 (2.2%) in the higher-risk category. In contrast, 10 of 42 men (11.1%) had moderate to high risk. This disparity is consistent with existing literature and may be due to both biological and behavioral factors. Estrogen in premenopausal women provides cardiovascular protection by improving HDL levels and maintaining vascular health. Men lack this hormonal benefit, making them more vulnerable to hypertension and atherosclerosis. Additionally, men are more likely to engage in unhealthy behaviors such as smoking, poor diet, inactivity, and unmanaged stress, which further increase CHD risk. Previous studies by Jamee et al., Traish, Yusvita & Nadya, and Fadilah et al. similarly found higher CHD risk in men, particularly in working-age groups (13–15). Even though some studies had unequal gender distribution, the near-equal male-female ratio in this research supports the conclusion that men consistently face higher CHD risk than women.

Age plays a significant role in determining CHD risk, as shown by data from 90 respondents in this study. Most participants (93.4%) were aged ≤49, with only 6.6% over 49. Among the younger group, 85.6% had low CHD risk, while only 7.8% were at moderate to high risk. In contrast, among those >49, 83.3% were at moderate to high risk, indicating a clear rise in CHD risk with age. Aging leads to functional and structural cardiovascular decline, making older adults more prone to conditions like atherosclerosis, hypertension, and diabetes. Postmenopausal women also face increased risk due to reduced estrogen protection. These age-related changes are often compounded by lifestyle factors and comorbidities, contributing to CHD. Previous studies, including by Fadilah et al. and Suprayoga & Handari, support this finding—showing that cardiovascular risk accumulates with age, regardless of other contributing factors. Thus, age remains an independent and critical risk factor for CHD (13,16).

This study found that blood pressure influences the increase of CHD risk. Among 90 respondents, 72.3% had normal blood pressure and 27.7% had elevated to high blood pressure. In the normal group, 66.7% had low CHD risk, while only 5.6% had moderate to high risk. Conversely, in the high blood pressure group, 28% had moderate to high risk, highlighting a strong link between hypertension and CHD. Elevated pressure increases cardiac workload and damages vessel walls, promoting atherosclerosis and raising the risk of heart attacks and strokes. In contrast, normal blood pressure supports better vascular function and lowers CHD risk. These findings align with studies by Kalumpiu et al. and Whelton et al., the latter showing that each 10 mmHg rise in systolic pressure increases cardiovascular risk by 53%. Thus, systolic blood pressure is a powerful predictor of long-term cardiovascular events, especially in older individuals (17,18).

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BMI significantly affects CHD risk, as shown in this study. Of 90 respondents, 72.3% had a BMI <26.00 and 27.7% had a BMI ≥26.00. In the lower BMI group, 66.7% had low CHD risk, while only 5.6% had moderate to high risk. In contrast, among those with BMI ≥26.00, 28% had moderate to high risk, indicating a clear link between higher BMI and increased CHD risk. BMI is also the most influential factor in the JAKVAS assessment in this study showed an odds ratio (OR) of 6.685. Excess weight, especially abdominal fat, contributes to CHD by raising LDL, lowering HDL, increasing blood pressure, and triggering systemic inflammation. Individuals with lower BMI generally have healthier metabolic profiles and lower risk for hypertension, diabetes, and cardiovascular disease. These findings align with studies by Khan et al., Fadilah et al., and Farahdika & Azam, which confirm that individuals with elevated BMI face significantly higher lifetime cardiovascular risk compared to those with normal BMI (13,19,20).

Smoking history significantly impacts CHD risk, as shown in this study. Of 90 respondents, 77.7% never smoked and 22.3% had a smoking history. Among non-smokers, 73.3% had low risk, while only 4.4% had moderate to high risk. In contrast, 40% of those with a smoking history fell into the moderate to high-risk category. Smoking emerged as one of the most influential risk factors based on JAKVAS scores. Statistical analysis from this study showed an OR of 14.458, indicating that individuals with a smoking history were over 10 times more likely to have a high CHD risk compared to non-smokers. The damaging effects of smoking such as endothelial dysfunction, increased blood pressure, arterial thickening, and accelerated plaque buildup contribute significantly to cardiovascular deterioration, making smoking a critical target for prevention (21).

DM significantly increases the risk of coronary heart disease (CHD), as shown in this study. Of 90 respondents, 97.8% had no history of DM, while 2.2% did. Among non-diabetics, 86.7% had low CHD risk, with 11.1% at moderate to high risk. In contrast, all respondents with DM (2.2%) fell into the moderate to high-risk category. DM contributes to CHD through chronic high blood glucose levels, which damage blood vessels, promote inflammation, and accelerate atherosclerosis. Diabetics face a 2–4 times higher risk of cardiovascular disease and account for up to 75% of deaths from its complications. These findings align with prior research from Einarso, et al. showing a strong link between DM and elevated cardiovascular risk (22). This study reinforces that individuals with DM are more likely to experience higher CHD risk than those without.

Physical activity plays a crucial role in influencing coronary heart disease (CHD) risk. In this study, 46.7% of respondents had low or no physical activity, while 53.3% were moderately to highly active. Among the less active group, 38.9% had low CHD risk and 7.8% had moderate to high risk. In contrast, among the more active group, 47.8% had low risk and only 5.5% had moderate to high risk. These findings suggest that lower physical activity levels are associated with higher CHD risk. Regular exercise helps control several CHD risk factors—such as weight, blood pressure, cholesterol, and blood sugar—by improving blood flow, heart muscle strength, and vascular flexibility. It also enhances insulin sensitivity and lipid profiles (increasing HDL, reducing LDL and triglycerides), thereby lowering cardiovascular risk. On the other hand, sedentary lifestyles increase the likelihood of obesity, hypertension, and insulin resistance. Studies, such as those by Warren et al. and Yusvita et al., show that prolonged inactivity is linked to higher cardiovascular mortality and increased CHD risk (23,24). However, this study showed a less significant relationship, possibly due to differences in measurement methods, population characteristics, or data collection approaches (e.g., primary interview-based vs. secondary medical records). Despite this, physical activity still indirectly affects CHD risk through its impact on other factors like BMI, blood pressure, and diabetes.

CONCLUSION

Based on the JAKVAS assessment, the majority of the FKIK UNTIRTA academic community has a low risk of CHD, with 86.7% falling into the low-risk category and 13.3% in the moderate to high-risk group. Significant associations were found between increased CHD risk and factors such as age, gender, blood pressure, BMI, smoking history, and DM. Specifically, individuals over 49 years old and males showed higher proportions of moderate to high CHD risk. Those with elevated blood pressure or classified as overweight or obese also had increased risk. Smoking history emerged as the most dominant risk factor, with smokers

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and former smokers exhibiting notably higher risk compared to non-smokers. Additionally, respondents with a history of DM were more likely to be in the moderate to high-risk category. Multivariate analysis identified BMI over 26.00 and smoking history as the most significant predictors of elevated CHD risk; overweight or obese individuals had over six times greater risk, while those with a smoking history had more than fourteenth times the risk compared to their counterparts. Given these findings, future research should aim for a more balanced and representative sample across age, gender, and health status to enhance the validity and generalizability of results. Furthermore, considering lifestyle and campus environmental factors in subsequent studies could provide a deeper understanding of their impact on cardiovascular health and support comprehensive CHD prevention efforts within the academic setting.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest

REFERENCES

1. World Health Organization. Cardiovascular diseases [Internet]. Geneva: World Health Organization; 2023. Available from: https://www.who.int/health-topics/cardiovascular-diseases
2. Komilovich EB. Coronary artery disease. Eur J Mod Med Pract. 2023;3(12):81–7. Available from: https://inovatus.es/index.php/ejmmp/article/view/2186
3. Wahidah W, Harahap R. PJK (Penyakit Jantung Koroner) VS SKA (Sindrome Koroner Akut): Prespektif Epidemiologi. Afiasi J Kesehat Masy. 2021;6(1):54–65. Available from: https://afiasi.unwir.ac.id/index.php/afiasi/article/view/135
4. Kementerian Kesehatan Republik Indonesia. Hasil Utama Riset Kesehatan Dasar (Riskesdas) 2018. Jakarta: Badan Penelitian dan Pengembangan Kesehatan; 2018.
5. Perhimpunan Dokter Spesialis Kardiovaskular Indonesia (PERKI). Laporan Tahunan 2020. Jakarta: PERKI; 2020.
6. Kementerian Kesehatan Republik Indonesia. Profil Kesehatan Indonesia Tahun 2023. Jakarta: Kementerian Kesehatan Republik Indonesia; 2023.
7. World Heart Federation. WHF Policy Brief on Physical Activity: More people, more active, more often for heart health [Internet]. Geneva: World Heart Federation; 2023 Oct 30. Available from: https://world-heart-federation.org/news/whf-policy-brief-on-physical-activity-more-people-more-active-more-often-for-heart-health/
8. American Heart Association. Understand your risks to prevent a heart attack [Internet]. Dallas: American Heart Association. Available from: https://www.heart.org/en/health-topics/heart-attack/understand-your-risks-to-prevent-a-heart-attack
9. Akhmad M, Arifin F, Leksmono F, Amir M. Comparison of Framingham, SCORE and Jakarta Cardiovascular Score to predict coronary atherosclerosis in stable angina patients. ASEAN Heart J. 2015;23(1):2. Available from: https://link.springer.com/article/10.7603/s40602-015-0002-z
10. Kusmana D. The influence of smoking cessation, regular physical exercise and/or physical activity on survival: a 13 years cohort study of the Indonesian population in Jakarta. Med J Indonesia. 2002;11(4):230.
11. Sawitri H, Maulina N. Coronary heart disease risk factors among academic workers based on the Jakarta Cardiovascular Score: A cross-sectional study. Narra J. 2023;3(2):e162.

https://doi.org/10.56303/jhnresearch.v4i2.440

12. Indonesian Heart Association. Abstracts of the 24th Annual Scientific Meeting of Indonesian Heart Association 2015 (24th ASMIHA) Jakarta, Indonesia, April 10th–12th, 2015. ASEAN Heart J. 2015;23(1):2. Available from: https://link.springer.com/article/10.7603/s40602-015-0002-z
13. Fadilah S, Sucipto A, Amestiasih T. Usia, jenis kelamin, perilaku merokok, dan IMT berhubungan dengan risiko penyakit kardiovaskular. J Keperawatan. 2019;11(4):261–8.
14. Jamee A, Abed Y, Jalambo MO. Gender difference and characteristics attributed to coronary artery disease in Gaza-Palestine. Glob J Health Sci. 2013;5(5):51.
15. Traish AM. Major cardiovascular disease risk in men with testosterone deficiency (hypogonadism): appraisal of short, medium and long-term testosterone therapy – a narrative review. Sex Med Rev. 2023;11(4):384–94.
16. Mi'raj Suprayoga I, Dyah Handari S. Correlation between Jakarta Cardiovascular Score and Coronary Artery Calcium Score in high-risk women at Siloam Hospital Surabaya, Indonesia, 2020–2021. Heart Sci J. 2023;4(2):13–7.
17. Kalumpiu JV, Herwana E, Yenny Y, Kurniasari K. Blood pressure, total cholesterol, and triglycerides associated with cardiovascular risk score in low 25-hydroxy vitamin D level among online motorcycle drivers, Jakarta, Indonesia. Glob Med Health Commun GMHC. 2024;12(1).
18. Whelton SP, McEvoy JW, Shaw L, Psaty BM, Lima JAC, Budoff M, et al. Association of normal systolic blood pressure level with cardiovascular disease in the absence of risk factors. JAMA Cardiol. 2020;5(9):1011.
19. Khan SS, Ning H, Wilkins JT, Allen N, Carnethon M, Berry JD, et al. Association of body mass index with lifetime risk of cardiovascular disease and compression of morbidity. JAMA Cardiol. 2018;3(4):280.
20. Farahdika A, Azam M. Faktor risiko yang berhubungan dengan penyakit jantung koroner pada usia dewasa madya (41–60 tahun) (studi kasus di RS Umum Daerah Kota Semarang). Unnes J Public Health. 2015;4(2):117–23.
21. Brown J, Gerhardt T, Kwon E. Risk factors for coronary artery disease. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024. Available from: https://www.ncbi.nlm.nih.gov/books/NBK554410/
22. Einarson T, Acs A, Ludwig C, Panton U. Prevalence of cardiovascular disease in type 2 diabetes: a systematic literature review of scientific evidence from across the world in 2007–2017. Cardiovasc Diabetol. 2018;17(1):83.
23. Warren TY, Barry V, Hooker SP, Sui X, Church TS, Blair SN. Sedentary behaviors increase risk of cardiovascular disease mortality in men. Med Sci Sports Exerc. 2010;42(5):879–85.
24. Yusvita F, Nandra NS. Gambaran tingkat risiko penyakit jantung dan pembuluh darah pada pekerja di PT.X. Univ Esa Unggul. 2018;15(2).

https://doi.org/10.56303/jhnresearch.v4i2.440