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CORRELATION BETWEEN CHEST PAIN AND PHYSICAL ACTIVITY IN PATIENTS WITH CORONARY HEART DISEASE: A STUDY AT H.BOEJASIN REGIONAL GENERAL HOSPITAL, TANAH LAUT REGENCY

(Korelasi Nyeri Dada dan Aktivitas Fisik pada Pasien Jantung Koroner:Studi di RSUD H. Boejasin Kabupaten Tanah Laut)

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ABSTRACT

Nyeri dada merupakan gejala utama pada pasien penyakit jantung koroner (PJK) yang berdampak pada keterbatasan aktivitas fisik dan menurunkan kualitas hidup. Penelitian ini bertujuan untuk mengidentifikasi hubungan antara tingkat nyeri dada dan aktivitas fisik pada pasien PJK di RSUD H. Boejasin Kabupaten Tanah Laut. Desain penelitian yang digunakan adalah kuantitatif korelasional dengan jumlah sampel sebanyak 94 pasien yang dipilih melalui purposive sampling. Pengukuran nyeri dada dilakukan menggunakan Numeric Rating Scale (NRS), sedangkan aktivitas fisik diukur dengan Global Physical Activity Questionnaire (GPAQ) dari WHO. Hasil penelitian menunjukkan mayoritas responden mengalami nyeri dada sedang (78,7%) dan melakukan aktivitas fisik ringan (74,5%). Analisis menggunakan uji Spearman rho menunjukkan adanya hubungan yang signifikan antara nyeri dada dan aktivitas fisik dengan nilai korelasi 0,649 (p < 0,05), yang berarti semakin tinggi tingkat nyeri dada, semakin rendah aktivitas fisik yang dilakukan pasien. Temuan ini menegaskan perlunya manajemen nyeri yang optimal pada pasien PJK guna mendukung peningkatan aktivitas fisik dan mencegah komplikasi yang lebih lanjut. Instrumen pengukuran yang terstandar seperti NRS dan GPAQ penting digunakan dalam praktik keperawatan untuk memantau kondisi pasien secara komprehensif.

Chest pain is a primary symptom in patients with coronary heart disease (CHD), often limiting physical activity and reducing quality of life. This study aimed to identify the relationship between chest pain intensity and physical activity among CHD patients at H. Boejasin District Hospital, Tanah Laut. A quantitative correlational design was employed, involving 94 patients selected by purposive sampling. Chest pain was measured using the Numeric Rating Scale (NRS), and physical activity was assessed with the Global Physical Activity Questionnaire (GPAQ) from WHO. The results showed that most respondents experienced moderate chest pain (78.7%) and engaged in light physical activity (74.5%). Spearman's rho test revealed a significant correlation between chest pain and physical activity (correlation coefficient 0.649; $p < 0.05$), indicating that higher levels of chest pain are associated with lower levels of physical activity. These findings highlight the importance of optimal pain management in CHD patients to support increased physical activity and prevent further complications. The use of standardized instruments such as NRS and GPAQ is crucial in nursing practice to monitor patients' conditions comprehensively.

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Introduction

Heart disease, particularly Coronary Heart Disease (CHD), is a type of degenerative disease categorized as a non-communicable disease (NCD) and is recognized as a leading cause of mortality worldwide. Specifically, four out of five deaths from cardiovascular disease are caused by heart attacks, with the majority occurring in individuals under the age of 70, thereby constituting premature mortality (World Health Organization, 2022). Each year, approximately 17.9 million people globally die from cardiovascular diseases, making them the foremost cause of death in both developed and developing countries.

In Indonesia, the burden of heart disease is also considerable. The Basic Health Research (Riskesdas, 2021) recorded around 651,481 deaths annually due to cardiovascular diseases, with 245,343 of these attributed to CHD. Furthermore, the 2022 Riskesdas indicated that heart disease remains a catastrophic illness, with the number of cases reaching 15.5 million people in Indonesia.

The rising incidence of CHD is evident not only at the national level but also regionally. In South Kalimantan Province, data from the Health Office demonstrated a significant increase in CHD cases over the past three years: from 12,712 cases in 2021, rising to 20,567 in 2022, and reaching 21,192 cases in 2023 (Kemenkes Kalimantan Selatan, 2023). This situation underscores that CHD is a major public health issue requiring ongoing intervention.

At the level of healthcare facilities, this regional trend is reflected in H. Boejasin Regional General Hospital, Tanah Laut Regency. Over the past three years, the number of CHD patients receiving care at this hospital has continued to increase: 102 patients in 2021, 211 patients in 2022, and 252 patients in 2023 (H. Boejasin Regional General Hospital, Tanah Laut Regency, 2023). This trend indicates that CHD at the district hospital level requires special attention, particularly for the continuous monitoring of chronic patients.

Clinically, CHD is often characterized by chest pain or discomfort in the chest area, especially during physical activities such as brisk walking, climbing stairs, or heavy labor. Chest pain in CHD typically occurs during activity and subsides with rest, serving as an important indicator for the diagnosis of angina pectoris or myocardial infarction (Ministry of Health of the Republic of Indonesia, 2019). Impaired blood flow due to CHD leads to decreased cardiac function and affects patients' ability to perform daily activities, even light ones (Kurnia & Sholikhah, 2020).

Moreover, chest pain in CHD patients has both physiological and psychological impacts. Sympathetic nervous system activation resulting from pain can increase heart rate, blood pressure, anxiety, and reduce quality of life. Without adequate management, chest pain may heighten the risk of serious complications, including sudden cardiac events (Potter & Perry, 2020).

Physical activity is one of the aspects most affected by the presence of chest pain in CHD patients. Those experiencing chest pain tend to limit their physical activity to avoid exacerbating symptoms, even though safe and measured physical activity is actually crucial for improving functional capacity and quality of life (Pescatello, 2020; WHO, 2022).

A preliminary study at H. Boejasin Regional General Hospital revealed that most CHD patients engage only in light physical activities, yet still experience moderate-intensity chest pain after exertion. This finding suggests a close relationship between chest pain and the level of physical activity among CHD patients, which requires systematic evaluation.

Given these circumstances, it is essential to investigate the relationship between physical activity and chest pain in patients with coronary heart disease. The findings of this study are expected to serve as a foundation for developing more targeted nursing interventions to enhance both the quality of life and the safety of daily activities for CHD patients.

Research Methodology

Research Design

This study employed a quantitative design with a cross-sectional approach. This design was chosen to examine the relationship between chest pain and physical activity among patients with coronary heart disease (CHD) simultaneously at a single point in time.

Population and Sample

The population in this study comprised all patients diagnosed with coronary heart disease who were registered at H. Boejasin Regional General Hospital, Tanah Laut Regency. The sample was obtained using a total sampling technique, thereby including all CHD patients who met the inclusion criteria during the study period as respondents. The final sample consisted of 94 participants. The inclusion criteria were as follows: patients who had been diagnosed with CHD for at least one year, were over 40 years of age, and were willing to participate as respondents.

Research Instruments

Data collection was conducted using two standardized instruments:

1. The level of chest pain was measured using the Numeric Rating Scale (NRS), a subjective scale assessing pain intensity from 0 (no pain) to 10 (severe pain). Validity testing of the NRS showed that all items had item-total correlation coefficients greater than 0.30, indicating validity. The reliability test demonstrated a Cronbach's alpha value of 0.87, which falls into the reliable category.
2. The level of physical activity was assessed using the Global Physical Activity Questionnaire (GPAQ) developed by the WHO. The GPAQ evaluates physical activity across three main domains: occupational activity, activity during commuting, and leisure-time activity. Validity testing of the GPAQ showed item-total correlation coefficients greater than 0.30 for all items, confirming validity, while the reliability test yielded a Cronbach's alpha value of 0.80, indicating the instrument is reliable.

Data Analysis

Data were analyzed univariately to describe respondent characteristics, chest pain levels, and physical activity levels. Bivariate analysis using the Spearman rho test was conducted to examine the relationship between chest pain and physical activity levels. Data processing was carried out using statistical software (SPSS version 26.0), with a significance level set at $p < 0.05$.

Ethical Considerations

This study received ethical approval from the Health Research Ethics Committee of Muhammadiyah University Banjarmasin. All respondents were provided with an explanation regarding the purpose and procedures of the study and were required to sign an informed consent form prior to completing the questionnaire. The confidentiality and privacy rights of all participants were maintained throughout the research process.

Result

A total of 94 patients with coronary heart disease (CHD) participated in this study. The characteristics of the respondents included a majority aged over 40 years and diagnosed with CHD for at least one year. All respondents met the inclusion criteria and consented to participate in the research.

1. **Level of Chest Pain**
   Based on the results of univariate analysis, most respondents reported moderate chest pain. A total of 74 respondents (78.7%) experienced moderate chest pain, while 20 respondents (21.3%) reported mild chest pain. No respondents were found to have severe chest pain in this study. The tabulation of chest pain levels is presented in Table 1.

Table 1. Frequency Distribution of Chest Pain Levels in CHD Patients (N=94)

No	Chest Pain Level in CHD	f	%
1.	Mild Pain	20	21.3
2.	Moderate Pain	74	78.7

2. **Level of Physical Activity**
   Analysis of physical activity levels showed that the majority of patients engaged in light physical activity. Seventy respondents (74.5%) were classified in the light physical activity category, while 24 respondents (25.5%) were in the moderate physical activity category. No respondents engaged in vigorous physical activity. The tabulation of physical activity levels is presented in Table 2.

Tablel 2. Frequency Distribution of Physical Activity in Coronary Heart Disease Patients

No	Physical Activity Level	f	%
1.	Light Physical Activity	70	74.5
2.	Moderate Physical Activity	24	25.5

3. **Relationship Between Chest Pain and Physical Activity**
   Bivariate analysis using the Spearman rho test showed a significant relationship between the level of chest pain and the level of physical activity in CHD patients ($r = 0.649$; $p < 0.05$). This result indicates that the higher the level of chest pain experienced by patients, the lower the level of physical activity performed. Conversely, patients with mild chest pain tended to be able to perform moderate physical activity. The cross-tabulation results are shown in Table 3.

Tabel 3. Cross-tabulation of the Relationship Between Chest Pain and Physical Activity in Coronary Heart Disease Patients at H. Boejasin Regional General Hospital, Tanah Laut Regency (N=94)

Chest Pain (X)	Physical Activity (Y)				Total		P Value
	Light Activity		Moderate Activity				
	n	%	n	%	N	%	
Mild Pain	4	20	16	80	20	100	0,000
Moderate Pain	66	89.2	8	10.8	74	100	
Total	70	74.5	24	25.5	94	100	

Discussion

The results of the study revealed that the majority of CHD patients (78.7%, n=74) experienced chest pain categorized as "moderate." Patients often described this pain as a sensation that required them to endure discomfort or prompted facial expressions of grimacing. The predominant manifestation of chest pain among respondents was stable angina pectoris, characterized by paroxysmal chest pain or discomfort occurring intermittently over prolonged periods, with the frequency, duration, and intensity of symptoms remaining consistent with previous episodes. Stable angina pectoris is typically triggered by physical activity or emotional stress and subsides with rest or administration of nitrates (Black & Hawk, 2024). The pain may be localized in the chest, jaw, shoulders, back, or arms and is associated with reduced myocardial blood flow without accompanying cardiac cell damage.

Further analysis by age showed that among the 29 respondents in the 45–50-year age group, 6 experienced mild pain and 23 experienced moderate pain. This finding aligns with the study by Br Silitonga (2023), which indicated a relationship between age and pain complaints, with most respondents (94.3%, n=66) being 30 years or older. Clinically, the electrocardiogram (ECG) findings in CHD patients are often nonspecific, although ST segment depression may indicate myocardial ischemia. In addition to chest pain, common CHD symptoms include shortness of breath, irregular heartbeat, dizziness, prolonged fatigue, abdominal pain, nausea, and vomiting. The determination of clinical manifestations of CHD requires a comprehensive examination, including clinical evaluation, medical history, physical examination, electrocardiography, chest X-ray, and cardiac enzyme tests (Hermawati and Dewi, 2019).

The risk factors for CHD are classified into two categories: non-modifiable and modifiable. Non-modifiable risk factors include heredity (including race), age, and sex. Individuals with a family history of CHD are at higher risk due to genetic predisposition to hypertension, dyslipidemia, diabetes, and obesity (Black and Hawks, 2018). The risk of CHD increases with age, with the highest prevalence among patients over 45 years, although cases are also observed in younger groups (15–24 years). Patients over 45 years of age tend to experience decreased organ function, making them more vulnerable to CHD, while those over 65 years are at higher risk of severe CHD due to plaque buildup and fragility of blood vessel walls (Ministry of Health, Republic of Indonesia, 2022). In terms of gender, males have a greater likelihood of experiencing heart attacks at a younger age compared to females. However, the risk in females increases two to threefold after menopause due to the loss of estrogen's protective effect against atherosclerosis during reproductive years.

This study also revealed that most respondents (74.5%, n=70) engaged in "light" physical activity. This tendency was attributed to the experience of chest pain, which limited their ability to perform moderate or vigorous physical activities. Light physical activity is defined as activity that requires minimal energy expenditure and does not cause significant changes in the respiratory system (Ministry of Health, 2020). CHD patients tend to restrict their physical activity to avoid exacerbation of symptoms. In general, physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure, including occupational, recreational, household, and travel-related activities.

CHD patients may be unable to tolerate certain physical activities, such as strenuous or competitive exercise, and may even struggle with light activities over prolonged periods. This is due to coronary artery obstruction, which reduces blood flow to the heart, triggering fatigue, shortness of breath, or even acute cardiac events. Therefore, cardiac rehabilitative exercise programs are crucial for improving the quality of life in CHD patients. These findings are consistent with research by Nabilah Nurilmi Diah (2020), who reported that more than half of respondents engaged in light physical activity, with the majority being over 50 years of age and male.

Inadequate physical activity, particularly lack of exercise, can worsen atherosclerosis. Conversely, regular exercise can mitigate atherosclerosis by increasing high-density lipoprotein (HDL) levels, reducing low-density lipoprotein (LDL), triglycerides, and blood glucose, as well as enhancing insulin sensitivity, lowering blood pressure, and reducing body mass index (Lilly, 2022). CHD patients tend to choose light physical activity due to its minimal impact on sweating and its negligible effect on increasing heart rate.

The results of the Spearman rho correlation test ($r=0.649$, $p<0.001$) indicated a positive relationship of moderate strength between chest pain and physical activity among CHD patients. This finding suggests that the higher the level

of chest pain experienced (moderate category), the greater the tendency for patients to engage in light physical activity. This is attributable to patients' perception that chest pain necessitates rest and avoidance of moderate or vigorous physical activity. Typical signs and symptoms of CHD, such as chest pain or a pressing sensation lasting more than 20 minutes during activity or at rest, are often accompanied by cold sweats, weakness, nausea, and dizziness (Ministry of Health, 2020).

This study also suggests that excessive physical activity may increase the risk of chronic CHD by placing additional strain on the heart. This is supported by research by Sofi et al. (2017), which found that excessive physical activity can cause inflammation in blood vessels, increase the risk of thrombosis and ischemia, and serve as a trigger for the pathophysiology of CHD. The relationship between chest pain and physical activity indicates that chest pain limits the ability of CHD patients to perform optimally, prompting them to choose light activities more frequently in order to avoid rapid increases in heart rate.

Nursing evaluations for CHD patients should include assessment of the patient's response to pain, aiming to reduce pain and enhance patient understanding of pain management. Expected outcomes following nursing interventions include the patient's ability to identify pain triggers, regularly monitor symptoms, use preventive measures, and manage pain both with and without analgesics as recommended (Nuratif & Kusuma, 2018). The majority of respondents in this study reported moderate pain and attempted to manage their pain independently.

Nonetheless, this study has several limitations. The use of a correlational design restricts the ability to draw causal conclusions. The total sampling technique may be less representative compared to more complex sampling methods designed to obtain a larger respondent pool. In addition, data collection relying solely on questionnaires could be enhanced by in-depth interviews for validation and further exploration of responses. The scope of the study, limited to a single public hospital, also restricts the generalizability of the findings.

Conclusion

The results of the study showed that the level of chest pain among coronary heart disease (CHD) patients was predominantly in the moderate category, with 74 patients (78.7%) experiencing moderate chest pain. Additionally, physical activity levels among CHD patients were mostly classified as light, with 70 patients (74.5%) engaging in light physical activity.

There was a significant relationship between chest pain and physical activity among coronary heart disease patients at H. Boejasin Regional General Hospital, Tanah Laut Regency, as indicated by the Spearman rho test result of 0.649, reflecting a moderate correlation. The significance level of the Spearman rho test was 0.000, which is less than 0.05, indicating statistical significance.

These findings suggest that healthcare professionals should prioritize pain management for patients to prevent further complications. Early intervention may lead to better cardiac rehabilitation outcomes.

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Conflict of Interest

The researcher declares that there are no conflicts of interest, whether financial, personal, or professional, in the conduct and reporting of this study. All stages of the research—from design, data collection, and analysis to manuscript preparation—were carried out independently, without any intervention or influence from any parties that could affect the research outcomes. The researcher also did not receive any funding or special support from

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Credit Author Statement

Solikin contributed to the research design, data collection, as well as the analysis and interpretation of results. Zea Maysita was responsible for developing the research instruments, data validation, and drafting the methodology section. Nurhikmah contributed to the literature review, manuscript writing, and final editing of the manuscript. All authors have read and approved the final version of the manuscript for publication.

References

Andarmoyo, S. (2019). *Konsep dan proses keperawatan nyeri*. Yogyakarta: AR-Ruzz.

Ariastuti, N. L. P., Candra, G. N. H., & Swastini, D. A. (2024). Profil faktor risiko penyakit jantung koroner pada kelompok dewasa muda. *Journal of Language and Health, 5*(2), 787–794. https://doi.org/10.37287/jlh.v5i1.4046

Ardiyanto, D., & Mustafa, P. S. (2021). Upaya mempromosikan aktivitas fisik dan pendidikan jasmani via sosio-ekologi. *Jurnal Pendidikan: Riset dan Konseptual, 5*(2), 169–177.

Black, J. M., & Hawks, J. H. (2018). *Medical-Surgical Nursing: Clinical Management for Positive Outcomes* (9th ed.). St. Louis: Elsevier.

Br Silitonga, S. S., & Utami, T. N. (2023). Hubungan Usia dan Lama Kerja dengan Keluhan Nyeri Punggung Bawah pada Nelayan di Kelurahan Belawan II. *Prepotif : Jurnal Kesehatan Masyarakat*, *5*(2), 926–930. https://doi.org/10.31004/prepotif.v5i2.2194

Erdania, E., Faizal, M., & Anggraini, R. (2023). Faktor-faktor yang berhubungan dengan kejadian penyakit jantung koroner (PJK) di RSUD Dr. (H.C.) Ir. Soekarno Provinsi Bangka Belitung tahun 2022. *Jurnal Keperawatan, 12*(1), 17–25. https://doi.org/10.47560/kep.v12i1.472

Iskandar, H., Hadi, A., & Alfridsyah. (2017). Faktor risiko terjadinya penyakit jantung koroner pada pasien Rumah Sakit Umum Meuraxa Banda Aceh. *Jurnal Action: Aceh Nutrition Journal.*

Kurnia, A. D., & Sholikhah, N. (2020). Hubungan antara tingkat aktivitas fisik dengan tingkat depresi pada penderita penyakit jantung. *Jurnal Kesehatan Mesencephalon, 6*(1).

Kemenkes. (2019). *Pedoman Pencegahan dan Pengendalian Penyakit Jantung Koroner*. Jakarta: Kemenkes RI.

Kemenkes. (2020). *Kenali lebih dekat tanda-tanda penyakit jantung koroner*. Pusat Promosi Kesehatan Direktorat Pencegahan dan Pengendalian Penyakit Tidak Menular. https://p2ptm.kemkes.go.id/infographic-p2ptm/penyakit-jantung/kenali-lebih-dekat-tanda-tanda-penyakit-jantung-koroner

LeMone, P., Burke, K. M., & Bauldoff, G. (2019). *Keperawatan medikal bedah* (Alih bahasa). Jakarta: EGC.

Lilly, L. S. (2022). *Pathophysiology of Heart Disease: A Collaborative Project of Medical Students and Faculty* (7th ed.). Philadelphia: Wolters Kluwer.

Marlinda, R., Dafriani, P., & Irman, V. (2020). Hubungan pola makan dan aktivitas fisik dengan penyakit jantung koroner. *Jurnal Kesehatan Medika Saintika, 11*(2).

Nafisah, S., Inayah, N. N., & Yusuf, B. (2024). Literatur review: Penyebab dan perkembangan penyakit jantung koroner. *Jurnal Forum Kesehatan: Media Publikasi Kesehatan Ilmiah, 14*(1), 27–36. https://doi.org/10.52263/jfk.v14i1.254

Nuratif, R. M., & Kusuma, A. (2018). *Asuhan Keperawatan pada Klien dengan Gangguan Sistem Kardiovaskular*. Yogyakarta: CV Andi Offset.

Pescatello, L. S. (Ed.). (2020). *ACSM's guidelines for exercise testing and prescription* (11th ed.). Wolters Kluwer.

Potter, P. A., & Perry, A. G. (2020). *Fundamentals of nursing: Fundamental keperawatan* (Edisi 7). Jakarta: Salemba Medika.

Riskesdas. (2022). *Hasil utama Riset Kesehatan Dasar tahun 2022*. Badan Penelitian dan Pengembangan Kesehatan Kementerian RI. http://www.depkes.go.id/resources/download/infoterkini/materi_rakorpop_2018/Hasil%20Riskesdas%2022.pdf

Sawu, S. D. (2022). Faktor risiko dominan penyakit jantung koroner akut pada pasien rawat inap di rumah sakit. *Syntax Literate: Jurnal Ilmiah Indonesia, 7*(1), 465. https://doi.org/10.36418/syntax-literate.v7i1.5784

Sofi, F., Capalbo, A., Cesari, F., Abbate, R., & Gensini, G. F. (2017). Physical activity during leisure time and primary prevention of coronary heart disease: An updated meta-analysis of cohort studies. *European Journal of Cardiovascular Prevention & Rehabilitation, 15*(3), 247–257. https://doi.org/10.1097/HJR.0b013e3282f232ac

Triyono, D., Liani, R., Utami, A. W., Tristiyanti, S., & Supriatna, A. (2025). Penyakit jantung koroner di Indonesia: Peran faktor risiko dan upaya pencegahan. *Humanis: Jurnal Ilmu-Ilmu Sosial dan Humaniora, 17*(1), 86–94. https://doi.org/10.52166/humanis.v17i01.8798

Toka, W. D. (2024). Deteksi dini penyakit jantung koroner melalui pemeriksaan rekam jantung pada sivitas akademika Universitas Khairun. *Jurnal Kreativitas Pengabdian Kepada Masyarakat (PKM), 7*(6), 2447–2454.

https://doi.org/10.33024/jkpm.v7i6.14453
World Health Organization. (2022). *Cardiovascular diseases*. https://www.who.int/health-topics/cardiovascular-diseases
World Health Organization. (2003). *The burden of musculoskeletal conditions at the start of the new millennium* (WHO Technical Report Series 919). http://apps.who.int/iris/bitstream/handle/10665/42721/WHO_TRS_919
World Health Organization. (2004). *The global burden of disease: 2004 update*. https://www.who.int/healthinfo/global_burden_disease/2004_report_update/en/