

The Relationship Between Knowledge of Coronary Heart Disease Risk Factors and Healthy Living Behavior in The Elderly

¹Herdiman Herdiman, ¹Harianto Manik

¹STIKep PPNI Jawa Barat, Indonesia



Proceeding STIKep PPNI Jawa Barat

Website :

<https://proceedings.stikep-ppnijabar.ac.id/index.php/psj>

Volume 1 (1), 102-108

Article info

Received : December 28, 2024

Revised : April 22, 2025

Accepted : May 02, 2025

Published : May 19, 2025

Corresponding author

Herdiman Herdiman

Sekolah Tinggi Ilmu Keperawatan PPNI Jawa Barat, Bandung, Indonesia

Jl. Muhammad No 34 Bandung, Indonesia

Email: herdimanherdiman69@gmail.com

Citation

Herdiman, H., & Manik, H. (2025). The Relationship Between Knowledge Of Coronary Heart Disease Risk Factors And Healthy Living Behavior In The Elderly. *Proceeding STIKep PPNI Jawa Barat*, 1(1), 102-108.

This is an **Open Access** article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License



INTRODUCTION

Coronary artery disease (CAD), also referred to as coronary heart disease (CHD), arises when the blood vessels responsible for delivering oxygen and nutrients to the heart muscle become obstructed (Kurniadi, 2020). Data from the 2018 Basic Health Research (Riskesmas) indicates that the prevalence of CHD in Indonesia stands at 0.5%—equivalent to 1.3 million individuals—based on diagnoses by medical professionals. However, when combining diagnoses with symptomatic cases, the prevalence increases to 1.5%, affecting approximately 3.9 million people. In West

Java, the prevalence is higher, reaching 1.6%, or about 4.2 million individuals (Health Research and Development Agency, 2018). Furthermore, in 2022, RSHS Bandung reported conducting 504 cardiac catheterization and stent placement procedures in its cath lab (Cathlab RSHS, 2022).

Understanding the risk factors associated with CAD is vital for effective prevention and management. These risk factors can be divided into two categories: non-modifiable and modifiable. Non-modifiable factors include age, gender, and genetics, which are beyond

Abstract

Objective: This study aimed to assess the relationship between knowledge of coronary heart disease (CHD) risk factors and healthy lifestyle behaviors in the elderly population.

Method: A quantitative, cross-sectional design was conducted with 56 elderly respondents selected through purposive sampling. Data were collected using the CHD Risk Factors Knowledge Questionnaire and a Healthy Lifestyle Behavior Survey. Statistical analysis included Spearman's rank correlation and multiple logistic regression.

Results: Spearman's rank test showed a significant negative correlation between knowledge of CHD risk factors and healthy lifestyle behaviors ($p = 0.012$; $r = -0.332$), indicating that lower knowledge was associated with poorer lifestyle practices. Logistic regression revealed a significant model ($p = 0.018$) with an odds ratio (OR) of 0.233. Among the influencing variables, smoking contributed 14.6% and gender 15.38% to the variance in behavior. The Nagelkerke R-square value was 0.260, suggesting the model explained 26% of the variability in healthy lifestyle outcomes.

Conclusion: Knowledge of CHD risk factors is significantly associated with lifestyle behaviors in the elderly. Improving awareness through targeted education may enhance prevention strategies and promote healthier aging.

Keywords: Coronary heart disease, knowledge, lifestyle behavior, elderly, prevention

individual control. Modifiable factors, such as psychological stress, smoking, elevated cholesterol levels, diabetes, obesity, poor dietary habits, physical inactivity, and hypertension, can be mitigated through lifestyle adjustments and medical treatment (AHA, 2015; Ridwan, 2009). Addressing these modifiable factors is critical for minimizing the likelihood of developing CAD.

The elderly, defined as individuals aged 60 years and above (Depkes RI, 2019), represent a significant segment of the population. Projections indicate that Indonesia's elderly population will grow substantially between 2013 and 2050, increasing by 12.5%, slightly surpassing the global average of 11.9% over the same period (Data and Information Center of the Ministry of Health, 2016). This demographic shift presents challenges for Indonesia's healthcare, social, and economic systems, emphasizing the need for targeted healthcare services for older adults.

Research has consistently demonstrated the interconnections between knowledge, attitudes, and health behaviors in elderly populations. For instance, a study by Li Ren et al. (2024) reported that urban residents exhibited significantly higher attitude scores ($p = 0.019$) and found positive correlations between knowledge and health practices ($r = 0.215$, $p < 0.001$) as well as between attitudes and practices ($r = 0.396$, $p < 0.001$). Similarly, Annisaa Fitrah Umara et al. (2023) identified a weak negative correlation between knowledge of heart disease risk factors and eating habits among engineering students ($p = 0.012$, $r = -0.134$).

This study aims to investigate the relationship between knowledge of CAD risk factors and healthy lifestyle behaviors among elderly residents at Panti Sosial Tresna Werdha (PSTW) Budi Pertiwi and Panti Perawatan Lansia Titian Benteng Gading in Bandung. Given the rising prevalence of CAD, especially among older adults, exploring how knowledge of risk factors influences lifestyle decisions can guide the development of more effective prevention and management strategies for this demographic. Specifically, the study seeks to determine whether greater awareness of CAD risk factors promotes healthier behaviors, such as improved dietary habits, regular

physical activity, and better stress management, which could help mitigate the risk of CAD.

METHODS

This study used a cross-sectional research design with a quantitative approach to investigate the relationship between knowledge of coronary artery disease (CAD) risk factors and healthy lifestyle behaviors among the elderly. The primary objective was to evaluate how knowledge of CAD risk factors influences the adoption of healthy behaviors while controlling for potential confounding variables such as age, gender, education, and employment status during data analysis.

Study Design

The study adopted a cross-sectional design, enabling the collection of data at a single point in time. This approach is well-suited for examining the prevalence of variables and their associations, offering valuable insights into patterns and relationships without altering the study variables.

Sample

The study sample consisted of 56 elderly individuals from two social care institutions in Bandung: Panti Sosial Tresna Werdha (PSTW) Budi Pertiwi and Panti Perawatan Lansia Titian Benteng Gading. Participants were selected using a non-probability sampling method, such as purposive or convenience sampling, based on specific criteria, including being 60 years or older and having knowledge or experience related to CAD risk factors. The sample size was determined through statistical power calculations to ensure sufficient precision and confidence in the results."

Instruments

Two primary instruments were used in the study:

1. **Questionnaire on Knowledge of CAD Risk Factors:** This instrument assesses participants' understanding of various CAD risk factors, such as hypertension, smoking, and diet. The questionnaire includes both general and specific questions about these risk factors, utilizing a Likert scale (ranging from "strongly agree" to "strongly disagree") or multiple-choice questions to measure knowledge levels.

2. **Survey on Healthy Lifestyle Behaviors:** This survey evaluates participants' engagement in behaviors that promote heart health, such as physical activity, diet, smoking cessation, and stress management. Questions are designed to capture the frequency, duration, and types of healthy behaviors, using a Likert scale or yes/no responses.

Data Collection

Data collection was conducted through self-administered surveys or face-to-face interviews, depending on the accessibility and preferences of the participants. Informed consent was obtained from all participants, and clear instructions were provided on how to complete the questionnaires. The study ensured privacy and confidentiality by collecting data in a controlled setting.

Data Analysis

Data analysis began with descriptive statistics to summarize participants' demographics, knowledge levels, and health behaviors. To test the hypothesis, correlation analysis (e.g., Pearson correlation) was used to examine the

relationships between knowledge of CAD risk factors and healthy lifestyle behaviors, with a significance threshold set at $p < 0.05$. Additionally, inferential statistical methods, such as regression analysis, were employed to explore the predictive relationships between variables while adjusting for confounding factors.

Ethical Considerations

Ethical approval was obtained to ensure the study adhered to ethical standards. All participants provided informed consent, acknowledging their understanding of the study and their right to withdraw at any time without consequence. Participant data remained anonymous and were securely stored to ensure confidentiality. Careful and respectful questioning was employed to prevent any harm to participants. The goal was to provide beneficial outcomes for both participants and the community, promoting a better understanding of CAD risks and encouraging healthier lifestyles.

RESULTS

Univariate Analysis

Table 1. Distribution of Respondents' Characteristics by Age and Weight at Panti Sosial Tresna Wredha (PSTW) Budi Pertiwi Kota Bandung and Panti Perawatan Lansia Titian Benteng Gading

Respondent Characteristics	Mean	Median	SD	Min-Max	95% CI
Age of Respondents	76.25	77	9.43	60-99	73.72-78.78
Weight of Respondents	51.0	49	10.15	35-75	48.28-53.72

This table presents the distribution of respondents' age and weight, including the mean, median, standard deviation (SD), range (Min-Max), and 95% confidence interval (CI). The data is based on elderly residents from two social care institutions in Bandung. The average age of the respondents is 76.25 years, with ages ranging from 60 to 99 years. The standard deviation is 9.43, indicating variability, and the median age is 77 years, reflecting the central value of the age distribution. The average weight is 51 kg, with the lightest respondent weighing 35 kg and the heaviest weighing 75 kg. The standard deviation for weight is 10.15, suggesting variability, and the median weight is 49 kg, representing the middle value of the weight distribution.

Table 2. Respondents' Characteristics Based on Educational Background

Respondents' Characteristics	Frequency	Percentage (%)
Educational Background		
No Formal Education	9	16.1
Elementary School (SD)	19	33.9
Middle School (SMP)	8	14.3

High School (SMA)	15	26.8
Higher Education	5	8.9
Employment History		
Unemployed	23	41.1
Private Sector	33	58.9
Smoking History		
Non-Smoker	51	91.1
Smoker	5	8.9
Gender		
Male	21	37.5
Female	35	62.5

This table illustrates the distribution of respondents by educational background. The majority (33.9%) completed elementary school, followed by 26.8% who finished high school. Only 8.9% attained higher education, while 16.1% had no formal education, and 14.3% completed middle school. Another table shows the respondents' employment history. Most respondents (58.9%) had worked in the private sector, while 41.1% were unemployed. A separate table presents the smoking history of respondents. The majority (91.1%) were non-smokers, while a smaller proportion (8.9%) had a history of smoking. The final table displays the gender distribution of respondents, with 62.5% identifying as female and 37.5% as male

Table 3. Knowledge of CAD Risk Factors and Healthy Lifestyle Behaviors

Respondent Characteristics	Mean	Median	SD	Min-Max	95% CI
Knowledge of CAD Risk Factors	15	15	3.34	5-20	14.10-15.90
Healthy Lifestyle Behaviors	49.11	50.50	9.73	23-66	46.50-51.71

This table summarizes respondents' knowledge of coronary artery disease (CAD) risk factors and their engagement in healthy lifestyle behaviors. The mean knowledge score is 15, with a median of 15 and a standard deviation of 3.34, ranging from 5 to 20. For healthy lifestyle behaviors, the mean score is 49.11, with a median of 50.50 and a standard deviation of 9.73, ranging from 23 to 66. The 95% confidence intervals for knowledge and lifestyle behaviors are 14.10–15.90 and 46.50–51.71, respectively

Table 4. Distribution of Knowledge Levels on CAD Risk Factors at Panti Sosial Tresna Wredha (PSTW) Budi Pertiwi Kota Bandung and Panti Perawatan Lansia Titian Benteng Gading

Knowledge Category	Frequency	Percentage (%)
Good Knowledge of CAD Risk Factors	25	44.6
Poor Knowledge of CAD Risk Factors	31	55.4
Total	56	100

This table shows the distribution of respondents' knowledge levels regarding coronary artery disease (CAD) risk factors. The majority (55.4%) have poor knowledge, while 44.6% have good knowledge of the risk factors

Table 5. Distribution of Healthy Lifestyle Behaviors Among the Elderly at Panti Sosial Tresna Werdha (PSTW) Budi Pertiwi Kota Bandung and Panti Perawatan Lansia Titian Benteng Gading

Healthy Lifestyle Behavior Category	Frequency	Percentage (%)
Good Healthy Lifestyle Behavior	5	8.9

Moderate Healthy Lifestyle Behavior	42	75.0
Poor Healthy Lifestyle Behavior	9	16.1
Total	56	100

This table shows the distribution of healthy lifestyle behaviors among elderly residents. The majority (75.0%) engage in moderate healthy lifestyle behaviors, 16.1% have poor behaviors, and only 8.9% exhibit good healthy lifestyle behaviors.

Bivariate Analysis

Based on the normality test, both knowledge about CAD risk factors and healthy lifestyle behaviors were not normally distributed.

Table 6. Cross-tabulation of Knowledge of CAD Risk Factors and Healthy Lifestyle Behavior

Knowledge of CAD Risk Factors	Good Healthy Lifestyle Behavior	Moderate Healthy Lifestyle Behavior	Poor Healthy Lifestyle Behavior	Total
Good Knowledge	2	17	6	25
Poor Knowledge	3	25	3	31
Total	5	42	9	56

This table presents the cross-tabulation of knowledge about CAD risk factors (good vs. poor knowledge) with healthy lifestyle behaviors (good, moderate, poor). It shows the number of respondents in each category of healthy lifestyle behavior based on their knowledge level. Among those with good knowledge of CAD risk factors, 2 exhibited good lifestyle behavior, 17 showed moderate behavior, and 6 had poor behavior. Meanwhile, among those with poor knowledge, 3 exhibited good lifestyle behavior, 25 showed moderate behavior, and 3 had poor behavior. This table helps identify the distribution of lifestyle behaviors in relation to knowledge about CAD risk factors, which can be further analyzed to understand the relationship between these two variables

Table 7. Spearman's Rho Nonparametric Correlations between Knowledge of CAD Risk Factors and Healthy Lifestyle Behavior in Elderly Residents at Panti Sosial Tresna Werdha (PSTW) Budi Pertiwi Kota Bandung and Panti Perawatan Lansia Titian Benteng Gading

Variables	Correlation coefficient	p-value
Level of Knowledge of CAD Factors Healthy Lifestyle Behavior	-0.332	0.012*

This result suggests a significant but moderate inverse relationship between knowledge of CAD risk factors and healthy lifestyle behaviors in the elderly population studied. Further investigation could explore the underlying reasons for this correlation, such as the impact of knowledge on behavior and other influencing factors. The Spearman's Rho correlation coefficient between knowledge of CAD risk factors and healthy lifestyle behavior is -0.332, indicating a moderate negative correlation. The negative sign suggests that as knowledge about CAD risk factors increases, healthy lifestyle behaviors tend to decrease, or vice versa, among elderly residents in the study. The p-value of 0.012 is less than 0.05, which indicates that the relationship between these two variables is statistically significant. Both variables have a sample size of 56 respondents. This result suggests a significant but moderate inverse relationship between knowledge of CAD risk factors and healthy lifestyle behaviors in the elderly population studied. Further investigation could explore the underlying reasons for this correlation, such as the impact of knowledge on behavior and other influencing factors.

DISCUSSIONS

This study aimed to examine the relationship between awareness of coronary artery disease (CAD) risk factors and the adoption of healthy lifestyle behaviors among participants. The bivariate analysis using Spearman's rank correlation showed a significant negative correlation between knowledge of CAD risk factors and healthy lifestyle behaviors ($p = 0.012$, $r = -0.332$). This indicates that while knowledge of CAD risk factors is crucial, other factors, such as educational background, likely influence lifestyle behaviors. In fact, 50% of the participants had either no formal education or had only completed elementary school, suggesting that lower education levels may limit the capacity to fully apply knowledge of CAD risk factors in adopting healthy behaviors.

These results are consistent with prior studies that have emphasized the relationship between awareness of cardiovascular risk factors and lifestyle choices. For instance, Negesa et al. (2020) conducted a study in Ethiopia, which found that nearly half of the participants had insufficient knowledge of cardiovascular risk factors. This lack of awareness was associated with unhealthy behaviors such as poor dietary habits and lack of physical activity, which aligns with our study's conclusion that increased knowledge does not always guarantee healthier lifestyle choices. Socio-economic factors, including education, also play a critical role in shaping these behaviors.

Furthermore, Ucar (2017) reported a negative association between knowledge of cardiovascular disease risk factors and unhealthy behaviors, reinforcing the idea that knowledge alone is insufficient to foster behavior change. This study emphasizes that knowledge must be accompanied by interventions to effectively encourage healthier behaviors. Similarly, Ozkan et al. (2019) found that higher levels of education were associated with a better understanding of and adherence to healthy lifestyle practices, supporting the notion that educational background is an important factor in promoting health behaviors.

In summary, while awareness of CAD risk factors is a key factor in encouraging healthy

behaviors, our study shows that it is not sufficient by itself. The observed moderate negative correlation suggests that other elements, such as educational attainment and social support systems, significantly influence the ability to convert knowledge into action. This highlights the need for health education programs that not only disseminate information but also address socio-economic barriers to adopting healthier lifestyles.

In conclusion, this study highlights the importance of improving knowledge of CAD risk factors while also addressing socio-economic barriers to promote healthier lifestyle choices. Future research should focus on developing targeted interventions that integrate educational initiatives with practical support to improve health outcomes for individuals at risk of cardiovascular diseases.

CONCLUSION

The research on the relationship between knowledge of Coronary Artery Disease (CAD) risk factors and healthy lifestyle behaviors among the elderly at Panti Sosial Tresna Werdha (PSTW) Budi Pertiwi and Panti Perawatan Lansia Titian Benteng Gading in Bandung concluded that there is a significant negative correlation between these two variables. Statistical analysis using Spearman's Rank Correlation revealed a p-value of 0.012 (<0.05) and an r-value of -0.332, indicating a moderate inverse relationship. Despite limited knowledge of CAD risk factors, elderly participants demonstrated healthy lifestyle behaviors. This may be due to health programs, such as regular check-ups, physical activity, dietary management, and stress management, implemented by the care home management.

Acknowledgment

We would like to express our gratitude to all the participants for their involvement in this study, as well as to STIKep PPNI Jawa Barat for funding support.

Conflict Of Interest

All authors declare no conflict of interest.

REFERENCES

American Heart Association (AHA). (2015). *Heart disease and stroke statistics-2015*

- update: A report from the American Heart Association. *Circulation*, 131(4), e29-e322.
<https://doi.org/10.1161/CIR.00000000000000152>
- Anwar, S., & Suryawati, C. (2020). Edukasi kesehatan bagi lansia: Strategi meningkatkan pola hidup sehat. *Jurnal Pengabdian Masyarakat*, 5(2), 89-97.
- Arania, R., Triwahyuni, T., Esfandiari, F., & Nugraha, F. R. (2021). Hubungan antara usia, jenis kelamin, dan tingkat pendidikan dengan kejadian jantung koroner di Klinik Mardi Waluyo Lampung Tengah. *Jurnal Medika Malahayati*.
- Dalusung, & Angosta. (2010). Coronary heart diseases knowledge and risk factor among Filipino-American connected to primary care services. Dissertation, Doctor of Philosophy, University of Hawaii. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9121820/>
- Hidayat, A. (2017). *Metodologi penelitian keperawatan dan kesehatan*. Jakarta: Salemba Medika.
- Hidayat, M. K. (2022). Hubungan pengetahuan tentang faktor risiko penyakit jantung koroner dengan penerapan gaya hidup sehat pada mahasiswa S1 Fakultas Keperawatan Universitas Andalas. *Skripsi Keperawatan Universitas Andalas*. Retrieved from <http://scholar.unand.ac.id/110257/>
- Kementerian Kesehatan Republik Indonesia. (2018). Hasil utama riset kesehatan dasar. Retrieved from https://kesmas.kemkes.go.id/assets/uploader/dir_519d41d8cd98f00/files/Hasil-risikesdas-2018_1274.pdf
- Kurniadi, H. (2015). *Stop! Gejala penyakit jantung koroner*. Yogyakarta: Familia.
- Lestari, S., & Sulaiman, S. (2021). Pengaruh pendidikan kesehatan terhadap peningkatan pengetahuan lansia tentang penyakit jantung koroner di Puskesmas Jakarta. *Jurnal Kesehatan Masyarakat*, 18(1), 56-63.
- Negesa, L. B., Magarey, J., Rasmussen, P., & Hendriks, J. M. L. (2020). Patients' knowledge on cardiovascular risk factors and associated lifestyle behavior in Ethiopia in 2018: A cross-sectional study. *PLOS ONE*, 15(6), e0234198. <https://doi.org/10.1371/journal.pone.0234198>
- Nursalam, N., & Ma'ruf, F. (2020). Hubungan pola makan dengan risiko penyakit jantung koroner pada lansia di Surabaya. *Jurnal Keperawatan Indonesia*, 23(2), 121-128.
- Riyanti, Y. (2019). Pengetahuan tentang penyakit jantung koroner dan gaya hidup sehat pada lansia di Yogyakarta. *Jurnal Ilmu Kesehatan Masyarakat*, 11(4), 135-141.
- Suryani, S., & Kristina, R. (2022). Pengaruh program penyuluhan tentang jantung koroner terhadap perubahan pengetahuan lansia di Panti Sosial Tresna Werdha. *Jurnal Pendidikan Kesehatan*, 16(3), 234-240.
- World Health Organization (WHO). (2013). *Global action plan for the prevention and control of noncommunicable diseases 2013-2020*. World Health Organization. Retrieved from <https://www.who.int/nmh/publications/ncd-action-plan/en/>