



Warta Pengabdian Andalas

Jurnal Ilmiah Pengembangan dan Penerapan Ipteks

ISSN (Print) 0854-655X | ISSN (Online) 2797-1600

Women Cardiovascular Awareness And Physical Activity Promotion

Mulyanti Roberto Muliantino^{1*}, Yuanita Ananda¹, Esi Afianti¹, Leni Merdawati¹, Fitri Mailani¹, Rahmi Muthia¹, Siski Rahayu²

¹Faculty of Nursing, Universitas Andalas

²Post Graduate Faculty of Medicine, Universitas Andalas

*Corresponding author: mulyantiroberto@nrs.unand.ac.id

Submitted: October 28, 2025

Accepted: January 14, 2026

Published: March 25, 2026

ABSTRACT

Women's insufficient cardiovascular awareness remains a major obstacle in preventing cardiovascular disease (CVD) within this demographic. Addressing key contributing elements such as inactive lifestyles and insufficient physical activity among females is essential. The SEJIWA group, a women's fitness team in Padang, aims to foster healthy living, consistent physical training, and advancement in cardiac wellness. This program seeks to strengthen cardiovascular awareness and establish routine exercise culture among SEJIWA members. Various techniques were employed, encompassing educational sessions, promotional activities, health assessments, and practical training. The program ran from July through August 2025, with participation from 30 female SEJIWA members. Results revealed enhanced cardiac awareness score following education (50.04 versus 69.80), elevated physical activity measurements after weekly exercise routines (642.56 versus 940.38 MET). The majority exhibited unhealthy waist measurements, most participants were either obese or overweight, over half demonstrated elevated blood pressure readings and hypertension, most showed high cholesterol levels, while only a minority presented with elevated blood glucose. This program illustrated the efficacy of combined interventions including education, promotional strategies, screening, and consistent exercise in enhancing awareness and behavioral patterns. Nevertheless, the substantial CVD risk factors observed among participants highlight the critical need for sustained programs targeting CVD prevention in women.

Keywords: female, heart disease, physical activity, promotion, screening

INTRODUCTION

Cardiovascular disease (CVD) among females is rising and has emerged as a leading mortality factor worldwide. World Health Organization (WHO) statistics from 2021 indicate that ischemic heart disease constitutes the primary death cause in women. Germany reports a death rate of 189.9 per 100,000 people, whereas the United States records 123.4, Canada shows 90.4, India demonstrates 99.4, and Australia presents 70.4. WHO data reveals that Indonesian women experience an ischemic heart disease mortality rate of roughly 90.9 per 100,000 persons (World Health Organization, 2021). Within South Asia, Pakistan exhibits elevated female mortality from ischemic heart disease (Rahaman et al., 2025). The 2023 Indonesian Health Survey indicates a national heart disease prevalence of 0.85%. Female heart disease occurrence surpasses male rates, showing 0.91 versus 0.80,

respectively. West Sumatra Province ranks among the nation's top ten provinces with the highest heart disease prevalence rates at 0.87% (KemenkesRI, 2024).

Females demonstrate a more intricate array of CVD risk elements that go beyond traditional factors like high blood pressure, elevated cholesterol, excess weight, diabetes mellitus, tobacco use, and sedentary behavior (Mulvagh et al., 2024). Supplementary elements, encompassing sex-specific risks related to hormonal changes, contraceptive use, gestation and associated complications, plus menopausal transitions, have been recognized as contributors to this multifaceted scenario (Norris et al., 2024). Nevertheless, insufficient understanding exists among women concerning their cardiac disease susceptibility. Research evidence indicates limited cardiovascular awareness among female populations in Korea and Spain (Kim et al., 2022)(Fernández-Friera et al., 2025). This awareness gap has led to rising disease rates, postponed medical intervention, unfavorable outcomes, and patient health decline. To diminish CVD risk and impact in women, enhancing awareness is crucial. This objective can be accomplished through multiple approaches, including public education efforts, establishing preventive programs, and advancing health promotion strategies (Wenger, 2020; Wenger et al., 2022).

Prior research demonstrates that community-based educational initiatives focused on PKK groups within RT 06 RW 02 Pasar Ambacang successfully improved heart health knowledge, with scores rising from 37.5 to 49.9 (n=21) (Muliantino et al, 2025). According to Kris-Etherton et al. (2021), health promotion represents a vital component in decreasing CVD occurrence among females. This goal can be accomplished through encouraging consistent and systematic physical training (Kris-Etherton et al., 2021). Research indicates that females tend to display lower physical activity patterns. An investigation across 38 Muslim nations revealed that women and Arab populations show greater likelihood of physical inactivity compared to other groups (Kahan, 2015). Consistent physical training holds significant importance in elevating life quality. Current evidence shows that sustained exercise can improve life quality by 0.729 among individuals with coronary heart disease diagnoses(Muliantino, Ananda, et al., 2024). Additionally, current research identified a beneficial relationship between self-efficacy and exercise participation in coronary heart disease patients. Enhanced self-efficacy has been shown to generate physical activity increases reaching 93.513 MET. According to Muliantino et al. (2024), efforts to strengthen community self-efficacy can be achieved through educational programs, information sharing, and promotional campaigns (Muliantino et al, 2024).

The SEJIWA group represents a female fitness organization in RT 06 RW 02 Pasar Ambacang, Padang city. Limited recognition of routine exercise importance and inadequate knowledge among members regarding consistent physical training benefits for heart health constitute key barriers preventing this group from maintaining regular activity patterns. Therefore, introducing health promotion and cardiac awareness education programs is essential for this population. This initiative aims to strengthen heart health understanding and establish a sustained exercise culture within the SEJIWA group in RT 06 RW 02, Pasar Ambacang Village, through community-based education and health advocacy efforts.

METHOD

This study engaged 30 female participants from the SEJIWA fitness group located in RT 02 RW 06 Pasar Ambacang, Padang City, during July through August 2025. The program team consisted of six faculty members and students from Andalas University's Faculty of Nursing (Figure 1). This initiative utilized an educational methodology, incorporating information distribution, promotional strategies, health assessment procedures, and

hands-on training sessions, targeting the female members of the SEJIWA group in RT 02 RW 06 Pasar Ambacang, Padang (Figure 2).

This study will explore health education initiatives focused on cardiac awareness among females. Before implementing the educational intervention, an initial assessment was performed using the ABCD Risk tool to evaluate cardiovascular awareness (Bowyer et al., 2023; Lumbantoruan et al., 2024). A follow-up assessment was subsequently conducted to determine the educational program's impact. The initiative included promotional components and practical heart health exercise sessions, held weekly for 90-minute durations. Participants initially received instructor guidance, then in following weeks were allowed to perform exercises autonomously. Each participant's exercise levels were assessed through the International Physical Activity Questionnaire (IPAQ) to evaluate their physical activity capacity (Dharmansyah & Budiana, 2021). These measurements were taken both before and after the intervention period.

Cardiovascular risk factor detection is accomplished through health screening procedures, involving assessment of multiple physiological indicators. These encompass body mass index measurements, waist circumference evaluation, blood pressure monitoring, cholesterol testing, and glucose level analysis. These assessments are obtained from SEJIWA participants. Educational materials utilized comprise instructional modules, informational pamphlets, and visual displays. A screening equipment set contains various essential instruments, including blood pressure monitors (sphygmomanometers), glucose measurement devices (glucometers), and diagnostic strips for sugar and cholesterol assessment. Additional necessary screening components include puncture devices (lancets), protective gloves for hygiene maintenance, and antiseptic wipes for sterilization purposes. The collected information is subsequently analyzed and displayed using descriptive statistical methods.

RESULTS AND DISCUSSION

Most participants fell within the 31-40 age range (56.7%) and reported no prior medical conditions (66.6%) (refer to Table 1).

Table 1. Respondent characteristics (n=30)

Characteristics	n	%
Total of participants	30	
Age		
31 – 40 years	17	56.7
40 – 50 years	8	26.6
51 – 60 years	5	16.7
Medical history		
Hypertension	6	20.1
Diabetes mellitus	3	10.0
Heart disease	1	3.3
None	20	66.6

Table 2 reveals that average cardiac awareness scores showed substantial improvement, rising from 50.04 to 69.80 after the health education intervention among female SEJIWA members. The physical activity capacity increased from 642.56 MET becoming 940.38 MET after following consistent exercise among participants.

Table 2. The cardiovascular awareness and IPAQ Score among women in SEJIWA Group (n=30)

Awareness Score	Mean	Range
Cardiovascular Awareness		
Pre-test	50.04	0-80
Post-test	69.80	0-80
IPAQ score		
Pre-test	642.56	80-2574
Post-test	940.38	80-2574

Table 3 shows that over half of participants were obese (56.7%), while 10% fell into the overweight category. A large majority displayed unhealthy abdominal circumference exceeding 80 centimeters (79.9%). Blood pressure assessment results indicated that 56.7% of subjects had elevated readings, including 10% diagnosed with hypertension. Most subjects presented high cholesterol values (86.7%), while a minimal proportion (10%) had raised blood glucose measurements.

Table 3. Health screening results among women in SEJIWA Group (n=30)

Variable	n	%
Body Mass Index (BMI)		
Normal range (18,5-25)	10	33.3
Overweight (25 -27)	3	10.0
Obese (>27)	17	56.7
Abdominal circumference		
Ideal (< 80 cm)	6	20.1
No (>80 cm)	24	79.9
Blood pressure		
Normal (< 120 mmHg)	10	33.3
Elevated (120 - 39 mmHg)	17	56.7
Hypertension (>140 mmHg)	3	10.0
Cholesterol levels		
< 200 mg/dl	4	13.
> 200 mg/dl	26	86.7
Blood glucose levels		
< 200 mg/dl	27	70.0
> 200 mg/dl	3	10.0

The process of increasing health literacy, especially among community groups and women, is an ongoing challenge that needs attention. The focus should be on increasing self-awareness through the creation of health media that promotes heart health in women and encourages positive behavior change for the prevention of cardiovascular disease. Research conducted on women in India shows that population-based health literacy interventions, using posters, leaflets, street plays, public and group talks, and focus group discussions, significantly increase knowledge about cardiovascular disease (Jerome et al., 2023).



Figure 1. The health education and screening team

The WHO defines mHealth technology as a medical and public health practice supported by mobile devices such as mobile phones, patient monitoring devices, personal digital assistants, and other wireless devices. Preventing diseases through a healthy lifestyle, such as maintaining an ideal weight to prevent obesity and increase physical activity, is essential. Therefore, initiatives realized through the mHealth application are needed to promote a sustainable healthy lifestyle and control CVD in the future (Ciumărnean et al., 2022). Young women are generally unaware of the fact that CVD is the leading cause of death among women. Given that most young women are not concerned about the risk of developing CVD in the following years, campaigns promoting heart-healthy behaviors should focus on the benefits of such preventive attitudes to current health and the reduction of lifetime risks (Demissie et al., 2025). Meanwhile, Bradley et al. conducted research in the United States developing a prototype of an online cardiovascular risk assessment tool. This lifestyle-based cardiovascular risk assessment tool is expected to contribute to health promotion efforts related to CVD awareness in the United States (Bradley et al., 2022).

A number of studies show that abnormal cholesterol levels are associated with a higher risk of cardiovascular disease (CVD). Cholesterol level screening is crucial in the development of cardiovascular disease (CVD) (Ambelu & Teferi, 2023). Risk factors that can affect cholesterol levels are age, gender, blood pressure, and body time index. Everyone's risk of having high cholesterol increases with age (Demissie et al., 2025). A higher body mass index (BMI) later in life is protective as is an increase in cholesterol levels. The implementation of screening through routine cholesterol level checks is important to be carried out as a form of early detection of the prevention of heart and blood vessel diseases. Total cholesterol levels in a person's blood are based on HDL<LDL and triglyceride numbers. The normal level is < 200 mg/dl, the level that has increased and must be watched out for to start being controlled (borderline high) is 200-289 mg/dL. The high level is > 240 mg/dL.

Consuming foods that contain a lot of saturated fats and trans fats can lead to high cholesterol, lack of physical activity can make a person gain weight, which can lead to high cholesterol (Lawless et al., 2023). High cholesterol is a major risk factor for atherosclerotic cardiovascular disease caused by buildup in the arteries and increases the likelihood of heart disease and stroke. Lack of physical activity can adversely affect non-HDL cholesterol levels (Ambelu & Teferi, 2023).

Regular physical activity has been shown to have a beneficial impact by reducing non-HDL cholesterol concentrations. Physical activity or exercise can help increase levels of good cholesterol (HDL), which plays a role in clearing bad cholesterol from blood vessels (Rachman et al., 2024). With active physical activity, there is a lower risk of developing cardiovascular disease compared to those who are inactive. Women who are physically

active have a lower rate of cardiovascular disease than women who are inactive (Ambelu & Teferi, 2023).



Figure 2. Health education, screening and physical activities

High bloods glucose partly reflects greater insulin insensitivity, which contributes to increased production of very low-density lipoprotein (VLDL) by the liver and in turn lowers HDL cholesterol (Kiechl et al., 2022). High bloods glucose due to diabetes can also directly damage blood vessel lining. Hyperglycemia accelerates atherosclerosis through a variety of mechanisms, including oxidative stress, inflammation, and endothelial dysfunction (Ambelu & Teferi, 2023). Hyperglycemia also activates protein kinase C, stimulates polyol pathways, and promotes the formation of advanced glycation end products. All of these processes collectively contribute to plaque formation and increased arterial stiffness (Rachman et al., 2024). Hyperglycemia can alter the concentration and activity of estrogen receptors, potentially inhibiting their protective effects on blood vessel walls in women, increasing oxidative stress, and promoting vasoconstriction and platelet activity (Ambelu & Teferi, 2023). Women with diabetes have a 40% higher risk of developing cardiovascular disease and 25% of having a stroke (Kiechl et al., 2022).

Exercise can improve glycemic control and blood lipid profile in people with and without type 2 diabetes (Ciumărnean et al., 2022). Thus, combining continuous exercise modalities that increase cardio-metabolic risk factors can improve health outcomes. Aerobic exercise refers to activities such as walking or jogging with continuous, repetitive movements of large muscle groups for 10 minutes at a time (Ambelu & Teferi, 2023). Aerobic exercise can change the action of insulin of each fiber without increasing the size of the fibers. Glycemic exercise can also manage glycemic control and cardiovascular risk factors. Resistance training has been shown to induce hypertrophic responses and shifts in muscle fiber type in the muscles that exercise, leading to increased whole-body glucose utilization and lowering the risk of cardiovascular disease (Demissie et al., 2025).

CONCLUSION

The execution of promotional campaigns and cardiac health support for the SEJIWA group in Pasar Ambacang has produced positive results. A substantial improvement in heart health knowledge was recorded, advancing from 50.04 to 69.80 following health education program delivery. Furthermore, a considerable increase in exercise levels occurred, rising from 642.56 MET to 940.38 MET after introducing consistent weekly cardiac fitness activities. Nevertheless, health assessment data reveals that most subjects are obese or overweight with excessive waist measurements, more than half exhibit elevated blood pressure or hypertension, the majority show high cholesterol levels, and a minor percentage display elevated blood sugar. This initiative illustrates the effectiveness of combined approaches through education, promotion, assessment, and routine exercise in strengthening awareness and fostering healthy cardiac behaviors among women. Yet,

the prevalence of significant CVD risk elements emphasizes the requirement for continuous programs aimed at preventing heart disease in female populations.

ACKNOWLEDGMENT

We extend sincere appreciation to the Research Centre of the Faculty of Nursing at Universitas Andalas, the SEJIWA group in RT 02 RW 06 Pasar Ambacang, and all participants who contributed to this initiative. This project received financial support from the Research Centre of the Faculty of Nursing, Universitas Andalas (grant number: 72/UN16.13.D/KPT/III/2025).

REFERENCES

- Ambelu, T., & Teferi, G. (2023). The impact of exercise modalities on blood glucose, blood pressure and body composition in patients with type 2 diabetes mellitus. *BMC Sports Science, Medicine and Rehabilitation*, 15(1). <https://doi.org/10.1186/s13102-023-00762-9>
- Bowyer, M., Hassen, H. Y., Bastiaens, H., & Gibson, L. (2023). Psychometric evaluation of the Attitudes and Beliefs about Cardiovascular Disease (ABCD) Risk Questionnaire' with validation of a previously untested Intentions and Beliefs around Smoking' subscale. *BMJ Open*, 13(1). <https://doi.org/10.1136/bmjopen-2021-054532>
- Bradley, K., Arconada Alvarez, S. J., Gilmore, A. K., Greenleaf, M., Herbert, A., Kottke, M. J., Parsell, M., Patterson, S., Smith, T., Sotos-Prieto, M., Zeichner, E., & Gooding, H. C. (2022). Assessing and Promoting Cardiovascular Health for Adolescent Women: User-Centered Design Approach. *JMIR Formative Research*, 6(12). <https://doi.org/10.2196/42051>
- Ciumărnean, L., Milaciu, M. V., Negrean, V., Orășan, O. H., Vesa, S. C., Sălăgean, O., Iluț, S., & Vlaicu, S. I. (2022). Cardiovascular risk factors and physical activity for the prevention of cardiovascular diseases in the elderly. In *International Journal of Environmental Research and Public Health* (Vol. 19, Issue 1). MDPI. <https://doi.org/10.3390/ijerph19010207>
- Demissie, G. D., Birungi, J., Shrestha, A., Haregu, T., Thirunavukkarasu, S., & Oldenburg, B. (2025). The effectiveness of lifestyle interventions in reducing cardiovascular risk and risk factors in people with prediabetes: A systematic review and meta-analysis. In *Nutrition, Metabolism and Cardiovascular Diseases* (Vol. 35, Issue 10). Elsevier B.V. <https://doi.org/10.1016/j.numecd.2025.104130>
- Dharmansyah, D., & Budiana, D. (2021). Indonesian Adaptation of The International Physical Activity Questionnaire (IPAQ): Psychometric Properties. *JURNAL PENDIDIKAN KEPERAWATAN INDONESIA*, 7(2), 159–163. <https://doi.org/10.17509/jpki.v7i2.39351>
- Fernández-Friera, L., Pedreira Pérez, M., Campuzano Ruiz, R., Gámez, J. M., Rodríguez Padial, L., Ortiz Cortés, C., Bonanad, C., Fácila, L., Wasniewski, S., Anguita, M., & Sambola, A. (2025). Perception and knowledge of CVD among women in Spain: national survey on awareness, risk, and lifestyle. *Revista Española de Cardiología (English Edition)*. <https://doi.org/10.1016/j.rec.2025.02.018>

- Jerome, G. J., Boyer, W. R., Bustamante, E. E., Kariuki, J., Lopez-Jimenez, F., Paluch, A. E., Swift, D. L., Webber-Ritchey, K. J., & Barone Gibbs, B. (2023). Increasing Equity of Physical Activity Promotion for Optimal Cardiovascular Health in Adults: A Scientific Statement From the American Heart Association. *Circulation*, 147(25), 1951–1962. <https://doi.org/10.1161/CIR.0000000000001148>
- Kahan, D. (2015). Adult physical inactivity prevalence in the Muslim world: Analysis of 38 countries. *Preventive Medicine Reports*, 2, 71–75. <https://doi.org/10.1016/j.pmedr.2014.12.007>
- KemenkesRI. (2024). Survei Kesehatan Indonesia (SKI) 2023 - Badan Kebijakan Pembangunan Kesehatan | BKPK Kemenkes. In Badan Kebijakan Pembangunan Kesehatan | BKPK Kemenkes. <https://www.badankebijakan.kemkes.go.id/hasil-ski-2023/>
- Kiechl, S. J., Staudt, A., Stock, K., Gande, N., Bernar, B., Hochmayr, C., Winder, B., Geiger, R., Griesmacher, A., Egger, A. E., Pechlaner, R., Kiechl, S., Knoflach, M., & Kiechl-Kohlendorfer, U. (2022). Diagnostic Yield of a Systematic Vascular Health Screening Approach in Adolescents at Schools. *Journal of Adolescent Health*, 70(1), 70–76. <https://doi.org/10.1016/j.jadohealth.2021.10.019>
- Kim, H. J., Kim, H. Y., Kim, H. L., Park, S. M., Cho, D. H., Kim, M., Yoon, H. J., Byun, Y. S., Park, S. M., Shin, M. S., Hong, K. S., & Kim, M. A. (2022). Awareness of cardiovascular disease among Korean women: Results from a nationwide survey. *Preventive Medicine Reports*, 26(September 2021), 101698. <https://doi.org/10.1016/j.pmedr.2022.101698>
- Kris-Etherton, P. M., Petersen, K. S., Després, J. P., Anderson, C. A. M., Deedwania, P., Furie, K. L., Lear, S., Lichtenstein, A. H., Lobelo, F., Morris, P. B., Sacks, F. M., & Ma, J. (2021). Strategies for Promotion of a Healthy Lifestyle in Clinical Settings: Pillars of Ideal Cardiovascular Health: A Science Advisory from the American Heart Association. In *Circulation* (Vol. 144, Issue 24, pp. E495–E514). Lippincott Williams and Wilkins. <https://doi.org/10.1161/CIR.0000000000001018>
- Lawless, M., Brown, S., & Kunadian, V. (2023). Raising awareness about cardiovascular disease in women. *European Heart Journal*, 44(33), 3110–3112. <https://doi.org/10.1093/eurheartj/ehad452>
- Lumbantoruan, S. M., Uligraf, D. K., & Tallutondok, E. B. (2024). Measuring Cardiovascular Disease Risk Perception: Translation and Validation of the Indonesian ABCD Risk Questionnaire. *Nursing Research and Practice*, 2024. <https://doi.org/10.1155/2024/7526455>
- Muliantino et al. (2025). The Efforts in Increasing Awareness and Identifiying Risk Factors of Cardiovascular Disease in Women. *Warta Pengabdian Andalas*, 32(1), 38–45. <https://doi.org/10.25077/jwa.32.1.38-45.2025>
- Muliantino, M. R., Ananda, Y., Mailani, F., Sarfika, R., & Safitri, D. A. (2024). Understanding quality-of-life determinants in coronary arterial disease patients. 13(3), 1208–1215. <https://doi.org/10.11591/ijphs.v13i3.24277>
- Muliantino et al. (2024). Self-efficacy in increasing physical activity of coronary heart disease patients: a cross-sectional study. *Jurnal Ners*, 19(3), 371–377. <https://doi.org/10.20473/jn.v19i3.51941>
- Mulvagh, S. L., Colella, T. J. F., Gulati, M., Crosier, R., Allana, S., Randhawa, V. K., Bruneau, J., Pacheco, C., Jaffer, S., Cotie, L., Mensour, E., Clavel, M. A., Hill, B., Kirkham, A. A., Foulds,

- H., Liblik, K., Van Damme, A., Grace, S. L., Bouchard, K., ... Norris, C. M. (2024). The Canadian Women's Heart Health Alliance ATLAS on the Epidemiology, Diagnosis, and Management of Cardiovascular Disease in Women — Chapter 9: Summary of Current Status, Challenges, Opportunities, and Recommendations. In *CJC Open* (Vol. 6, Issue 2, pp. 258–278). Elsevier Inc. <https://doi.org/10.1016/j.cjco.2023.12.001>
- Norris, C. M., Mullen, K. A., Foulds, H. J. A., Jaffer, S., Nerenberg, K., Gulati, M., Parast, N., Tegg, N., Gonsalves, C. A., Grewal, J., Hart, D., Levinsson, A. L. E., & Mulvagh, S. L. (2024). The Canadian Women's Heart Health Alliance ATLAS on the Epidemiology, Diagnosis, and Management of Cardiovascular Disease in Women — Chapter 7: Sex, Gender, and the Social Determinants of Health. In *CJC Open* (Vol. 6, Issue 2, pp. 205–219). Elsevier Inc. <https://doi.org/10.1016/j.cjco.2023.07.013>
- Rachman, I., Wahiduddin, W., Maria, I. L., Mappangara, I., Jafar, N., & Riskiyani, S. (2024). Knowledge, Health Education, and Mobile Health Strategies on Cardiovascular Disease Awareness in Women: A Narrative Review. In *Journal of Mid-Life Health* (Vol. 15, Issue 4, pp. 228–239). Wolters Kluwer Medknow Publications. https://doi.org/10.4103/jmh.jmh_163_24
- Rahaman, T., Cenko, E., Manfrini, O., Maas, A., Bergami, M., Gale, C. P., Gulati, M., & Bugiardini, R. (2025). Sex Disparities in Ischemic Heart Disease in South Asia: The Role of Dietary Factors. *JACC: Asia*. <https://doi.org/10.1016/j.jacasi.2025.07.012>
- Wenger, N. K. (2020). Why Does Myocardial Infarction Preferentially Disadvantage Women? *Journal of the American College of Cardiology*, 76(15), 1761–1762. <https://doi.org/10.1016/j.jacc.2020.08.032>
- Wenger, N. K., Lloyd-Jones, D. M., Elkind, M. S. V., Fonarow, G. C., Warner, J. J., Alger, H. M., Cheng, S., Kinzy, C., Hall, J. L., & Roger, V. L. (2022). Call to Action for Cardiovascular Disease in Women: Epidemiology, Awareness, Access, and Delivery of Equitable Health Care: A Presidential Advisory from the American Heart Association. *Circulation*, 145(23), E1059–E1071. <https://doi.org/10.1161/CIR.0000000000001071>
- World Health Organization. (2021). WHO Countries Data and statistics. <https://www.who.int/countries>

@2026 Muliantino et al.

This is an open access article licensed under the terms of a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License (<http://creativecommons.org/licenses/by-nc-sa/4.0>).