



Cardiovascular Health Literacy and Physical Activity Patterns in Apparently Healthy Adults: A Narrative Review

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Abstract: Cardiovascular diseases (CVDs) remain the leading cause of global mortality, with a disproportionate burden in low- and middle-income countries such as India. Modifiable risk factors including physical inactivity, obesity, hypertension, and unhealthy dietary habits contribute significantly to early onset of CVD, yet awareness and preventive behaviors remain inconsistent. This narrative review synthesizes evidence from 42 studies (2010–2025) examining cardiovascular health literacy and physical activity patterns among apparently healthy adults. Findings reveal moderate-to-good knowledge of cardiovascular risk factors in most populations, yet physical inactivity persists across diverse demographic groups, particularly women and urban residents. Importantly, knowledge alone does not consistently translate into preventive behaviors, underscoring a persistent knowledge–behavior gap. Barriers such as cultural norms, socioeconomic constraints, and limited infrastructure further attenuate the impact of health literacy. Effective prevention requires multi-faceted strategies that integrate behavioral counselling, self-efficacy enhancement, and environmental restructuring alongside conventional education. Future research should employ longitudinal designs and randomized trials to evaluate interventions that bridge the awareness–action divide. This review highlights the urgent need for comprehensive, context-specific approaches to reduce the long-term cardiovascular burden in seemingly healthy populations.

Keywords - CVD knowledge, Physical activity, HDFQ, IPAQ-SF, Knowledge-action gap, Health behavior, Risk awareness, Cross-sectional study, Demographic factors, Preventive interventions.

1. INTRODUCTION

Cardiovascular diseases (CVDs) constitute a major group of disorders affecting the heart and blood vessels and remain the leading cause of mortality worldwide. They include coronary heart disease, cerebrovascular disease, peripheral arterial disease, and other vascular conditions. The majority of CVDs arise from modifiable risk factors such as hypertension, diabetes mellitus, dyslipidemia, obesity, tobacco use, physical inactivity, unhealthy dietary habits, psychosocial stress, and excessive alcohol consumption, highlighting the significant scope for prevention through lifestyle modification and early intervention [1].

Atherosclerosis is the principal pathological process underlying most cardiovascular diseases. Progressive lipid accumulation within arterial walls leads to vascular narrowing, endothelial dysfunction, and thrombus formation, ultimately compromising blood flow to vital organs and resulting in conditions such as myocardial infarction and stroke [2]. The global burden of CVD continues to increase, with over 20 million deaths reported annually, and the highest impact observed in low- and middle-income countries (LMICs) [3].

In recent years, the burden of cardiovascular disease has shifted disproportionately toward LMICs, including India, where premature mortality rates are alarmingly high. Indians tend to develop CVD at a younger age compared to Western populations, a phenomenon that cannot be fully explained by conventional risk factors alone, suggesting the contribution of genetic susceptibility, environmental influences, and rapid lifestyle transitions [4,5].

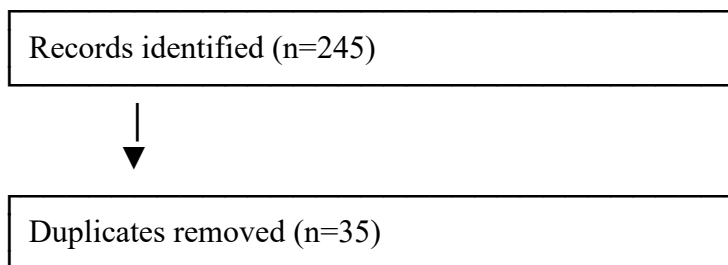
Physical inactivity has emerged as a key modifiable determinant of cardiovascular risk. Regular physical activity improves metabolic and cardiovascular parameters, whereas sedentary lifestyles—particularly among women and individuals with limited awareness or opportunities for exercise—are associated with increased disease risk. Accurate assessment of physical activity remains challenging; while self-reported tools such as the International Physical Activity Questionnaire are commonly used, wearable activity trackers offer more objective measures [6–8].

Despite growing awareness of lifestyle-related risk factors, knowledge regarding non-modifiable and biological determinants such as age, family history, and lipid abnormalities remains inadequate, especially among young adults in developing countries. Additionally, psychosocial stress, poor sleep, and dietary shifts toward processed foods have further contributed to the rising cardiovascular disease burden [9–11]. Therefore, this review aims to summarize current evidence on the epidemiology of cardiovascular diseases, key risk factors, physical activity patterns, and awareness levels, with a particular focus on developing countries, to support targeted prevention and public health strategies.

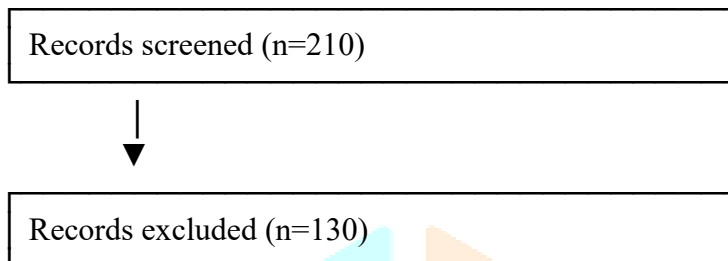
II. METHODS

Studies are searched from the following search engines PubMed, Google scholar, and ResearchGate to review the literature. Studies include physical activity and knowledge of cardiovascular disease. Cross-sectional study of 150 healthy adults (30-45 years) from Haryana using HDFQ and IPAQ-SF questionnaires. Inclusion: Healthy adults without diagnosed CVD, willing to consent. Exclusion: People with a history of cardiovascular disease, psychiatric illness and cognitive impairment. Literature searched PubMed/Scopus/Google Scholar (2010-2025) using CVD + physical activity + knowledge terms (245→42 studies). Chi-square analysis examined demographic associations (SPSS v25, $p < 0.05$). Key finding: No correlation between CVD knowledge and physical activity ($p = 0.814$).

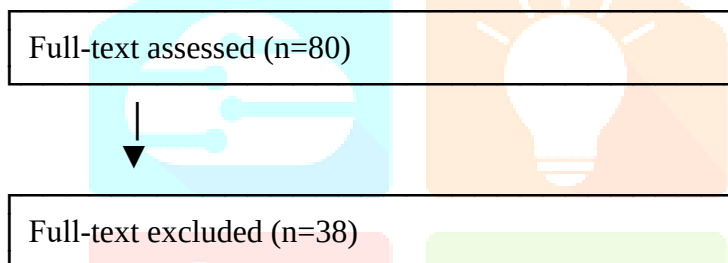
IDENTIFICATION



SCREENING



ELIGIBILITY



INCLUDED



Figure 1. PRISMA 2020 flow diagram illustrating the selection process of studies included in the narrative review on cardiovascular health literacy and physical activity patterns among apparently healthy adults. Literature was searched from PubMed, Google Scholar, and ResearchGate (2010–2025), resulting in 42 studies included in the final review.

	Author, Journal, year	Design & Characteristics of participants' sample size	Materials & Method	Outcome Measures	Results
1	Nadeem et al., Pak J Med Sci (2013)	2013, Cross-sectional, 109 patients <45 yrs with ischemic heart disease	Clinical examination, structured questionnaire, lipid profile	Assess prevalence of CAD risk factors in young adults	Smoking, family history of CAD, hypertension, dyslipidemia, diabetes, obesity; abdominal girth an independent risk factor; lifestyle factors drive early CAD
2	Umuerr EM et al., Int J Cardiovasc Acad (2019)	2019, Cross-sectional, 300 healthy adults aged 18–35 yrs	Interviewer-administered structured questionnaire (lifestyle, knowledge, perception)	Determine prevalence of unhealthy lifestyle behaviours and knowledge/perception of heart disease	Physical inactivity 71.4%, low fruit intake 46.9%, alcohol 26.5%, smoking 19%; mean knowledge 39.5%; low risk perception; health education recommended
3	Behera et al., India J Public Health (2024)	2024, Cross-sectional, 724,000+ women aged 15–49 yrs	National Family Health Survey-5 data analysis	Assess prevalence of CVD risk factors among women in India	Central obesity ~80%, overweight/obesity ~25%, hypertension ~12%, raised blood sugar ~10%; older/rural women at higher risk; need for tailored preventive strategies
4	Estebansari et al., BMC Public Health (2024)	2024, Cross-sectional, 302 students (151 medical, 151 non-medical)	Online questionnaire (knowledge, attitudes, lifestyle)	Compare CVD-related knowledge and lifestyle practices	Medical students had higher knowledge ($p<0.001$), no difference in attitudes or lifestyle practices; knowledge alone insufficient
5	Zhang et al., J Clin Epidemiol (2010)	2010, Cross-sectional, 19,003 adults aged 18–76 yrs	Questionnaires, BP, glucose, lipid measurements	Correlate lifestyle, diet, and physical activity with CVD risk	Overweight/obesity 31.9%, hypertension 33.6%, dyslipidemia 30.3%, diabetes 6.1%, metabolic syndrome 11.6%; regular physical activity protective; unhealthy diets increased risk
6	Mohd Saat et al., BMC Women Health (2021)	2021, Cross-sectional, 63 low-income housewives	IPAQ-short form, anthropometric & clinical assessments	Examine effect of physical inactivity on cardiovascular risk	Very low activity; 60% obese, >80% central obesity; inactivity linked to elevated BP, cholesterol, glucose; culturally appropriate

					interventions recommended
7	Anjana et al., Int J Diabetes Dev Ctries (2014)	2014, Cross-sectional, >14,000 adults ≥20 yrs	WHO Global Physical Activity Questionnaire (GPAQ)	Assess physical activity patterns in Indian adults	>50% physically inactive; inactivity higher in urban residents and women; >90% no leisure-time exercise; targeted interventions needed
8	Sadasivam K et al., Indian J Prev Soc Med (2016)	2016, Cross-sectional, 154 first-year MBBS students	Pretested 30-item structured questionnaire (6 domains), BMI, BP	Assess knowledge of CVD risk factors among medical students	Mean knowledge 71.4%; good awareness of conventional risk factors; poor understanding of HDL (12.5%) and lifestyle factors (35.4%); females outperformed males
9	Bulto LN et al., BMC Public Health (2021)	2021, Qualitative, 18 hypertensive patients (31–64 yrs)	Semi-structured interviews; thematic analysis using NVivo	Explore awareness of heart disease and factors influencing health behaviours	Limited awareness; poor risk perception; partial recognition of lifestyle factors; social, cultural, economic barriers; culturally tailored education recommended
10	Yeluri SR et al., Indian Heart J (2021)	2021, Cross-sectional, 1,122 college students, Andhra Pradesh	Heart Disease Fact Questionnaire (HDFQ)	Assess knowledge of cardiovascular risk factors in young adults	Mean score 60%; 25% poor, 44% moderate, 31% good; good awareness of modifiable factors; poor knowledge of non-modifiable factors and HDL/LDL; targeted health education needed

III.DISCUSSION

This study demonstrates moderate-good CVD knowledge (85.3%) and high physical activity (54%) among healthy adults, yet no knowledge-activity correlation ($p=0.814$) reveals a critical awareness-behaviour gap. Factual understanding fails to drive sustained practice due to deficient self-efficacy, inaccurate personal risk perception, and weak habit reinforcement mechanisms.

Cultural norms (family obligations), gender constraints, and economic pressures favouring sedentary work predominate in India, attenuating health literacy effects despite awareness. Comparable global patterns emerge: medical students exhibit knowledge without lifestyle change (Estebarsari et al.); Malaysian housewives show obesity despite risk recognition (Mohd Saat et al.); India's pervasive inactivity persists amid occupational activity (Anjana et al.).

Implications: Physiotherapists must integrate behavioural counselling with IPAQ/HDFQ screening; preventive cardiology requires self-efficacy programs for at-risk aware groups; public health policy demands environmental restructuring (walking infrastructure, workplace programs) over knowledge campaigns, with education-stratified messaging for behavioural impact.

IV. CONCLUSION

This study confirms adequate CVD knowledge and physical activity among healthy adults, yet reveals a persistent knowledge-behaviour gap ($p=0.814$) that undermines prevention efforts.

Key message: Health literacy alone cannot prevent cardiovascular disease; behavioral activation through self-efficacy enhancement and environmental restructuring is essential.

Role of Early Intervention: Physiotherapists and preventive cardiologists must implement early screening with HDFQ/IPAQ tools among knowledge-adequate but inactive individuals, using motivational interviewing and personalized exercise prescriptions to convert awareness into sustained practice before clinical disease manifests.

Future Research: Longitudinal studies tracking HDFQ/IPAQ trajectories over 3-5 years are needed to establish causality between knowledge gaps and CVD endpoints, while randomized trials testing behavioral interventions (self-efficacy training, community exercise programs) against knowledge-only education will identify optimal strategies for bridging the awareness-action divide in Indian populations.

Limitation

The findings are based on self-reported questionnaires (HDFQ and IPAQ-SF), so some participants may have over- or under-estimated their knowledge and activity levels. The sample was drawn from a specific area (Rohtak) and included a relatively small number of participants, which means the results may not fully represent other regions or populations. In addition, no objective measures such as accelerometers or blood tests were used to validate the self-reported data. Finally, without longitudinal follow-up, it is not possible to see how knowledge, behavior, and risk evolve over time in these individuals.

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DECLARATIONS

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