RESEARCH

CARDIOVASCULAR RISK FACTORS AMONG DIFFERENT SOCIOECONOMIC GROUPS: A CROSS-SECTIONAL ANALYSIS

C Mamatha Reddy[1]

[1]Associate Professor, Department of Cardiology, Kakatiya Medical College and Mahathma Gandhi Memorial Hospital, Warangal, Telangana, India

Received : 15/05/2022
Received in revised form : 19/06/2022
Accepted : 05/07/2022

Keywords:
Cardiovascular Risk Factors, Socioeconomic Status, Health Disparities, Cross-Sectional Study, Public Health, High Blood Pressure, Cholesterol, Smoking, Obesity, Diabetes

Corresponding Author:
Dr. C Mamatha Reddy,
Email: mamathac04@gmail.com
ORCID: 0009-0000-0170-0277

DOI: 10.47009/jamp.2022.4.3.64

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2022; 4 (3); 281-284

Abstract

Background: Cardiovascular diseases remain a leading cause of mortality globally. Socioeconomic status is known to influence the prevalence of cardiovascular risk factors, but detailed analysis within diverse income groups is less explored. Objective: This study aimed to assess the prevalence of various cardiovascular risk factors—high blood pressure, high cholesterol, smoking, obesity (BMI ≥ 30), and diabetes—across three socioeconomic groups: low-income, middle-income, and high-income. **Materials and Methods:** A cross-sectional analysis was conducted with a total sample size of 100 participants, equally divided among the three socioeconomic groups. Data on cardiovascular risk factors were collected and analyzed to determine the prevalence in each group. **Result:** The prevalence of all measured cardiovascular risk factors was highest in the low-income group, followed by the middle-income and high-income groups. Specifically, high blood pressure was found in 63.6% of low-income, 35.3% of middle-income, and 24.2% of high-income participants. High cholesterol was present in 54.5% of low-income, 44.1% of middle-income, and 30.3% of high-income participants. The pattern was similar for smoking, obesity, and diabetes. The results indicate a clear socioeconomic gradient in the prevalence of these risk factors. **Conclusion:** The study highlights significant disparities in cardiovascular risk factors among different socioeconomic groups. The findings suggest the need for targeted health interventions and policies that address these disparities, particularly focusing on lower-income populations.

INTRODUCTION

Cardiovascular disease (CVD) remains a leading cause of morbidity and mortality worldwide, posing significant public health challenges.[1] While the interplay of genetic, environmental, and lifestyle factors contributes to the development of CVD, emerging evidence suggests that socioeconomic status (SES) plays a crucial role in determining the prevalence and distribution of cardiovascular risk factors.[2,3] This study aims to explore the relationship between socioeconomic groups and the prevalence of key cardiovascular risk factors: high blood pressure, high cholesterol, smoking, obesity (BMI ≥ 30), and diabetes.[4,5]

The link between SES and health outcomes has been extensively documented. Lower SES is often associated with higher rates of adverse health conditions, including a greater burden of cardiovascular risk factors.[6,7,8] Factors such as limited access to healthcare, poor nutritional choices due to economic constraints, higher rates of smoking, and lifestyle choices influenced by socioeconomic conditions contribute to this disparity.[9,10] However, the extent to which these risk factors vary across different income levels within specific populations remains underexplored.

This study contributes to the existing literature by providing a detailed analysis of cardiovascular risk factors across low, middle, and high-income groups in a representative sample. Understanding these patterns is crucial for developing targeted public health strategies and interventions aimed at reducing the incidence and impact of CVD across all socioeconomic strata. By identifying and addressing the specific needs of each socioeconomic group, healthcare providers and policymakers can more effectively combat the growing burden of cardiovascular diseases.

MATERIALS AND METHODS

Study Design and Period

This cross-sectional analysis was conducted from July 2020 to June 2021. The study was designed to assess the prevalence of cardiovascular risk factors among different socioeconomic groups.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Study Setting

The study was carried out at Mahatma Gandhi Memorial Hospital, Warangal, affiliated with Kakatiya Medical College. This setting was chosen due to its diverse patient demographic, allowing for a representative sample of the general population across various socioeconomic statuses.

Participants

A total of 100 participants were enrolled in the study. The inclusion criteria were adults aged 18 years and above, willing to participate in the study. Participants were stratified into three socioeconomic groups (low-income, middle-income, high-income) based on their annual household income, with each group comprising roughly one-third of the total sample (33 or 34 participants per group).

Data Collection

Participants were interviewed using a structured questionnaire to collect demographic information and data on known cardiovascular risk factors, including high blood pressure, high cholesterol, smoking status, obesity (BMI ≥ 30), and diabetes. Blood pressure measurements, cholesterol tests, and diabetes screening were conducted following standard clinical protocols. BMI was calculated based on measured height and weight.

Statistical Analysis

Descriptive statistics were used to summarize the data. The prevalence of each cardiovascular risk factor was calculated as a percentage of participants within each socioeconomic group. Comparative analyses were performed using chi-square tests to determine significant differences in the prevalence of risk factors among the socioeconomic groups.

Ethical Considerations

The study protocol was reviewed and approved by the Ethics Committee of Kakatiya Medical College. Informed consent was obtained from all participants. The study adhered to the principles of the Declaration of Helsinki.

RESULTS

Sample Characteristics

The study sample comprised 100 participants, distributed across three socioeconomic groups. The low-income group consisted of 33 participants, the middle-income group had 34, and the high-income group also included 33 participants (Table 1).

Prevalence of Cardiovascular Risk Factors

The prevalence of various cardiovascular risk factors was assessed across the different socioeconomic groups, as summarized in Tables 2 to 6.

High Blood Pressure: The prevalence of high blood pressure was highest in the low-income group, affecting 63.6% of its members. This contrasted with 35.3% in the middle-income group and 24.2% in the high-income group (Table 2).

High Cholesterol: Similarly, high cholesterol levels were more prevalent in the low-income group (54.5%), compared to the middle-income (44.1%) and high-income groups (30.3%) (Table 3).

Smoking Status: Smoking was most common among the low-income group, with 45.5% of its participants being smokers. This rate was significantly higher compared to the middle-income (23.5%) and high-income groups (15.2%) (Table 4).

Obesity (BMI ≥ 30): Obesity prevalence was again highest in the low-income group (60.6%), followed by the middle-income (32.4%) and high-income groups (21.2%) (Table 5).

Diabetes: The pattern continued with diabetes prevalence, which was 42.4% in the low-income group, 26.5% in the middle-income group, and 18.2% in the high-income group (Table 6).

Key Findings

There was a clear socioeconomic gradient in the prevalence of cardiovascular risk factors. Participants from the low-income group exhibited the highest prevalence rates across all measured factors: high blood pressure, high cholesterol, smoking, obesity, and diabetes. The middle-income and high-income groups demonstrated progressively lower prevalence rates for these risk factors.

Table 1: Sample Characteristics

Socioeconomic Group	Number of Participants
Low-income	33
Middle-income	34
High-income	33
Total	100

Table 2: Prevalence of High Blood Pressure by Socioeconomic Group

Socioeconomic Group	Participants with High Blood Pressure	Percentage
Low-income	21	63.6%
Middle-income	12	35.3%
High-income	8	24.2%

Table 3: Prevalence of High Cholesterol by Socioeconomic Group

Socioeconomic Group	Participants with High Cholesterol	Percentage
Low-income	18	54.5%
Middle-income	15	44.1%
High-income	10	30.3%

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Table 4: Smoking Status by Socioeconomic Group

Socioeconomic Group	Participants Who Smoke	Percentage
Low-income	15	45.5%
Middle-income	8	23.5%
High-income	5	15.2%

Table 5: Prevalence of Obesity (BMI ≥ 30) by Socioeconomic Group

Socioeconomic Group	Participants with Obesity	Percentage
Low-income	20	60.6%
Middle-income	11	32.4%
High-income	7	21.2%

Table 6: Diabetes Prevalence by Socioeconomic Group

Socioeconomic Group	Participants with Diabetes	Percentage
Low-income	14	42.4%
Middle-income	9	26.5%
High-income	6	18.2%

DISCUSSION

Interpretation of Findings

Our study's findings indicate a significant variation in the prevalence of cardiovascular risk factors among different socioeconomic groups. Notably, participants from the low-income group exhibited a higher prevalence of all measured risk factors – high blood pressure, high cholesterol, smoking, obesity (BMI ≥ 30), and diabetes – compared to the middle-income and high-income groups. These results are consistent with previous research indicating a strong association between lower socioeconomic status and increased cardiovascular risk.[11]

High Blood Pressure and Cholesterol

The high prevalence of hypertension and high cholesterol in the low-income group could be attributed to a combination of factors, including limited access to health education, poor dietary choices due to economic constraints, and reduced access to preventive healthcare services. These factors often result in delayed diagnosis and treatment, exacerbating these conditions.[12]

Smoking and Lifestyle Factors

The higher smoking rates observed in the low-income group might reflect stress-related behaviors and limited access to smoking cessation resources. Additionally, lifestyle factors, such as physical inactivity due to lack of access to safe exercise environments, might contribute to the observed disparities.[13]

Obesity and Diabetes

Our findings regarding obesity and diabetes prevalence further underscore the impact of socioeconomic status on health. The low-income group's higher rates of obesity could be linked to the consumption of calorie-dense but nutrient-poor foods, which are often cheaper and more accessible than healthier options. This dietary pattern also contributes to the increased incidence of diabetes[14].

Public Health Implications

These findings highlight the need for public health strategies that address these disparities. Interventions should not only focus on health education and promotion but also consider the broader socioeconomic determinants of health. Policies that improve access to healthcare, promote healthy food options, and create safe spaces for physical activity are essential.

Limitations

Our study has limitations, including its cross-sectional design, which prevents establishing causality. Additionally, the study was conducted in a single hospital setting, which may limit the generalizability of the findings. Further longitudinal studies are needed to confirm these associations and explore the underlying causal mechanisms.

CONCLUSION

The study highlights notable socioeconomic disparities in cardiovascular risk factors, underscoring the necessity for multifaceted strategies that tackle social determinants of health. It emphasizes the importance of targeted public health interventions and policies focused on reducing these disparities, thereby mitigating cardiovascular risks and enhancing health outcomes across different socioeconomic strata. This approach is crucial for addressing the broader health inequities revealed by our findings.

REFERENCES

1. Samuel P, Antonisamy B, Raghupathy P, Richard J, Fall CH. Socio-economic status and cardiovascular risk factors in rural and urban areas of Vellore, Tamilnadu, South India. Int J Epidemiol. 2012 Oct;41(5):1315-27. doi: 10.1093/ije/dys001. Epub 2012 Feb 24. PMID: 22366083; PMCID: PMC3541500.
2. Davari M, Maracy MR, Khorasani E. Socioeconomic status, cardiac risk factors, and cardiovascular disease: A novel approach to determination of this association. ARYA Atheroscler. 2019 Nov;15(6):260-266. doi: 10.22122/arya.v15i6.1595. PMID: 32206069; PMCID: PMC7073799.
3. Davari M, Maracy M, Ghorashi Z, Mokhtari M. The Relationship between Socioeconomic Status and the Prevalence of Elective Cesarean Section in Nulliparous

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Women in Niknafs Teaching Center, Rafsanjan, Iran. Health Info Manage. 2012;8(7):958–65
4. Roberts CB, Couper DJ, Chang PP, James SA, Rosamond WD, Heiss G. Influence of life-course socioeconomic position on incident heart failure in blacks and whites: The Atherosclerosis Risk in Communities Study. Am J Epidemiol. 2010;172(6):717–27.
5. Borne Y, Engstrom G, Essen B, Sundquist J, Hedblad B. Country of birth and risk of hospitalization due to heart failure: A Swedish population-based cohort study. Eur J Epidemiol. 2011;26(4):275–83.
6. Christensen S, Mogelvang R, Heitmann M, Prescott E. Level of education and risk of heart failure: A prospective cohort study with echocardiography evaluation. Eur Heart J. 2011;32(4):450–8.
7. Savu A, Schopflocher D, Scholnick B, Kaul P. The intersection of health and wealth: Association between personal bankruptcy and myocardial infarction rates in Canada. BMC Public Health. 2016;16:31.
8. Baghaei R, Parizad N, Alinejad V, Khademvatan K. Epidemiological study of patients with acute myocardial infarction In Seyyed Al Shohada Hospital in Urmia. Urmia Med J. 2013;24(10):763–70.
9. Vahidi R, Saadati M. Determining the distribution of effective factors on out of pocket payment (formal and informal) in hospitalized cardiac patientsof Shahid Madani hospital and its side effects on the patient or companions-Iran-Tabriz 2010. Hospital. 2013;11(4):45–52.
10. Baghaei R, Parizad N, Alinejad V, Khademvatani K. Epidemiological study of patients with acute myocardial infarction in seyyed al Shohada Hospital in Urmia. Urmia Med J. 2013;24(10):763–70. In Persian.
11. Moeini M, Mokhtari H, Adibi F, Lotfizadeh N, Moeini M. The prevalence of hypertension among the elderly in patients in Al-Zahra Hospital, Isfahan, Iran. ARYA Atheroscler. 2012;8(1):1–4.
12. Veghari G, Sedaghat M, Maghsodlo S, Banihashem S, Moharloei P, Angizeh A, et al. Impact of literacy on the prevalence, awareness, treatment and control of hypertension in adults in Golestan Province (northern Iran). Caspian J Intern Med. 2013;4(1):580–4.
13. Capingana, D.P., Magalhães, P., Silva, A.B. et al. Prevalence of cardiovascular risk factors and socioeconomic level among public-sector workers in Angola. BMC Public Health 13, 732 (2013). https://doi.org/10.1186/1471-2458-13-732
14. Brindley, C., Van Ourti, T., Capuno, J. et al. Risk factor contributions to socioeconomic inequality in cardiovascular risk in the Philippines: a cross-sectional study of nationally representative survey data. BMC Public Health 23, 689 (2023). https://doi.org/10.1186/s12889-023-15517-x.

ISSN (O): 2687-5365; ISSN (P): 2753-6556