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.
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).

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

<table>
<thead>
<tr>
<th>Socioeconomic Group</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-income</td>
<td>33</td>
</tr>
<tr>
<td>Middle-income</td>
<td>34</td>
</tr>
<tr>
<td>High-income</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2: Prevalence of High Blood Pressure by Socioeconomic Group

<table>
<thead>
<tr>
<th>Socioeconomic Group</th>
<th>Participants with High Blood Pressure</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-income</td>
<td>21</td>
<td>63.6%</td>
</tr>
<tr>
<td>Middle-income</td>
<td>12</td>
<td>35.3%</td>
</tr>
<tr>
<td>High-income</td>
<td>8</td>
<td>24.2%</td>
</tr>
</tbody>
</table>

Table 3: Prevalence of High Cholesterol by Socioeconomic Group

<table>
<thead>
<tr>
<th>Socioeconomic Group</th>
<th>Participants with High Cholesterol</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-income</td>
<td>18</td>
<td>54.5%</td>
</tr>
<tr>
<td>Middle-income</td>
<td>15</td>
<td>44.1%</td>
</tr>
<tr>
<td>High-income</td>
<td>10</td>
<td>30.3%</td>
</tr>
</tbody>
</table>
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, 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
Women in Niknafs Teaching Center, Rafsanjan, Iran. Health Info Manage. 2012;8(7):958–65