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Research Article

SOCIO-DEMOGRAPHIC DETERMINANTS OF CARDIOVASCULAR RISK FACTORS AMONG ADULTS IN SUBURBAN POPULATION OF SOUTH INDIA

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ABSTRACT

Objectives: The shift in lifestyle among the South Asian population has significantly contributed to the increasing burden of non-communicable diseases. This study estimates risk factors of cardiovascular diseases (CVDs) among adults in South India.

Methods: The current study used data from adults in sub-urban area of South India. The total sample for the analysis was 260 adults aged between 20 and 60 years. Prevalence of cardiovascular risk was assessed by the non-laboratory-based INTERHEART modifiable risk scale. The data on socio-demographic variables were expressed as a frequency table and analysed by the Chi-square test. The CVD risk was also analysed comparing age and gender by multiple logistic regression.

Results: The mean age (standard deviation) of the adults was 35.38 (8.56) years. The frequency of risk factors for the age <39 years showed, 100,85.4, 64.4, and 26.7% for no risk, mild, moderate, and severe, while the above 40 years showed, 0, 14.6.35.6, and 73.3%. It was statistically significant ($p<0.001$), showing that the severity of the CVD risk is comparatively more in above 40 years. The age showed an odds ratio of 5.334, while the gender showed an odds ratio of 0.541.

Conclusion: This screening study offers insights into the distribution of risk factors of CVDs among IT professionals, particularly concerning age and gender, poses a significant challenge to India`s future health trajectory. Implementing effective strategies focused on early detection and management is crucial to reducing the risk of CVDs.

Keywords: Adults, Cardiovascular disease risk factors, Non-laboratory based INTERHEART modifiable risk scale; South India.

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INTRODUCTION

India has a large youth population, with 37% of its between 30 and 59 years, which is predicted to increase 42.2% in 2036 [1]. Cardiovascular disease (CVD) is a major reason for the mortality in India and around the world [2]. According to World Health Organization, India accounts for one-fifth of CVD deaths worldwide, especially in the younger population [3]. The ICMR-INDIAB study is a research survey conducted in India encompasses all 28 states and two union territories and revealed the frequency of diabetes and metabolic non-communicable diseases (NCDs), including hypertension and obesity, is notably higher compared to earlier studies [4]. Statistics indicate that men in India bear a greater burden of premature mortality from CVD in terms of years of life lost compared to women. The highest rates among men were observed in Tamil Nadu, followed by Madhya Pradesh and Chhattisgarh.

South Asia, identified as a residence of one-fourth of global population, is currently experiencing an epidemiological transition marked by a rapid surge in the prevalence of NCDs [5]. In the past, the Indian visionary leader and the National Father of India, recognized the seriousness and the immediacy of public health issues, addressed health and its association with poverty, socio-economic conditions, and food habits of common Indians [6,7]. There has been a decline in the consumption of nutritious foods like coarse cereals, pulses, fruits, and vegetables, accompanied by a rise the in intake of meat products, processed and ready-to-eat energy-dense and high salt foods [8]. Risk factors were identified among the Indian population. The South Asian vegetarian diet was also found to include a significantly higher intake of fried foods and desserts compared to the non-vegetarian diet. Unlike vegetarians in the U.S., this diet did not provide substantial protection against abdominal obesity [9]. It undergoes the significant impact of dietary habits in the development of cardiovascular risk. In addition, the declining air quality across much of the country, along with prolonged exposure to household air pollutants have been implicated as a recent risk factor for the rising prevalence of disease burden in India [10]. Numerous studies have indicated that the risk of CVD due to air pollution may arise through various mechanistic pathways that include inflammation/lipid peroxidation, endothelial dysfunction, increased blood pressure, and abnormalities in heart rhythm [11-13].

On the other hand, India is identified as a developing country, in 2017, the government health expenditure was only 1% of its gross domestic product, significantly lower than 8.6% in US, 4% in Brazil, and 2.9% in China. NCDs accounted for 16,939 DALYs/100, 000 in India. About 50–70% of patients took treatment in private facilities. There is a huge variation in the utilization of health facilities, disease burden, and cost of treatment across the states of India [7]. Approximately 50.3% of families incurred catastrophic health expenditure due to hospitalization, and 43.2% had some financial burdens due to outpatient department care. 19.0% of families were driven below the poverty line due to

hospitalization costs associated with CVD treatment [14]. Prevention is one of the key strategies for identifying CVD risk and reducing the occurrence of it [15]. Many studies reinforced the need to strengthen the efforts for prevention, screening, early diagnosis, and treatment of CVDs [14,16]. However, the current study aimed to determine demographic groups that have a higher probability of developing CVD and to identify its association with CVD risk factors among participants.

METHODS

Ethics, consent, and permission

The study received ethical clearance approved by the Institutional Ethics Committee (007/11/2023/IEC/SMCH) and obtained consent and approval from local governing authorities. In addition, consent was obtained from all adults before collecting the required data then conducted in compliance with ethical guidelines.

Study design and inclusion criteria

This is an institution-based cross-sectional study carried out from March 2024 to May 2024 via a convenience sampling method. The researcher recruited both men and women between the age of 20 and 60 years, working in two IT companies.

Study population

There were nearly twelve IT companies in selected settings, two companies were randomly selected through a lottery method. IT companies belong to suburban western part of Chennai is known for its residential neighbourhoods and its proximity to IT hubs, making a it sought-after location for professionals. 260 adults who fulfilled inclusion criteria were selected as study participants. IT professionals work long hours under high stress, increasing their vulnerability to CVD risk factors. Limited data exist on CVD risk factors among software professionals. Hence, this study findings can help in designing targeted interventions for CVD preventions.

Data collection

The first section of the questionnaire was related to the sociodemographic profile. The participants self-report their data such as age, gender, religion, education, marital status, annual income, and occupation. Non-laboratory INTERHEART risk score was used to collect their clinical history and simple physical measurements, tool permission was obtained before collecting the data.

Cardiovascular risk assessment

The cardiovascular risk was assessed by the Non-laboratory INTERHEART risk score incorporates factors such as medical history, current waist-to-hip ratio (guidelines provided with the survey), smoking habits, psychosocial status, and dietary habits. Dietary consideration includes the consumption of salt, fruits, vegetables, fast food, and poultry or meat, as well as their level of physical activity. The study population was categorised for CVD risk as severe 16–48, Moderate 10–15, mild 1–9, and 0 as no risk of CVD.

Statistical analysis

Sociodemographic data were presented in a frequency table and analysed using the Chi-square test. CVD risk was further examined by comparing age and gender through multiple logistic regression. A probability of 0.05 and less was considered as statistically significant. SigmaPlot 14.5 version was used for statistical analysis) Systat Software Inc., San Jose, USA).

RESULTS

Data from 260 participants were in the analysis. The characteristics of these participants are given in Table 1. The mean age (standard deviation) of the adults was 35.38 (8.56) years, with males averaging 35.7 years and females 32.8 years. Out of 260 adults, 191 (73.5%) of adults were under the age of 39 years, 205 (78.8%) were male, 229 (88%) of them were graduated from professional courses, and 227 (87.3%) were skilled workers (Table 1).

Table 1: Characteristics of socio-demographic variables (n=260)

Variables	Frequency (no.)	Percentage (%)
Age		
<39 years	191	73.5
>40 years	69	26.5
Gender		
Male	205	78.8
Female	55	21.1
Religion		
Hindu	210	80.7
Non-Hindu	50	19.2
Educational status		
Graduates	31	11.9
Professional graduates	229	88
Marital status		
Unmarried	39	15
Married	221	85
Income (per month)		
<Rs. 47347	96	36.9
>47348	164	63
Occupation (nature of job)		
Semi- skilled	33	12.6
Skilled (Professionals)	227	87.3

Values are expressed in frequency and percentage

Among this group, results showed 13 (6.8%), 123 (64%), 47 (24.5%), and 8 (4.1%) of adults had no risk, mild, moderate, and severe risk of CVDs. While 100% of adults over the age of 40 years (n=69) fall under the risk group, statistical data showed, 21 (30.4%) had mild, 26 (37.6%) had moderate, and 22 (31.8%) had severe level of CVD risk.

The study setting was conducted in an IT company, with a majority of participants being male, comprising 205 (78.8%), while females accounted for 55 (21.1%) participants. Among 205 males, only 6 (2.9%) had no risk, others had mild 110 (53.5%), moderate 62 (30.2%) and severe 27 (13.1%) risk of CVDs. Out of 55 females, 7 (1.2%) had no risk and 34 (61.8%) mild, 11 (20%) moderate, and 3 (5.4%) had severe risk of CVDs. It was observed a statistically significant ($\chi 2=12.710$, $p=0.005$), these findings indicate that the severity is greater in males than in females, which is consistent with the results of other studies [17,18].

Regarding the percentage of risk factors, among male, 199 (97%) had risk of CVDs, in this group 83 (40.4%) had smoking habits, 74 (37.1%) were the meat eaters, 37 (18.5%) had diabetes mellitus, 36 (18%) had hypertension, 20 (10%) had family history of CVDs and only 46 (23.1%) had a habit of doing physical exercises. Whereas among females, 48 (87.2%) had risk of CVDs, in this group, stress 20 (41.6%) and psychological factors 14 (29%) were more prominent risk factors compared to males. There was not much difference in risk statistics between married and unmarried adults. Out of 211 married adults, 209 (99%) had risk, similarly out of 39 unmarried adults, 38 (97%) had risk of CVDs. Other variables such as religion, education, annual income, and occupation were statistically not significant which was explained in Table 2.

DISCUSSION

Overall, this screening study provides insights into the distribution of risk factors of CVDs among IT professionals, especially variables such as age and gender. Many studies have emphasized the significance of considering age when examining sex-based variation in cardiovascular and metabolic disorders [19,20]. In the current study, the multiple logistic regression of age and gender with CVD risk showed significance for age only ($p<0.001$). The gender showed a marginal significance ($p=0.087$). The age showed an odds ratio of 5.334, while the gender revealed an odds ratio of 0.541.

A national-level, multi-round survey conducted to explore the trend of modifiable risk factors in India, identified overweight/obesity, to

Table 2: Association of socio-demographic variables for cardiovascular disease risk (n=260)

Variable	Category	CVD risk				Statistics
		No	Mild	Moderate	Severe	
Age (year)						
	<39	13	123	47	8	χ^2=52.035 p<0.001
	>40	0	21	26	22	
Gender						
	Male	6	110	62	27	χ^2=12.710 p=0.005
	Female	7	34	11	3	
Religion						
	Hindu	9	121	57	23	χ^2=2.763 p=0.430
	Other religions	4	23	16	7	
Education						
	Graduate	2	17	10	2	χ^2=1.159 p=0.763
	Professional	11	127	63	28	
Marital status						
	Unmarried	1	26	10	2	χ^2=3.330 p=0.344
	Married	12	118	63	28	
Annual income (rupees)	<47347	7	57	23	9	χ^2=3.573 p=0.311
	>47348	6	87	50	21	
Occupation						
	Semi-Skilled	3	16	10	4	χ^2=1.668 p=0.644
	Skilled (Professional category)	10	128	63	26	

CVD: Cardiovascular disease. Values are expressed in frequency with Chi-square value and p-value

be higher among males (3.4% points) compared to females (11.4% points) [21]. Overweight/obesity is a growing health challenge has much impact on economic of a country [22]. A cost-of-illness analysis revealed that per capita obesity related expenses in 2019 ranged from US$7 in India to US$940 in Australia [23,24]. Consequently, this exacerbates the economic strain and health burden on both individual and nations such as India. However, the present study did not demonstrate a significant correlation with these findings. Nevertheless, waist- to- hip ratio exhibited notable prevalence, affecting 50 (19%) adults, with males comprising 39 (19%) of the participants.

The increasing burden of CVDs in India is complex, leading to significant morbidity and mortality and hindering the country's progress toward achieving its sustainable development goals. India has 253 million teenagers and is the second-most populous nation in the world [25]. The current study results showed, high prevalence of lifestyle related CVDs risk factors such as smoking (32.6%), psychological factors (25.3%), stress (31.1%), meat eaters (38.8%) and waist hip ratio (19.2%) among the younger population poses a serious challenge to India`s future trajectory. This indeed may decrease the labour supply, divert resources away from productive investments toward healthcare, strain public and private budgets, increase business expenses, and weaken competitiveness [26].

The professionals 229 (88%) make up a larger proportion of each risk category compared to graduates 31 (11.9%), it might suggest differences in lifestyle, workload or other factors contributing to risk levels. This study result showed non-significant, would suggest that risk levels are influenced by other factors beyond education such as lifestyle or environmental factors [27,28]. The sample sizes for the graduate group are relatively small compared to the professional group, which might skew results. Similarly, unmarried participants represent a smaller proportion in all risk categories compared to married individuals, married adults account for a larger proportion of all risk levels yet the current study result showed non-statistically significant with CVD risk factors. But many studies showed CVD risk been influenced by factors such as family responsibilities, work stress, or financial obligations [29,30].

Strength and limitations of the study

The present study may be the initial attempt to identify cardiovascular health status and its associated factors among two IT companies of South India. Further, we assessed cardiovascular risk using non-laboratory risk assessment scale, which is identified as standardized scale and easy on participants. In addition, it gave a first view on participant's cardiac health swiftly. However, our study had a few limitations; majority of collected data was subjective in nature, may be the authenticity limited. The non-laboratory INTERHEART risk score serves as a valuable preliminary tool for risk stratification; however, its precision may be inferior to a comprehensive cardiovascular assessment that incorporates laboratory diagnostics. Moreover, we considered only a few IT companies and participants were desk-workers selected based on availability at the time of data collection. So, the data outcome may not represent and generalize with all adults at suburban western Chennai.

CONCLUSION

Our study highlighted the cardiovascular risk among adults in suburban western Chennai, India, with a focus on socio-demographic characteristics. It also provided insights into the frequency of CVD and related risk factors among the adult's population in India. The findings indicate that the adults in this region are at higher risk of developing CVDs in future. In addition, a more investigations is needed to identify and prioritize the risk factors that may directly or indirectly influence CVD. The high prevalence raises significant concern about cardiac health and growing healthcare needs. Effective implementation strategies are essential to reduce the risk of CVDs, with an emphasis on early detection and management.

CONTRIBUTING AUTHORS

- Study design: Sasikala Palayan, responsible for designing the study, which involved conceptualizing the planning, methodology, and outlining the approach to the study.
- Data collection: Sasikala Palayan, involved in organizing and gathering the data needed for the study from all participants individually.
- Data analysis: Sasikala Palayan, Thenmozhi Paluchamy, were responsible for interpreting the data once after received from statistician. The data were reviewed for its pattern and validated the findings.
- Study supervision: Sasikala Palayan, Thenmozhi Paluchamy, and Ramesh Chandrababu, were overviewed the research from the planning till the end of the study. Ensured objectives were adhered during planning and execution.

- Manuscript writing: Sasikala Palayan was involved in drafting sections, organizing the content, and formatting as whole document.
- Critical revisions for important intellectual content: Thenmozhi Paluchamy, Ramesh Chandrababu were involved in reviewing the manuscript critically and provided feedback to refine and improve quality and clarity.

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CONFLICT OF INTEREST

The authors declare that they have no known competing financial conflicts of interest or personal relationships that could have influenced the work presented in this paper.

FINDING

Nil.

REFERENCES

1. Rani V, Goli S, Reddy AB. The economic-adjusted age dependency ratio in India: A new measure for understanding economic burden of aging. In: Handbook of Aging, Health and Public Policy. Singapore: Springer Nature; 2024. p. 1-37. doi: 10.1007/978-981-16-1914-4_242-1
2. Sreeniwas Kumar A, Sinha N. Cardiovascular disease in India: A 360 degree overview. Med J Armed Forces India. 2020;76(1):1-3. doi: 10.1016/j.mjafi.2019.12.005, PMID 32020960
3. Jan B, Dar MI, Choudhary B, Basist P, Khan R, Alhalmi A. Cardiovascular diseases among Indian older adults: A comprehensive review. Cardiovasc Ther. 2024;2024:6894693. doi: 10.1155/2024/6894693, PMID 39742010
4. Anjana RM, Unnikrishnan R, Deepa M, Pradeepa R, Tandon N, Das AK, *et al*. Metabolic non-communicable disease health report of India: The ICMR-INDIAB national cross-sectional study (ICMR-INDIAB-17). Lancet Diabetes Endocrinol. 2023 Jul 1;11(7):474-89. doi: 10.1016/S2213-8587(23)00119-5, PMID 37301218
5. Khatoon S, Bhattacharya P, Mukherjee N, Menon J, Janakiram C, Rajendran A, *et al*. Prevalence and Risk Factors of Non-Communicable Diseases in Indigenous Populations of South Asia: A Systematic Review Protocol. ResearchSquare [Preprint]; 2023 Sep 8. Available from: https://www.researchsquare.com [Last accessed on 2025 Apr 02].
6. Kant R. Mahatma Gandhi and public health in India. In: Gandhi in the Twenty First Century: Ideas and Relevance. Berlin: Springer Nature; 2022. p. 161-71.
7. Khan FS, Lotia-Farrukh I, Khan AJ, Siddiqui ST, Sajun SZ, Malik AA, *et al*. The Burden of non-communicable disease in transition communities in an Asian megacity: Baseline findings from a cohort study in Karachi, Pakistan. PLoS One. 2013 Feb 13;8(2):e56008. doi: 10.1371/journal.pone.0056008, PMID 23418493
8. Temgire S, Borah A, Kumthekar S, Idate A. Recent trends in ready to eat/cook food products: A review. Pharma Innov. 2021;10(5):211-7. doi: 10.22271/tpi.2021.v10.i5c.6207
9. Parthasarathi SK, Hebbani AV, Dharmavaram Desai PP. Vegetarian ethnic foods of South India: Review on the influence of traditional knowledge. J Ethn Foods. 2022;9(1):42. doi: 10.1186/s42779-022-00156-1
10. Kaur R, Pandey P. Air pollution, climate change, and human health in Indian cities: A brief review. Front Sustain Cities. 2021;3:705131. doi: 10.3389/frsc.2021.705131
11. Liang S, Zhang J, Ning R, Du Z, Liu J, Batibawa JW, *et al*. The critical role of endothelial function in fine particulate matter-induced atherosclerosis. Part Fibre Toxicol. 2020;17(1):61. doi: 10.1186/s12989-020-00391-x, PMID 33276797
12. Bi F, Gao C, Guo H. Epigenetic regulation of cardiovascular diseases induced by behavioral and environmental risk factors: Mechanistic, diagnostic, and therapeutic insights. FASEB Bioadv. 2024;6(11):477-502. doi: 10.1096/fba.2024-00080, PMID 39512842
13. Feng S, Huang F, Zhang Y, Feng Y, Zhang Y, Cao Y, *et al*. The pathophysiological and molecular mechanisms of atmospheric PM2.5 affecting cardiovascular health: A review. Ecotoxicol Environ Saf. 2023;249:114444. doi: 10.1016/j.ecoenv.2022.114444
14. Allarakha S, Yadav J, Yadav AK. Financial burden and financing strategies for treating the cardiovascular diseases in India. Soc Sci Humanit Open. 2022 Jan 1;6(1):100275. doi: 10.1016/j.ssaho.2022.100275
15. Turcu AM, Ilie AC, Ştefăniu R, Ţăranu SM, Sandu IA, Alexa-Stratulat T, *et al*. The impact of heart rate variability monitoring on preventing severe cardiovascular events. Diagnostics (Basel). 2023;13(14):2382. doi: 10.3390/diagnostics13142382, PMID 37510126
16. Restrepo Tique M, Araque O, Sanchez-Echeverri LA. Technological advances in the diagnosis of cardiovascular disease: A public health strategy. Int J Environ Res Public Health. 2024;21(8):1083. doi: 10.3390/ijerph21081083, PMID 39200692
17. Vasiljevic Z, Scarpone M, Bergami M, Yoon J, Van Der Schaar M, Krljanac G, *et al*. Smoking and sex differences in first manifestation of cardiovascular disease. Atherosclerosis. 2021 Aug 1;330:43-51. doi: 10.1016/j.atherosclerosis.2021.06.909, PMID 34233252
18. Levy M, Chen Y, Clarke R, Guo Y, Lv J, Yu C, *et al*. Gender differences in use of invasive diagnostic and therapeutic procedures for acute ischaemic heart disease in Chinese adults. Heart. 2022 Feb 1;108(4):292-9. doi: 10.1136/heartjnl-2021-318988, PMID 34045308
19. Zhernakova DV, Sinha T, Andreu-Sánchez S, Prins JR, Kurilshikov A, Balder JW, *et al*. Age-dependent sex differences in cardiometabolic risk factors. Nat Cardiovasc Res. 2022 Sep 1;1(9):844-54. doi: 10.1038/s44161-022-00131-8, PMID 39196077
20. Lodi E, Stefani O, Reggianini L, Carollo A, Martinotti V, Modena MG. Gender differences in cardiovascular risk factors. Ital J Gender Specic Med. 2020;6(3):118-25. doi: 10.1723/3432.34216
21. Yadav K, Behera S, Singh M, Parashar M, Goel S, Jaswal N, *et al*. Trend of risk factors for cardiovascular diseases among young and middle-aged Indians: Insights from a nationally representative survey. Int J Cardiol Cardiovasc Risk Prev. 2023 Dec 1;19:200200. doi: 10.1016/j.ijcrp.2023.200200
22. Prasad Rao M, Jalem SR, Kumar BB, Sangam S. Evaluation of lipid profile and liver function parameters in obese and non-obese hypertensive individuals attended tertiary care teaching hospital. Int J Curr Pharm Res. 2023 May;15:26-9.
23. Okunogbe A, Nugent R, Spencer G, Ralston J, Wilding J. Economic impacts of overweight and obesity: Current and future estimates for eight countries. BMJ Glob Health. 2021;6(10):e006351. doi: 10.1136/bmjgh-2021-006351, PMID 34737167
24. Mehra R, Aanchal KS, Kalsi S, Gautam SP. Hypertension in relation to immune system and way of life along with treatment. Int J Curr Pharm Res. 2021 Nov 15;13:1-10.
25. Ghosh J. A review on understanding the risk factors for coronary heart disease in Indian college students. Int J Noncommun Dis. 2023 Jul;8(3):117-28. doi: 10.4103/jncd.jncd_68_23
26. Gaiha R. Is the Growing Burden of Non-Communicable Diseases in India Preventable? Philadelphia, PA: University of Pennsylvania; 2024.
27. Powell-Wiley TM, Baumer Y, Baah FO, Baez AS, Farmer N, Mahlobo CT, *et al*. Social determinants of cardiovascular disease. Circ Res. 2022;130(5):782-99. doi: 10.1161/CIRCRESAHA.121.319811, PMID 35239404
28. Juarez PD, Hood DB, Song MA, Ramesh A. Use of an exposome approach to understand the effects of exposures from the natural, built, and social environments on cardio-vascular disease onset, progression, and outcomes. Front Public Health. 2020;8:379. doi: 10.3389/fpubh.2020.00379, PMID 32903514
29. Kamardeen I. Work stress related cardiovascular diseases among construction professionals. Built Environ Proj Asset Manag. 2022 Feb 8;12(2):223-42. doi: 10.1108/BEPAM-06-2021-0081
30. Erving CL. Stress exposure and cardiovascular disease risk among US black women: Ethnicity and nativity intersections. Popul Res Policy Rev. 2024 Jun 1;43(3). doi: 10.1007/s11113-024-09883-6