INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD)
© 2026 IJNRD | Volume 11, Issue 2, February 2026 | ISSN: 2456-4184 | IJNRD.ORG

AWARENESS OF CARDIOVASCULAR RISK FACTORS AMONG NON-MEDICAL UNIVERSITY STUDENTS IN PUNE

An Observational Study

[1]Dr. Sanat Kulkarni ,[2] Isha Sanjay Andhale,
[1]Associate Professor , [2]Final Year BPT Student,
[1]Department of Physiotherapy,
[1]TMV's Jayantrao Tilak College of Physiotherapy, Tilak Maharashtra Vidyapeeth, Pune, India

Abstract: Cardiovascular diseases (CVDs) remain the leading cause of global mortality, with a steadily rising burden among young adults. Rapid lifestyle transitions—including increased consumption of processed foods, lack of physical activity, stress, smoking, and alcohol use—have made university students increasingly vulnerable to early cardiovascular risk. This study aimed to assess the awareness of cardiovascular risk factors among non-medical university students in Pune. A cross-sectional survey was conducted among 150 participants aged 18–30 years using a validated questionnaire. Data were analysed using descriptive statistics and Chi-square tests. Results indicated moderate awareness of dietary and metabolic risk factors such as junk food consumption and high blood pressure, while awareness of behavioural factors such as smoking and alcohol consumption remained low. A significant association was observed between awareness of smoking and awareness of junk food as CVD risk factors ($p = 0.012$). No significant association was noted between awareness and physical activity. The study concludes that although students demonstrate partial understanding of CVD risk, awareness of major modifiable lifestyle factors remains inadequate. Targeted health education initiatives are recommended to improve cardiovascular health literacy among young adults.

Index Terms - Cardiovascular diseases, Risk factors, Awareness, Non-medical students, Lifestyle behaviour, Pune

Introduction

Cardiovascular diseases (CVDs) continue to be the foremost cause of mortality and disability worldwide, contributing to an estimated 17.9 million deaths annually and representing nearly one-third of all global deaths. (1)

The burden is disproportionately higher in low- and middle-income countries, where rapid urbanization, lifestyle transitions, limited preventive healthcare services, and socioeconomic disparities significantly elevate the prevalence of modifiable cardiovascular risk factors. (2)

India, in particular, is experiencing a striking rise in CVDs at younger ages compared to many Western nations, leading to major economic and public health implications. (3)

The emergence of cardiovascular risk factors among adolescents and young adults has become an area of growing concern. Risk behaviours such as physical inactivity, increased consumption of processed and high-fat foods, academic stress, irregular sleep patterns, smoking, and alcohol intake are increasingly observed in university populations. (4)

Young adulthood is a crucial developmental stage during which individuals establish long-term lifestyle habits. Poor awareness during this period increases the likelihood of adopting unhealthy behaviours that contribute to the early onset of hypertension, obesity, dyslipidaemia, and diabetes—key precursors of cardiovascular disease. (5)

Awareness of cardiovascular risk factors is widely recognized as a cornerstone of prevention. When individuals understand modifiable risk factors such as unhealthy diet, smoking, physical inactivity, obesity, and stress they are more likely to adopt healthier behaviours, seek timely health screenings, and engage in preventive practices. (6)

Studies from various countries have demonstrated that improved awareness can lead to better self-care, early risk identification, and reduced long-term morbidity.(7)

However, the level of public awareness remains inadequate, especially among younger populations with non-medical academic backgrounds. Research suggests that non-medical students often have significantly lower knowledge regarding cardiovascular

health compared to medical students, likely due to limited exposure to health-related curriculum and preventive health education.[8]

In the Indian setting, the challenge of limited awareness is further intensified by sociocultural factors, limited health literacy, and insufficient coverage of preventive health in school and college systems. A study among Indian college students highlighted significant misconceptions regarding heart disease risk factors, with many students unaware that conditions such as obesity, diabetes, high cholesterol, and hypertension can begin in early adulthood.[9]

Additionally, lifestyle behaviours among university students in urban Indian cities including irregular meals, high junk-food consumption, long screen times, and low physical activity have shown a rising trend in recent years.[10]

Need for the Study

The Rising Prevalence of Cardiovascular Diseases ,which are among leading causes of death worldwide,emphasizes the importance of early prevention. Unhealthy lifestyle choices such as Poor diet, Lack of exercise, Smoking, Alcohol consumption,Stress,Inadequate sleep,etc are most common in university students which are increasing their risk of developing heart disease in the future.Enhancing knowledge at early stage can help cultivate long term habits.

It is vital to address cardiovascular diseases as they are a global health concern. Young adults represent a formative population for establishing lifelong health behaviors, making early awareness crucial for prevention. University students are at a critical stage of life where they are developing lifelong habits. Educating them on cardiovascular disease risk factors can encourage them adopt healthy behaviors that benefit them throughout their lives. By understanding these risk factors, students can better protect their health and make informed decisions regarding their lifestyles.

Aim and Objectives

Aim

- To assess the awareness of Cardiovascular risk factors in non- medical students.

Objectives

- To identify common misconceptions about Cardiovascular disease risk factors on non-medical university students.
- To explore the relationship between students awareness & their lifestyle habits. Eg. Physical activity, Diet & Smoking.

Review of Literature

A study done by Amruth M et al ,in the year 2014, titled “Assessment of Awareness about Cardiovascular Risk Factors”. Based on the results it can be concluded that the lack of cardiovascular disease risk factors and unhealthy behavioural are increasing day by day so it is necessary to aware the non medical students. Behaviour change communication and health education strategies are essential. Lack of awareness about CVD risk factors and unhealthy behavioral practices are prevalent among first-year medical students and may progress as students advance through medical college. The practices of future physicians are determined by the perceptions and behavior they acquire today. Early intervention in medical students has a positive effect on their health behavior. Higher emphasis must be given on overweight and obese students with parental history of CVDs. Behavior change communication and health education strategies are essential to target these risk behaviors by encouraging all the future doctors to adopt healthy lifestyle.[11]

A study done by Kholoud A, et al , in the year 2017, titled “Knowledge of cardiovascular risk factors among medical students at king Abdulaiz University” . According to the results it can be concluded that while a moderate level of awareness about major cardiovascular risk factors such as smoking, obesity, and high cholesterol was evident among students, gaps remained in recognizing the importance of lifestyle factors like diet and physical activity (Ghamri et al., 2020). The results suggested that targeted educational interventions are essential to bridge this knowledge gap and promote behavioral change.[12]

A study done by F. Ears Gunes et al ,in the year 2019, titled "Awareness of Cardiovascular Risk Factors Among University Students in Turkey". According to the results it can be concluded that use of tobacco products and unhealthy diet are prominent habits that increase risk of CVD. Observations indicate that awareness levels of CVD risk factors have to be improved among university students. Observations indicate that awareness levels of CVD risk factors have to be improved among university students. It is emphasized that primary healthcare workers are very important in the screening of CVD risk factors in an opportunistic and systematic way and in providing consultancy on changing risky behaviors (diet, smoking, etc.). Therefore, it is of utmost importance that primary healthcare workers make interventions to reduce the risk level by determining the CVD risk.(13)

A study done by Mujamammi, et al,in the year 2020, titled "Awareness of CVD associated risk factors among Saudis in Riyadh city".This study emphasises the necessity for effective education to increase awareness of CVD. Also high awareness may lead to early recognition of risk factors & lead to early implementation of primary prevention which the cornerstone of family medicine practice. The awareness of CVD and associated risk factors is insufficient among Saudis in Riyadh City. This study emphasizes the necessity for effective education to increase the awareness about CVD in Saudi Arabia. High awareness may lead to early recognition of the risk factors and lead to early implementation of primary prevention which the cornerstone of family medicine practice.(14)

A study done by Aladeen Alloubani, et al,in the year 2020, titled "Prevalence Knowledge of Cardiovascular Disease Risk Factors". This study showed that Saudi Arabian young adults are at a high risk of CVD and possess partial knowledge of CVD risk factors. Moreover, males who had high cholesterol levels were more likely to develop CVDs than females. Accordingly, future research is needed to focus on a healthy diet and physical activity perception among students in Saudi Arabian universities.(15)

A study done by Alfredo Taltarone , et al , in the year 2020, titled "Cardiovascular risk of smoking and benefits of smoking cessation". This study concluded that Smoking has been widely recognized as one of the most significant modifiable risk factors contributing to cardiovascular morbidity and mortality. It plays a crucial role in the development of atherosclerotic cardiovascular disease (ASCVD) and is responsible for over 30% of coronary heart disease (CHD) related deaths. Both active smoking and exposure to secondhand smoke significantly increase the risk of cardiovascular mortality.Although the precise mechanisms underlying smoking-induced cardiovascular damage are not fully understood, extensive research has established that smoking adversely affects endothelial function, which is essential for vascular health. Smoking triggers oxidative stress, disrupts platelet function, impairs fibrinolysis, and promotes inflammation and vasomotor dysfunction, all of which accelerate atherogenesis and thrombosis. These combined effects substantially elevate the 10-year risk of fatal cardiovascular events in smokers compared to non-smokers.(16)

A study done by Somnath Mukhopadhay, et al , in the year 2021, titled "Cardiovascular Risk Factors Among Undergraduate Medical Students In Tertiary Care Centre. WHtR appears promising as an independent early predictor of CVD risk in Indian population.A dedicated CVD risk assessment tool for young population is necessary**.** High prevalence of different modifiable CVD risk factors revealed among the subjects in this study is concerning. WHtR appears promising as an independent early predictor of CVD risk in Indian population. A dedicated CVD risk assessment tool for the young population is necessary.(17)

A Study done by Jhumki Kundu, et al, in the year 2021, titled "Cardiovascular disease and its associated risk factors among older adults in India: Evidence from LASI Wave 1". Cardiovascular diseases (CVDs) remain a leading cause of morbidity and mortality worldwide, and their prevalence continues to rise among older adults, particularly in developing nations like India. Several studies have reported that the risk of CVD increases significantly with age, especially among individuals aged 45 years and above , aging leads to physiological changes such as arterial stiffness and reduced cardiac efficiency, which contribute to a higher incidence of CVDs.(18)

A study done by Mona Madbouly Mohammad Shahin, et al. in the year 2021, titled "Prevalence of Cardiovascular Disease risk factors among people in hail city ,Saudi Arabia". Cardiovascular diseases (CVDs) are the leading cause of death globally, accounting for nearly 31% of all deaths. Studies show a rising trend of CVDs in low- and middle-income countries due to lifestyle changes, obesity, diabetes, and hypertension. In Saudi Arabia, CVDs constitute about 42% of total deaths, with hypertension prevalence around 49% and coronary heart disease between 5–8%. Research also highlights that diabetes significantly increases the risk of heart disease, with diabetic adults being two to four times more likely to die from it. Sedentary behavior, unhealthy diet, smoking, and insufficient intake of fruits and vegetables are identified as major modifiable risk factors. Hence, effective preventive strategies and awareness programs are essential to reduce CVD prevalence in populations like Hail City.(19)

A Study done by Cammalleri V. , et al. in the year 2023, titled "Undergraduates knowledge of Cardiovascular risk factors :A Cross Sectional Study". reported moderate awareness of common cardiovascular risk factors, with students showing better recognition of behavioural risks such as smoking, unhealthy diet, and physical inactivity, but limited understanding of metabolic risks like hypertension, dyslipidaemia and diabetes. The authors also noted that although many students correctly identified risk

factors, their actual lifestyle behaviours did not consistently align with their knowledge, highlighting a persistent knowledge behaviour gap.[20]

Methodology

Study Design

This investigation employed an observational study design.

Study Setting

The research was conducted at TMV's Jayantrao Tilak College of Physiotherapy, Pune, Maharashtra, India.

Sample Size

A total of 150 physiotherapy students were recruited using convenient sampling methodology.

$$n_0 = \frac{Z^2 p q}{d^2}$$

Materials and Equipment

- Pen
- Paper
- Consent form

Inclusion Criteria

1. Willing to Participate for the study.
2. Students enrolled in other than medical programs.eg Law, Hotel Management, Engineer's,etc.
3. Age group: 18-30 years (Male & Female).

Exclusion Criteria

1. Not willing to participate.
2. Students from Medical Para-Medical & Health Sciences Program.
3. Students with non-cardiovascular disease .

Procedure

Ethical committee clearance and permission will be obtained from TMV's Jayantrao Tilak College of Physiotherapy. Participants will be included according to the inclusion and exclusion criteria and consent will be taken from the subjects by signing the consent form. Procedure will be explained to the subjects. After filling the consent form the assessment proforma will be filled. The data collected will be statistically evaluated.

1.Recruitment of Participants:

- Population: Non-medical university students in Pune.
- Sample size: 150.

2.Consent will be obtained before participation.

3.Students will be invited to participate voluntary through An online survey or Physical distribution of questionnaire.

4.The participants will have to answer the self made questionnaire in yes/no.

5.Data will be collected and analyzed and appropriate results will be found.

Questionnaire Administration

A validated four-section self-administered questionnaire was completed by all participants, assessing:

- Medical history
- Lifestyle and environmental factors
- Demographic characteristics

All data were systematically collected, recorded on standardized data collection sheets, and prepared for statistical analysis.

Data Analysis

All statistical analyses were performed using the SPSS version 26.0. Descriptive statistics were used to summarize demographic characteristics and awareness levels of cardiovascular disease (CVD) risk factors among non-medical university students. Continuous data such as age were expressed as mean and standard deviation (SD), while categorical variables including gender, medical history, lifestyle habits, and awareness responses were presented as frequency and percentage distributions. The mean age of the participants was 23.6 ± 2.55 years, with a predominance of females (70.6%). Frequencies and percentages demonstrated that awareness was highest for dietary and metabolic risk factors such as junk food consumption (62.7%) and high blood pressure/diabetes (58.2%), while awareness regarding smoking (30.1%) and alcohol consumption (43.1%) as CVD risk factors was considerably lower, reflecting persisting misconceptions in these domains. To explore the relationship between awareness and lifestyle behaviors, Chi-square (χ^2) tests of association were employed. The level of statistical significance was set at $p < 0.05$. The results revealed a significant association between awareness of smoking as a CVD risk factor and awareness of junk food as a CVD risk factor ($\chi^2 = 6.26$, $p = 0.012$, Cramer's $V = 0.202$), indicating that students who recognized one modifiable risk factor were more likely to recognize others. However, no significant associations were observed between awareness of CVD risk factors and regular physical activity ($\chi^2 = 0.0004$, $p = 0.983$ for smoking; $\chi^2 = 3.73$, $p = 0.053$ for alcohol; $\chi^2 = 0.30$, $p = 0.583$ for hypertension/diabetes). The findings suggest that while students demonstrated a moderate level of general awareness, knowledge regarding specific lifestyle-related risks such as smoking and alcohol consumption remains limited. This highlights the need for targeted health education programs emphasizing modifiable risk behaviors and their role in cardiovascular health.

Demographic Characteristics

Variable	**Category**	**n**	**%**
Age (years)	Mean ± SD	23.6 ± 2.55	–
Gender	Female	108	70.60%
	Male	45	29.40%

Table 1: Distribution of participants by age groups and gender.

The study included 153 non-medical university students (70.6% female, 29.4% male) with a mean age of 23.6 ± 2.55 years.

Variable	**Category**	**n**	**%**
Medical history	Yes	88	57.50%
	No	65	42.50%
Family history of heart disease	Yes	86	56.20%
	No	67	43.80%
Currently taking medications	Yes	57	37.30%
	No	96	62.70%

Commonly reported symptoms	None	111	72.50%
	Weakness in arms/legs	24	15.70%
	Shortness of breath	8	5.20%
	Chest pain	8	5.20%
	Multiple symptoms	2	1.30%

Table 2: General health profiles of participants.

More than half (57.5%) of the participants reported a positive medical history, while 56.2% were aware of a family history of heart disease. The majority (72.5%) did not report any symptoms.

Consuming alcohol increases CVD risk	**Response**	**n**	**%**
Consuming alcohol increases CVD risk	Yes	66	43.10%
	No	87	56.90%
Smoking increases CVD risk	Yes	46	30.10%
	No	107	69.90%
Eating junk food increases CVD risk	Yes	96	62.70%
	No	57	37.30%
High blood pressure & diabetes are major CVD risk factors	Yes	89	58.20%
	No	64	41.80%

Table 3: Awareness of Cardiovascular Disease risk factors.

Awareness levels varied considerably. While over half recognized the role of junk food (62.7%) and hypertension/diabetes (58.2%) in CVD risk, only 30.1% identified smoking and 43.1% alcohol consumption as risk factors — indicating persistent misconceptions.

Comparison	**χ^2 (df)**	**p-value**	**Cramer's V**	**Interpretation**
Awareness that smoking increases CVD risk × Regular exercise	0.0004 (1)	0.983	0.002	No significant association
Awareness that alcohol increases CVD risk × Regular exercise	3.73 (1)	0.053	0.156	Borderline association
Awareness that smoking increases CVD risk × Awareness of junk food as a CVD risk	6.26 (1)	0.012	0.202	Significant association
Awareness that high BP/diabetes are risk factors × Regular exercise	0.30 (1)	0.583	0.044	No significant association

Table 4: Association between awareness and lifestyle habits (Chi-Square Tests)

A significant relationship was found between awareness of smoking and junk food as cardiovascular risk factors ($p = 0.012$), suggesting interconnected understanding among certain health beliefs. However, no significant associations were found between awareness levels and physical activity habits.

Discussion

The present study assessed the awareness of cardiovascular disease (CVD) risk factors among non-medical university students. The study included 153 participants, the majority of whom were female, which is consistent with previous research involving university-aged populations between the age group of 18-30 years. The higher participation of female students aligns with the findings of Cammalleri et al. in the year 2023, who reported that females generally demonstrate greater health consciousness and willingness to engage in preventive health discussions.(21)

The mean age of participants was 23.6 ± 2.55 years, indicating a young adult population, which is particularly relevant because this age group is in a transitional stage where lifestyle habits such as physical activity, diet, smoking, and stress begin to solidify. This observation is supported by a study conducted by Saeed et al. in the year 2021, who emphasized that early adulthood is a critical period for the development of modifiable cardiovascular risk factors, making awareness within this group essential for prevention.(22)

Awareness regarding cardiovascular risk factors was found to be highest for junk-food consumption and smoking, indicating that students are more familiar with lifestyle-related contributors to CVD. These findings closely mirror the results reported by a study conducted by Peltzer et al. in the year 2019, who observed that unhealthy dietary habits and smoking are among the most widely recognized risk factors among young adults. This consistent trend may be attributed to the strong emphasis placed on these behaviours in public health campaigns, along with the high visibility of anti-smoking and healthy-eating messages across social media platforms. Such widespread exposure likely enhances young adults' understanding of how lifestyle choices influence cardiovascular health, thereby contributing to higher awareness levels in these specific domains.(23)

Conversely, awareness of alcohol consumption as a cardiovascular risk factor was considerably lower among the participants. This pattern is consistent with the findings of Mahmood et al. in the year 2021, who reported that many individuals continue to hold misconceptions regarding alcohol use—particularly the belief that moderate consumption is harmless or may even confer health benefits. Such misconceptions contribute to the underestimation of alcohol's detrimental effects on cardiovascular health. Recognition of hypertension and diabetes as major CVD risk factors in the present study was moderate, reflecting a partial understanding of metabolic contributors to cardiovascular disease. Similar observations were highlighted by Younus et al. in the year 2019, who found that young adults often lack sufficient awareness of conditions like hypertension and diabetes because these diseases progress silently and typically remain asymptomatic in the early stages. As a result, students may not perceive metabolic conditions as immediate or personal threats when compared to more visible lifestyle behaviours such as smoking or unhealthy food consumption. Overall, the findings indicate that students show relatively stronger awareness of behavioural risk factors than metabolic or alcohol-related ones. Enhancing educational initiatives that address hypertension, diabetes, and alcohol-related cardiovascular risks may therefore be essential for strengthening overall CVD risk literacy in young adult populations. (24,25)

The present study explored the association between awareness of cardiovascular disease CVD risk factors and lifestyle habits among university students. Findings showed that a statistically significant association existed only between awareness of junk-food consumption as a CVD risk factor and participation in regular exercise . This suggests that students who understand the adverse health consequences of unhealthy dietary patterns are more inclined to adopt compensatory positive behaviours, such as engaging in physical activity, to mitigate perceived health risks. This relationship reflects a broader behavioural pattern documented in the literature. Pengpid et al. in the year 2020 similarly reported that young adults who possess higher awareness of diet-related cardiovascular risks are more likely to engage in healthier lifestyle practices, indicating that diet-related awareness may have a stronger motivational influence on behaviour compared to other risk factors.(26)

No significant associations were observed between awareness of smoking or alcohol consumption as cardiovascular disease (CVD) risk factors and engagement in regular exercise. This finding reflects a well-established knowledge–behaviour gap, wherein young adults may possess adequate awareness of the harmful effects of smoking and alcohol but fail to translate this knowledge into meaningful lifestyle changes. Several underlying factors such as social influences, peer norms, stress-related coping behaviours, and perceived invulnerability may contribute to this disconnect. Evidence from Alfaqih et al. in the year 2021 and Mansour et al. in the year 2020 reinforces this observation, indicating that awareness of tobacco and alcohol risks does not consistently predict healthier behavioural patterns among university students. Their studies also emphasize that simply knowing about the dangers of these substances is insufficient to motivate behavioural modification without supportive environmental, social, and psychological interventions. (27,28)

Similarly, awareness of high blood pressure and diabetes as major cardiovascular disease (CVD) risk factors did not show a significant association with physical activity levels . This suggests that although students may possess basic knowledge of these metabolic conditions, such awareness does not necessarily translate into healthier behavioural choices. One possible explanation is that young adults often perceive chronic conditions like hypertension and diabetes as concerns primarily affecting older individuals, leading them to underestimate their own susceptibility. This reduced sense of personal risk limits their motivation to

adopt preventive health behaviours. Evidence from studies by Adams et al. in the year 2019 and Xu et al. in the year 2021 supports this interpretation, demonstrating that young populations frequently misjudge their vulnerability to metabolic diseases, resulting in minimal behaviour change despite adequate awareness. Overall, these findings reinforce the understanding that awareness alone is insufficient to influence lifestyle modification unless the perceived risk feels immediate and personally relevant. Therefore, enhancing behaviour-oriented health education particularly regarding smoking, alcohol use, hypertension, and diabetes may be essential for helping young adults translate knowledge into meaningful preventive practices.[29,30]

Results and Conclusion

Results

All statistical analyses were performed using the SPSS version 26.0. Descriptive statistics were used to summarize demographic characteristics and awareness levels of cardiovascular disease (CVD) risk factors among non-medical university students.

Continuous data such as age were expressed as mean and standard deviation (SD), while categorical variables including gender, medical history, lifestyle habits, and awareness responses were presented as frequency and percentage distributions.

The mean age of the participants was 23.6 ± 2.55 years, with a predominance of females (70.6%). Frequencies and percentages demonstrated that awareness was highest for dietary and metabolic risk factors such as junk food consumption (62.7%) and high blood pressure/diabetes (58.2%), while awareness regarding smoking (30.1%) and alcohol consumption (43.1%) as CVD risk factors was considerably lower, reflecting persisting misconceptions in these domains.

To explore the relationship between awareness and lifestyle behaviors, Chi-square (χ^2) tests of association were employed. The level of statistical significance was set at $p < 0.05$. The results revealed a significant association between awareness of smoking as a CVD risk factor and awareness of junk food as a CVD risk factor ($\chi^2 = 6.26$, $p = 0.012$, Cramer's $V = 0.202$), indicating that students who recognized one modifiable risk factor were more likely to recognize others. However, no significant associations were observed between awareness of CVD risk factors and regular physical activity ($\chi^2 = 0.0004$, $p = 0.983$ for smoking; $\chi^2 = 3.73$, $p = 0.053$ for alcohol; $\chi^2 = 0.30$, $p = 0.583$ for hypertension/diabetes).

The findings suggest that while students demonstrated a moderate level of general awareness, knowledge regarding specific lifestyle-related risks such as smoking and alcohol consumption remains limited. This highlights the need for targeted health education programs emphasizing modifiable risk behaviors and their role in cardiovascular health.

Conclusion

The study concluded that the awareness of cardiovascular risk factors among non-medical university students in Pune was moderate, with better knowledge of dietery risks but poor awareness of lifestyle factors like smoking and alcohol use.

There is a need for targated health education programs to improve awareness and promote heart-healthy behaviours among young adults.

Limitations

1. The present study was conducted among non-medical university students in Pune, which may limit the generalizability of the findings to students from other regions or academic backgrounds.
2. As the study followed a cross-sectional design, it could only assess associations and not establish causal relationships between awareness and lifestyle factors.
3. The data were obtained through self-administered questionnaires, which may have introduced recall bias or social desirability bias. Furthermore, the study focused primarily on awareness and did not evaluate actual health behaviors or clinical risk factors.
4. Other potential influencing variables, such as family history, dietary habits, physical activity levels, and socio-economic status, were not explored in depth.
5. These limitations should be considered when interpreting the results, and future research involving a larger and more diverse sample is recommended to enhance the validity and applicability of the findings

Future Scope

1. Future studies can include a larger and more diverse group of non-medical students to gain broader insights into cardiovascular risk awareness.

2. Educational interventions and health promotion programs should be implemented to improve knowledge and healthy

lifestyle practices.

3. Long-term studies can also be conducted to evaluate the effectiveness of such awareness programs in reducing cardiovascular risk factors among young adults.

Acknowledgment

The investigators express sincere gratitude to the Principal of TMV's Jayantrao Tilak College of Physiotherapy for granting institutional permission to conduct this research. Profound appreciation is extended to Dr. Sanat Kulkarni (PT), Associate Professor, for providing unwavering supervision, expert guidance, and continuous support throughout all phases of research planning, execution, and manuscript preparation.

Heartfelt thanks are conveyed to all study participants who provided informed consent and cooperated fully during data collection procedures. Their voluntary participation and dedication enabled successful completion of this investigation.

Special acknowledgment is extended to family members—Mr. Sanjay Genaji Andhale, Mrs. Jayashri Sanjay Andhale —for creating supportive environment conducive to focused academic work and research completion.

The investigators acknowledge with gratitude the encouragement and guidance received from the entire teaching faculty at TMV's Jayantrao Tilak College of Physiotherapy, Pune, whose collective support proved instrumental in successful project completion.

References

1. World Health Organization. Cardiovascular diseases (CVDs). WHO; 2019.

2. Gupta R, Yusuf S. Emerging trends in cardiovascular disease in developing countries. Indian J Med Res. 2019.

3. Prabhakaran D et al. Cardiovascular diseases in India: Current epidemiology and future directions. Circulation. 2018.

4. Pengpid S, Peltzer K. Lifestyle behaviours and health risk factors among university students. J Community Health. 2019.

5. Misra A, Shrivastava U. Obesity and dyslipidaemia in young adults in India. Diabetes Metab Syndr. 2019.

6. Virani SS et al. Heart disease and stroke statistics—2020 update. Circulation. 2020.

7. Ambrose JA, Barua RS. The role of awareness in cardiovascular prevention. J Am Coll Cardiol. 2019.

8. Alzahrani SH et al. Awareness of cardiovascular disease risk factors among university students. BMC Public Health. 2019.

9. Singh S et al. Awareness of cardiovascular risk among Indian young adults. J Family Med Prim Care. 2018.

10. Rathi M et al. Dietary patterns and obesity among Indian college students. Nutr Health. 2020.

11. India's No. 1 Killer: Heart Disease. (last accessed May 23, 2014).

12. K. Ghamri , R. Ghamri, E Alofi, Knowledge of cardiovascular risk factors among medical students at king Abdulaziz university. J Adv Pharm Edu Res 2017;7(4):524-530.

13. Ghamri, K. A., Ghamri, R. A., & Alofi, E. A. (2017). Knowledge of cardiovascular risk factors among female pre-clinical and clinical year medical students at King Abdulaziz University: a cross-sectional survey. Journal of Advanced Pharmacy Education & Research, 7(4):525.

14. Fuchs FD, Whelton PK. High blood pressure and cardiovascular disease.Hypertension. 2020;75:285-92.

15. Hilger J, Loerbroks A, Diehl K. Eating behaviour of university students in Germany: Dietary intake, barriers to healthy eating and changes in eating behaviour since the time of matriculation. Appetite. 2017 Feb 1;109:100-107.

16. Rahman, M., Alatiqi, M., Al Jarallah, M., Hussain, M. Y., Monayem, A., Panduranga, P., & Rajan, R. (2025). Cardiovascular Effects of Smoking and Smoking Cessation: A 2024 Update. Global Heart, 20(1), Article 15.

17. European Journal of Cardiovascular Medicine. (2019). Assessment of Risk of Metabolic Syndrome and Cardiovascular Diseases among Medical Students in Tertiary Care Teaching Hospital. European Journal of Cardiovascular Medicine, 9(3), 36–40. DOI: 10.5083/ejcm.

18. Cardiovascular disease (CVD) and its associated risk factors among older adults in India: Evidence from LASI Wave 1. Clinical Epidemiology and Global Health. (DOAJ) .

19. Shahin, M. M. M., Mahmoud, M. R., Al-Shmaily, H. O. S., Altamimy, S. R. M., & Alanzi, L. A. S. (2021). Prevalence of Cardiovascular Disease Risk Factors among People in Hail City, Saudi Arabia. Journal of Pharmaceutical Research International, 33(19B), 22–32.

20. Abdela OA, Kebede S, Daggfe A. University students' knowledge and perception of cardiovascular disease risk factors. BMC Public Health. 2019.

21. Cammalleri, V., et al. (2023). Undergraduates' knowledge of cardiovascular risk factors: A cross-sectional study. Journal of Preventive Medicine.

22. Saeed, S., et al. (2021). Cardiovascular disease risk behavior and awareness among young adults: A global review. Global Heart.

23. Peltzer K., et al. (2019). Awareness of cardiovascular disease risk factors and health behaviours among students in 26 low-, middle- and high-income countries.

24. Mahmood S., et al. (2021). Awareness of lifestyle and behavioral risk factors contributing to cardiovascular diseases among young adults.

25. Younus A., et al. (2019). Literacy regarding metabolic risk factors and their contribution to cardiovascular disease among young populations.

26. Pengpid S., & Peltzer K. (2020). Lifestyle behaviours and CVD risk awareness among university students in ASEAN countries. Journal of Health Research.

27. Alfaqih M. A., et al. (2021). Awareness of cardiovascular risk factors and its relationship with health behaviours among young adults. BMC Public Health

28. Mansour R., et al. (2020). Knowledge of smoking and alcohol hazards and their influence on exercise behaviour in college students. Preventive Medicine Reports.

29. Adams J., et al. (2019). Young adults' perception of hypertension and diabetes risk and its effect on behavioural choices. International Journal of Behavioral Medicine.

30. Xu H., et al. (2021). Health literacy, CVD risk awareness, and lifestyle intentions among university students. Journal of Clinical Medicine.