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Research Article

Knowledge and Awareness of Cardiovascular Risk Factors among Young Adults in Peshawar

Saniya Ashfaq[2], Shadman Tawsif Zaman[3], Kinjal Shah[4], Jestin KJ[5], Shakshi Sharma[6], Nida Gul[7], Aliza khan[8] and Ayaz Ali[1]*

[1]Internal Medicine, Khyber Medical College, Peshawar, Pakistan

[2]Medicine, Dow medical college Karachi, Pakistan

[3]Medicine, Evercare Hospital, Dhaka Bangladesh

[4]Health administration, Rutgers Edward j.Bloustein school of planning and public policy, New Brunswick, New Jersey, USA

[5]Junior Resident, Pathology and Laboratory Medicine, All India Institute of Medical Sciences, Bilaspur, India

[6]Medicine, Gomel state medical university, Gomel, Belaru, India

[7]Internal Medicine, Khyber Medical College, Peshawar Pakistan

[8]Medicine, Khyber Medical College, Peshawar Pakistan

ABSTRACT

Introduction: Cardiovascular diseases (CVD) remain a leading cause of morbidity and mortality globally, with significant risk factors being modifiable through lifestyle changes. Knowledge and awareness of these risk factors are critical, particularly among young adults, who can adopt preventive measures to reduce their long-term risk. This study aimed to assess the level of knowledge and awareness of CVD risk factors among young adults in Peshawar, Pakistan and to identify gaps in understanding less commonly recognized factors.

Methods: A descriptive cross-sectional study was conducted in Peshawar with a sample size of 1,280 participants, aged 19-35 years. Data were collected using a standardized and validated Cardiovascular Disease Risk Knowledge Questionnaire (CVD-RKQ), which assessed knowledge of traditional risk factors (e.g., smoking, hypertension, hyperlipidemia) and awareness of preventive lifestyle measures (e.g., diet, exercise, stress management). SPSS version 20 was used for statistical analysis. Frequencies, percentages and chi-square tests were applied to find associations between demographic factors and knowledge levels.

Results: Out of the 1,280 participants, 47% were male and 53% were female. Overall, 64% of participants demonstrated moderate knowledge of cardiovascular risk factors, with 18% having high knowledge and 18% showing poor understanding. Smoking (85%), high blood pressure (77%) and high cholesterol (70%) were the most recognized risk factors. However, less commonly acknowledged factors like family history (39%), diabetes (44%) and stress (48%) had lower awareness rates. A significant association (p < 0.05) was found between higher education levels and better knowledge of CVD risk factors.

Discussion: The study highlights that while young adults in Peshawar possess a reasonable understanding of major CVD risk factors, critical gaps remain in recognizing the role of less commonly known factors, such as family history and diabetes. These

findings suggest the need for enhanced health education strategies that focus on comprehensive CVD prevention and awareness.

Conclusion: Young adults in Peshawar show moderate awareness of cardiovascular risk factors, with notable deficiencies in recognizing less common risks such as family history and stress. Public health initiatives should prioritize comprehensive CVD risk education among this age group, emphasizing both well-known and lesser-known factors to encourage early prevention.

Keywords: Cardiovascular diseases; Risk factors; Knowledge, awareness; Young adults; Peshawar; Prevention Lifestyle changes

Introduction

Heart and blood vessel problems together referred to as cardiovascular diseases (CVD) include coronary heart disease, cerebrovascular diseases and deep vein pulmonary embolism, thrombosis and a few more cardiac conditions[1]. The Texas Heart Institute (THI) divides the risk factors for cardiovascular illnesses into two categories: major contributing factors and minor contributing factors.

The primary risk factors include high blood pressure, diabetes, obesity, high fat content, smoking and physical inactivity. The following are the minor risk factors: alcohol consumption, sex hormone intake, birth control pill use and anxiety-related stress[2]. Noncommunicable diseases (NCDs) are thought to be responsible for 71% of the 57 million deaths that occur worldwide each year, making them the main cause of mortality. Cardiovascular disease (CVD) is still the leading cause of mortality and disability globally among NCDs. According to estimates from the World Health Organisation, 17.9 million deaths worldwide in 2016 were attributed to CVD, accounting for 44% of deaths from NCDs and 31% of deaths overall[3].

According to projections, cardiovascular diseases (CVDs) would account for about 23.6 million deaths by 2030, with coronary heart disease and stroke being the primary causes[4]. Reductions in risk factors at the population level, including smoking, blood pressure, total cholesterol and physical inactivity, have led to a notable decrease in the morbidity and mortality associated with cardiovascular disease in high-income nations[5]. Research has demonstrated that awareness of CVDs and associated risk factors can help prevent and control them by influencing people's attitudes and behaviors towards leading healthy lives, improving adherence to treatment and lowering the chance of complications from the condition[6,7].

Objectives

To assess the level of knowledge regarding cardiovascular risk factors (e.g., smoking, high blood pressure, high cholesterol) among young adults in KPK. To evaluate awareness among young adults about preventive lifestyle changes, such as diet, exercise and stress management, for reducing cardiovascular risk. To identify key knowledge gaps in understanding less commonly recognized cardiovascular risk factors, such as diabetes, family history and alcohol consumption.

Methodology

Study Design and Study center: This study was conducted as a cross-sectional survey in Peshawar, designed to assess the knowledge and awareness levels of cardiovascular risk factors among young adults. Study Population and Sample Size A total of 1,280 participants were included in the study. The sample size was selected to ensure diversity in the participant pool, allowing for a comprehensive understanding of knowledge and awareness across different demographic groups. Inclusion Criteria Participants were required to be: Aged between 19 and 35 years. Willing to participate and able to provide informed consent. Exclusion Criteria Individuals below 19 years or above 35 years. Those with pre-existing cardiovascular conditions, as their prior medical knowledge could skew the results. Participants who did not provide complete responses to the questionnaire.

Data Collection and Questionnaire: Data was gathered using a standardized and validated questionnaire. The questionnaire was designed to assess two key aspects: Knowledge of cardiovascular risk factors by using validated questionnaire Cardiovascular Disease Risk Knowledge Questionnaire (CVD-RKQ). To categorize participants based on their knowledge of cardiovascular risk factors, we used the following cutoffs: High Knowledge Participants who answer 80% or more of the questions correctly. Score range: 16 to 20 points Moderate Knowledge Participants who answer 50% to 79% of the questions correctly. Score range: 10 to 15 points Low Knowledge Participants who answer less than 50% of the questions correctly. Score range: 0 to 9 points

- Awareness of preventive lifestyle changes by using validated questionnaire Awareness of Cardiovascular Disease Questionnaire (ACDQ). Cutoffs for Categorizing Awareness:

High Awareness:

- Score: 16 to 20 points

- This level indicates strong awareness of both cardiovascular disease and personal risk factors.

Moderate Awareness:

- Score: 10 to 15 points

- This suggests that the individual has a reasonable awareness of general cardiovascular risks but may lack specific knowledge or a full understanding of personal risk factors.

Low Awareness:

- Score: 0 to 9 points

- This level indicates limited awareness of cardiovascular disease and personal risk, signifying a need for further education.

Data Analysis The collected data was analyzed using SPSS version 20. Descriptive statistics, including frequencies and percentages, were calculated to summarize the demographic characteristics and knowledge/awareness levels. Additionally, chi-square tests were applied to identify any significant associations between demographic variables and knowledge/awareness levels.

Results

Table 1: Age distribution of participants.

Mean age	median	range	minimum	maximum
27	27	13	21	34

The mean age of the participants is 27 years, with a median age also of 27 years. The participants' ages range from 21 to 34 years, indicating that the youngest participant is 21 years old and the oldest is 3, **(Table 1)**.

Table 2: Demographic Characteristics and Family History of Cardiovascular Injuries among Participants.

Variable	Category	Frequency	Percentage
Gender	Male	760	59%
	Female	520	41%
Occupation	Student	512	40%
	Employed	128	10%
	Unemployed	384	30%
	Self employed	256	20%
Education	Secondary	256	20%
	Undergraduate	384	30%
	Postgraduate	256	20%
	Uneducated	384	30%
Family history of cardiovascular diseases	Yes	512	40%
	No	768	60%

The demographic characteristics of the participants show a diverse sample. Of the total participants, 59% are male (760 participants) and 41% are female (520 participants). Regarding occupation, 40% of the participants (512 individuals) are students, while 10% (128 individuals) are employed, 30% (384 individuals) are unemployed and 20% (256 individuals) are self-employed **(Table 2)**.

In terms of educational background, 20% (256 participants) have completed secondary education, 30% (384 participants) are undergraduates, another 20% (256 participants) hold postgraduate degrees and 30% (384 participants) are uneducated. When examining family history, 40% (512 participants) reported having a family history of cardiovascular diseases, while 60% (768 participants) did not have such a history.

This demographic data provides insights into the diverse background of the participants, offering a well-rounded view of the sample's gender, education, occupation and family history of cardiovascular diseases.

Table 3: Distribution of Knowledge and Awareness Levels Regarding Cardiovascular Risk Factors Among Young Adults.

Variables	Category	Frequency	Percentage
Knowledge level of cardiovascular risk factors	High knowledge level	384	30%
	Moderate knowledge level	256	20%
	Low knowledge level	640	50%
Awareness level of cardiovascular risk factor	High awareness level	200	16%
	Moderate awareness level	256	20%
	Low awareness level	824	64%

The distribution of knowledge and awareness levels regarding cardiovascular risk factors among young adults reveals significant variations in understanding and awareness within the population **(Table 3)**.

When assessing the knowledge levels of participants about cardiovascular risk factors, such as smoking, high blood pressure and high cholesterol, only 30% (384 participants) were categorized as having a high level of knowledge. These individuals demonstrated a strong understanding of the common and significant risk factors associated with cardiovascular health. Meanwhile, 20% (256 participants) fell into the moderate knowledge level category, indicating that they had a reasonable awareness of the key risk factors, but there may still be gaps in their understanding. Notably, 50% (640 participants) were classified as having a low level of knowledge, meaning that half of the participants lacked sufficient knowledge about the factors contributing to cardiovascular diseases. This indicates a substantial need for improved education and awareness campaigns focused on enhancing knowledge about cardiovascular risks in this population.

In terms of awareness levels regarding cardiovascular risk factors, the data paints an even more concerning picture. Only 16% (200 participants) showed a high level of awareness, meaning they were well-informed about both the risks and the preventive lifestyle changes needed to mitigate those risks, such as maintaining a healthy diet, exercising regularly and managing stress. A slightly larger group, 20% (256 participants), had a moderate level of awareness, suggesting that while they recognized some preventive measures, their understanding was not comprehensive. Alarmingly, the majority-64% (824 participants)-had a low level of awareness about cardiovascular risk factors and how to prevent them. This indicates a large portion of the population is not fully aware of the necessary steps to take for cardiovascular health, which could increase their vulnerability to heart-related conditions.

Overall, these findings underscore the urgent need for targeted educational interventions to increase both knowledge and awareness of cardiovascular risk factors among young adults. The data suggests that a significant proportion of young adults in the region are either under informed or unaware of the critical steps required to prevent cardiovascular diseases, highlighting the importance of public health campaigns and educational programs aimed at this demographic.

The distribution of knowledge levels regarding cardiovascular risk factors across various demographic categories shows important trends and statistically significant differences (p = 0.001 for all variables). Gender: The data reveals notable gender differences in knowledge about cardiovascular risk factors. Among males, 40% (256 participants) demonstrated high knowledge, 20% (128 participants) had moderate knowledge and 40% (256 participants) had low knowledge. In contrast, among females, only 20% (128 participants) had a high level of knowledge, with an equal proportion of 20% (128 participants) in the moderate knowledge category. However, a significantly higher proportion of females, 60% (384 participants), exhibited low knowledge. This suggests that males are generally better informed than females about cardiovascular risk factors, though a substantial proportion of both groups still have low knowledge, particularly among females. Education: Educational attainment appears to have a strong influence on

knowledge levels. Undergraduate participants had the highest proportion of high knowledge at 52% (200 participants), followed by postgraduates, where 37.5% (96 participants) had high knowledge. Both educational levels also showed a lower percentage of low knowledge (32.2% for undergraduates and 47.6% for postgraduates). In comparison, only 20% (28 participants) of those with secondary education had high knowledge and a large proportion, 49.2% (126 participants), exhibited low knowledge. Among the uneducated, none (0%) demonstrated high knowledge, with an overwhelming majority, 92% (350 participants), categorized as having low knowledge. This pattern clearly highlights the direct relationship between higher education and improved knowledge of cardiovascular risk factors. Occupation: Occupation also plays a role in knowledge distribution. Students demonstrated the highest level of knowledge, with 50% (256 participants) falling into the high knowledge category, while 30.4% (156 participants) had low knowledge. In contrast, employed participants showed a more balanced distribution, with 23.4% (30 participants) having high knowledge and 45.3% (58 participants) categorized as having low knowledge. The self-employed group showed a strong presence in the high knowledge category (43.7%, 112 participants), but still, 33.5% (86 participants) had low knowledge. Among the unemployed, none (0%) had high knowledge and a striking 78.1% (300 participants) fell into the low knowledge category. This suggests that being employed or self-employed might contribute to greater access to information, while unemployment is associated with poorer knowledge levels. Residence: There is a notable urban-rural divide in knowledge of cardiovascular risk factors. Among participants from urban areas, 39% (300 participants) had high knowledge, with fewer participants in the low knowledge category (28%, 212 participants). On the other hand, participants from rural areas showed much lower levels of understanding, with only 13.2% (68 participants) demonstrating high knowledge, while a significant majority, 71.2% (364 participants), fell into the low knowledge category. This discrepancy emphasizes the gap in health education and awareness between urban and rural populations, with rural participants significantly lacking in knowledge about cardiovascular risks. Family History of

Cardiovascular Diseases: Participants with a family history of cardiovascular diseases displayed significantly higher knowledge levels. Among those with a family history, 58.5% (300 participants) exhibited high knowledge, while only 25.1% (128 participants) had low knowledge. This suggests that personal or familial experience with cardiovascular issues may contribute to a heightened awareness of risk factors. Conversely, among those without a family history, only 7.2% (56 participants) had high knowledge and a large proportion, 66.6% (512 participants), were classified as having low knowledge. This significant gap highlights the importance of family history as a potential motivator for acquiring health knowledge. The data consistently shows that factors such as gender, education, occupation, residence and family history significantly influence the levels of knowledge about cardiovascular risk factors. The findings indicate a critical need for targeted health education initiatives, especially for females, those with lower educational attainment, the unemployed, rural residents and individuals without a family history of cardiovascular diseases. These groups are more likely to exhibit low levels of knowledge and are, therefore, at greater risk of not being aware of the preventive measures necessary to reduce the likelihood of developing cardiovascular conditions. Addressing these disparities could help improve cardiovascular health awareness across the population (**Figure 1**) (**Table 4**).
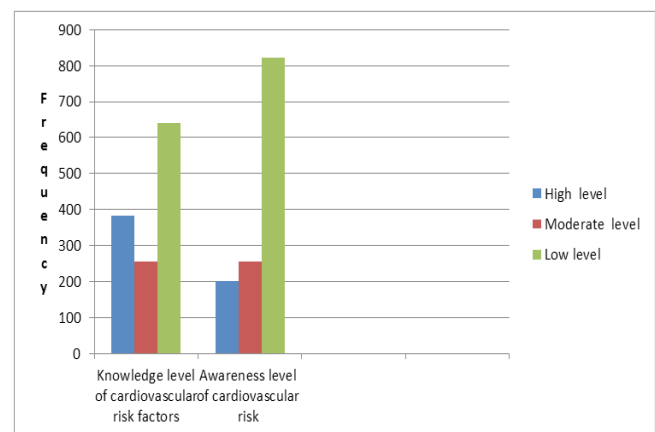

Figure 1: Knowledge Level Awareness Level Awareness Level of Cardiovascular Risk Factors.

Table 4: Association Between Demographic Variables and Knowledge Levels of Cardiovascular Risk Factors Among Participants.

Variables	Category	High knowledge N (%)	Moderate knowledge N (%)	Low Knowledge N (%)	P value
Gender	Male	256(40%)	128(20%)	256(40%)	0.001
	Female	128(20%)	128(20%)	384(60%)	0.001
Education	Secondary	28(20%)	102(39.8%)	126(49.2%)	0.001
	Undergraduate	200(52%)	60(15.6%)	124(32.2%)	0.001
	Postgraduate	96(37.5%)	38(14.8%)	122(47.6%)	0.001
	Uneducated	0(0%)	34(8%)	350(92%)	0.001
Occupation	Student	256(50%)	100(19.5%)	156(30.4%)	0.001
	Employed	30(23.4%)	40(31.2%)	58(45.3%)	0.001
	Unemployed	0(0%)	84(21.9%)	300(78.1%)	0.001
	Self employed	112(43.7%)	60(23.4%)	86(33.5%)	0.001
Residence	Urban	300(39%)	256(33%)	212(28%)	0.001
	Rural	68(13.2%)	80(15.6%)	364(71.2%)	0.001
Family history of cardiovascular diseases	Yes	300(58.5%)	84(16.4%)	128(25.1%)	0.001
	No	56(7.2%)	200(26.2%)	512(66.6%)	0.001

Table 5: Distribution of True and False Responses Regarding Cardiovascular Disease Risk Factors in the Cardiovascular Disease Risk Knowledge Questionnaire (CVD-RKQ).

Variables	True N (%)	False N (%)
Smoking increases a person's risk of developing cardiovascular disease.	740(57.8%)	540(42.2%)
High blood pressure is not a risk factor for cardiovascular disease.	768(60%)	512(40%)
A high cholesterol level can increase the risk of heart disease.	384(30%)	896(70%)
Physical inactivity does not affect a person's risk of heart disease.	796(60%)	484(40%)
Obesity is a risk factor for cardiovascular disease.	400(31.2%)	880(68.8%)
Men have a higher risk of heart disease than women.	700(54.6%)	580(45.4%)
Diabetes does not increase the risk of cardiovascular disease.	1024(80%)	256(20%)
A diet high in fruits and vegetables can reduce the risk of cardiovascular disease.	1152(90%)	128(10%)
High levels of "good" cholesterol (HDL) reduce the risk of heart disease.	768(60%)	512(40%)
Drinking alcohol in moderation can lower the risk of cardiovascular disease.	440(34.3%)	840(65.7%)
Stress is not related to the risk of cardiovascular disease.	256(20%)	1024(80%)
People who have a family history of cardiovascular disease are more likely to develop it.	896(67.8%)	384(32.2%)
Age is a risk factor for cardiovascular disease	1100(86%)	180(14%)
Daily physical activity can help reduce the risk of heart disease.	924(72.1%)	356(27.9%)
High intake of saturated fats increases the risk of cardiovascular disease.	900(70.3%)	380(29.7%)
Lowering blood pressure can help reduce the risk of cardiovascular disease.	1020(79.6%)	260(20.4%)
Having too much abdominal fat (waist circumference) increases the risk of cardiovascular disease.	768(60%)	512(40%)
Taking medication for blood pressure control can help reduce the risk of heart disease.	800(62.5%)	480(37.5%)
High levels of triglycerides in the blood increase the risk of cardiovascular disease.	700(54.6%)	580(45.4%)
Quitting smoking can significantly lower the risk of developing cardiovascular disease.	680(53.1%)	600(46.9%)

The Cardiovascular Disease Risk Knowledge Questionnaire (CVD-RKQ) highlights various aspects of awareness regarding key risk factors for cardiovascular disease (CVD) among the participants. A significant majority (57.8%) recognized that smoking increases the risk of CVD, while 42.2% incorrectly believed it does not. There was a notable gap in understanding the impact of high blood pressure, as 60% correctly identified it as a risk factor, but 40% did not. Similarly, while only 30% knew that high cholesterol increases the risk of heart disease, a substantial 70% were unaware of this critical fact. Concerning physical inactivity, 60% acknowledged its role in heart disease, whereas 40% did not. Moreover, 31.2% identified obesity as a CVD risk factor, leaving 68.8% unaware. Over half of the participants (54.6%) knew that men are more likely to develop heart disease than women and a considerable 80% recognized diabetes as a risk factor. Encouragingly, a vast majority (90%) understood that a diet rich in fruits and vegetables could reduce CVD risk and 60% were aware of the protective effects of high

HDL cholesterol. However, only 34.3% believed moderate alcohol consumption could lower CVD risk, while 65.7% disagreed. A significant proportion (80%) understood the link between stress and CVD and 67.8% recognized the importance of family history in determining risk. Most participants (86%) acknowledged age as a risk factor and 72.1% understood that daily physical activity reduces heart disease risk **(Table 5)**. Knowledge of the harmful effects of saturated fats and the benefits of lowering blood pressure was strong, with 70.3% and 79.6% agreeing, respectively. While 60% knew that excessive abdominal fat increases CVD risk, only 62.5% were aware that blood pressure control medications can help prevent heart disease. A slight majority (54.6%) identified high triglycerides as a risk factor and 53.1% recognized the benefit of quitting smoking in lowering CVD risk. These findings reveal substantial knowledge gaps in critical areas of cardiovascular health, indicating the need for targeted educational interventions.

Discussion

A study conducted among African Americans revealed important insights into perceptions of the leading causes of death. When asked in an open-ended format, 27% of respondents believed obesity was the leading cause of death, followed by heart disease (16%), poor diet/unhealthy lifestyle (16%), HIV/AIDS (13%), cancer (11%) and diabetes (6%). However, when presented with a closed-ended question, the responses shifted, with heart disease being the most frequently cited cause (34%), followed by cancer (21%) and HIV/AIDS (12%). Awareness of heart disease as the leading cause of death was notably higher among college-educated respondents (p = 0.003) and older individuals (p = 0.012). Furthermore, 51% of participants reported feeling moderately well informed about heart disease, while 24% felt they were not informed at all. Similarly, 47% reported being moderately informed about stroke, but 33% stated they had no information on the subject[8]. In comparison, the findings of my study on young adults in Peshawar also underscore a gap in knowledge about cardiovascular risk factors. In my study, only 30% of participants had high knowledge of cardiovascular risk factors, while 50% had low knowledge. This reflects a broader lack of awareness about heart disease, much like the African American study. Additionally, educational level in my study was also a significant factor, with participants holding undergraduate degrees demonstrating a higher level of knowledge about cardiovascular risk factors (52%, p = 0.001), similar to the higher awareness among college-educated respondents in the African American study. Both studies highlight the importance of education and targeted awareness campaigns to address gaps in cardiovascular health knowledge.

In the Dublin study, it was observed that females had a significantly higher level of knowledge about cardiovascular disease (CVD) compared to males (p = 0.022). Participants demonstrated increased knowledge of CVD when they reported higher educational attainment (p = 0.036), a daily healthy diet (p < 0.02) and a family history of CVD (p < 0.02)[9]. In contrast, our study on young adults in Peshawar revealed a different pattern. Although males showed a higher percentage of high knowledge about CVD (40%) compared to females (20%), this finding diverges from the Dublin results. Regarding education, while our study also indicated that individuals with higher education levels were more knowledgeable, the results showed that postgraduate participants had 37.5% high knowledge and the uneducated

group had none. This similarity emphasizes the crucial role of education in enhancing awareness of CVD, similar to the Dublin findings. Additionally, our results indicate that dietary habits and family history also play a significant role; however, they were not explicitly assessed in our analysis. This suggests that there may be potential gaps in dietary awareness and family history recognition among the participants, highlighting the need for targeted interventions in Peshawar to improve overall cardiovascular health knowledge. Overall, while both studies demonstrate the importance of gender, education and lifestyle factors in CVD knowledge, the differing outcomes underscore the necessity of contextualizing findings within specific populations.

In a comparative study, 35% of patients recognized that being overweight contributes to heart disease, 22% identified age as an important risk factor and only 16% considered smoking a significant contributor. These findings suggest that many young individuals either lack understanding of cardiovascular risk factors or believe they are not personally at risk, given the disproportionate emphasis on age as the primary concern[10]. When comparing these results to our study, a larger percentage of participants in our research demonstrated greater awareness of certain risk factors. In our study, 31.2% identified obesity as a cardiovascular disease risk factor, which aligns closely with the 35% reported in the other study. However, our participants showed significantly better awareness regarding smoking, with 57.8% correctly identifying it as a major risk factor, compared to only 16% in the previous study. Additionally, 86% of our participants recognized age as a risk factor, a much higher proportion than the 22% seen in the other study. This comparison highlights the need for further educational efforts, particularly to address gaps in understanding among younger individuals, as well as the influence of other modifiable risk factors beyond age.

Another study done in Ethiopia, the majority of patients displayed strong awareness of key cardiovascular risk factors, with 79.4% acknowledging age, 97.6% recognizing smoking, 91.3% identifying being overweight and 81.9% understanding the role of high blood pressure. However, knowledge gaps were evident concerning the significance of family history and diabetes as risk factors, with only 86.8% and 64.1% aware of these, respectively. Additionally, 19.2% of patients did not realize that controlling blood pressure helps reduce cardiovascular disease risk, 18.1% failed to recognize that consuming fatty foods impacts cholesterol levels and 40.1% mistakenly believed that only gym or structured exercise could lower the risk of heart disease[11]. When comparing these findings to our study, there are some notable similarities and differences. In our study, 86% of participants identified age as a risk factor, closely mirroring the 79.4% in the other study. Our participants also had substantial awareness of smoking as a risk factor (57.8%), though this was lower compared to the 97.6% reported in the previous study. Interestingly, fewer of our participants (31.2%) recognized being overweight as a risk factor, significantly less than the 91.3% reported in the other study. Regarding high blood pressure, our study showed 60% awareness, which was notably lower than the 81.9% in the comparison group. Our study also highlighted gaps in knowledge regarding family history (67.8%) and diabetes (80%), though our participants were more aware of diabetes as a risk factor compared to the other study (64.1%). Similar knowledge deficits were seen in understanding the importance of blood pressure control, as 20.4% of our

participants were unaware of its significance, aligning closely with the 19.2% in the previous study. However, our participants showed stronger knowledge of the role of saturated fats (70.3%) compared to the 18.1% in the other study and fewer (72.1%) held the misconception that only structured exercise lowers cardiovascular risk, compared to 40.1% in the other study. These comparisons emphasize the variability in public knowledge of cardiovascular risk factors and the need for targeted health education to address specific gaps.

Limitations

This study was limited by its reliance on self-reported data, which may be subject to recall bias. Additionally, the cross-sectional design prevents the establishment of causality between knowledge levels and actual lifestyle behaviors. The study was conducted in a single region, limiting the generalizability of the findings to other populations.

Conclusion

The findings from this study indicate that young adults in Peshawar possess a moderate level of awareness regarding cardiovascular risk factors. A significant proportion of participants demonstrated an understanding of well-known risk factors such as smoking, high blood pressure and high cholesterol, which suggests that existing health education initiatives may be effectively communicating the importance of these factors. However, this study also identified critical gaps in knowledge concerning less commonly recognized risk factors, including family history, diabetes and stress, which are vital for comprehensive cardiovascular health management. The awareness levels observed in this study point to an urgent need for tailored public health initiatives aimed specifically at young adults. Educational programs should not only focus on the conventional risk factors but also address the broader spectrum of cardiovascular risks, emphasizing the role of genetic predisposition, lifestyle choices and psychological well-being. Integrating these components into health promotion strategies could empower young adults to adopt healthier lifestyles and engage in proactive health management. Moreover, the significant association between educational attainment and knowledge of CVD risk factors suggests that increasing access to health education in academic settings may further enhance awareness. Collaborations between educational institutions and health authorities could facilitate the implementation of comprehensive cardiovascular health curricula that encompass both traditional and less recognized risk factors. In summary, while young adults in Peshawar demonstrate a satisfactory understanding of key cardiovascular risk factors, addressing the identified knowledge gaps is essential for reducing future CVD incidence. Enhancing awareness through targeted health education and prevention strategies will be crucial in promoting long-term cardiovascular health within this demographic.

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