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Original Research Article

Awareness About Risk Factors, Signs and Symptoms of Cardiovascular Diseases and the Perceived Level of Physical Activity along with Sedentary Behaviour in Young Adults of Pune Region: A Questionnaire Based Study

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ABSTRACT

Background: Cardiovascular diseases (CVDs) are the leading cause of death globally. Young adults are more inclined towards unhealthy lifestyle habits, in turn leading to increased risk of developing CVDs. Identifying the level of awareness about CVDs risk factors and signs and symptoms along with their physical activity and sedentary behaviour will help in creating awareness which in turn might help in reduction of the modifiable CVD risk factors.

Objective: To assess awareness and knowledge about risk factors, signs and symptoms of CVDs in young adults of Pune region along with evaluating their perceived level of physical activity and sedentary behaviour.

Method: A questionnaire was designed to address all the components. Face validation of the questionnaire was done. Participants were explained in detail about the study purpose and the procedure; post their informed consent questionnaire was administered on an interview basis. Responses analysed using SPSS software and represented as descriptive statistics.

Result: Total 115 participants were included in the study, with the mean age 21.94±2.26 years. 68 % of the study participants denied gender predisposition and 12% of participants were not sure about it as a risk factor.69% of the participants had 3-5; whereas 31% had 1-2 modifiable risk factors. Sedentary behaviour was the most prevalent risk factor present in 96.5% of the study participants, followed by physical inactivity in 65.2% of participants. None of the participants met WHO guidelines of healthy diet for adults.55% of the participants perceived to have fair level of awareness. Only 11.30% of the participants perceived to have good level of physical activity. However, 65% of the participants were physically inactive. Sedentary behaviour was found to be 10.8±2.86 hour on a typical day.

Conclusion: In our study, participants had good knowledge and awareness about the risk factors and signs and symptoms of cardiovascular diseases except for few factors. Majority of participants perceived that they have fair levels of physical activity but more than half of the study participants failed to meet recommended criteria. Majority of our study participants already possessed three to five modifiable risk factors with unhealthy diet, sedentary behaviour and physical inactivity being at top of the list. They are also engaged in high sedentary behaviour.

KEY WORDS: Non communicable diseases, Cardiovascular diseases, Physical activity, Risk factors, Signs and symptoms, Sedentary behaviour, Awareness, Knowledge, Perceived levels.

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INTRODUCTION

Non communicable diseases (NCDs) are the diseases of long-standing duration and hence are also called as chronic diseases. According to World Health Organization (WHO) NCDs are responsible for about 71% of all deaths globally. NCDs are significantly contributing to the worldwide burden and are representing the deleterious effects of rapid urbanization and globalization in the developing world [1].

The development of NCDs is multifactorial and they arise as result of combination of factors like physiological, genetical, behavioural and environmental. The metabolic risk factors of NCDs lead to some major metabolic changes like– raised blood pressure, hyperglycemia, hyperlipidemia, overweight/obesity. These metabolic changes lead to increased risk of NCDs. NCDs mainly consist of four major groups of diseases namely Cardiovascular Diseases (CVDs), diabetes, cancers, and respiratory diseases. These group of diseases comprise over 80% of premature NCD deaths worldwide [1].

CVDs are a group of disorders of the heart and blood vessels and include coronary heart d isease, cerebrovascular disease, rheumatic heart disease and other conditions [2].

According to the WHO, CVDs are the leading cause of death globally. An estimated 17.9 million people died from CVDs in 2019, representing 32% of all global deaths. Of these deaths, 85% were due to heart attack and stroke. Over three quarters of CVD deaths take place in low- and middle-income countries across the world [2]. The efflux in cardiovascular disease amongst Indian population in past two decades has accounted for 1 in 4 deaths making CVD as the leading cause of mortality and morbidity in India. It has also been predicted that the number of people who will die due to cardiovascular diseases mainly from heart disease and strokes will increase to reach 23.3 million by the year 2030 and cardiovascular diseases has been predicted to remain the leading cause of death globally [2].

Risk factors of CVDs are mostly classified as modifiable and non-modifiable. Non modifiable risk factors are family history, age, gender and genetics; whereas modifiable risk factors include physical inactivity, unhealthy diet, cigarette smoking, sedentary behaviour, excessive alcohol consumption, tobacco consumption, and passive smoking. These modifiable risk factors also contribute to metabolic changes in the body like raised blood lipid levels, increased blood pressure, increased blood glucose levels, overweight and obesity which are responsible for increased risk of developing CVDs [3,4]. To restrain the morbidity and premature mortality associated with CVDs modifiable risk factors which can be modulated and modified by changing behaviour and lifestyle habits in young adults need to be targeted as a measure of primary prevention which can help to reduce the burden of morbidity and mortality associated with CVDs.

The American Heart Association (AHA) has defined optimal cardiovascular health as absence of clinical manifestations of CVDs along with presence of Life's Essential 8 which covers two major areas which are health behaviours and health factors. These Life's essential 8 include eat better, be more active, quit tobacco and get healthy sleep under area of health behaviour. Area of health factors include, to manage weight, control cholesterol, manage blood sugar and manage blood pressure [5]. Implementing these guidelines or imbibing them in one's lifestyle will help in reducing the risk of developing CVDs by keeping modifiable risk factors of CVDs under control.

WHO has defined physical activity as "any bodily movement produced by skeletal muscles that requires energy expenditure" [6]. WHO has recommended the required time and intensity of physical activity for healthy individuals of all age groups and individuals with chronic diseases, pregnant and postpartum women, children, adolescents and adults living with disabilities so as to maintain good health. Adults between age group of 18-64 years age are recommended to perform at least 150-300 minutes of moderate intensity aerobic activity; or 75-150 minutes of vigorous intensity aerobic physical activity; or a balanced combination of both moderate and

vigorous intensity activity throughout the week [6].

Physical inactivity whereas is simply defined as not meeting the recommended physical activity guidelines. So, for healthy adults between 18-64 years of age physical inactivity can be termed as lack of at least 150 minutes of moderate intensity aerobic activity per week. Physical inactivity or insufficient physical activity is one of the leading risk factors of mortality worldwide. WHO has stated that people who are physically not active have 20% to 30% increased risk of mortality compared to those who engage in at least 30 minutes of moderate intensity physical activity on most of their week days [6].

The sedentary behaviour research network (SBRN) which is an organization of health professionals and researchers has defined sedentary behaviour "as any waking behaviour characterized by an energy expenditure of less than 1.5 metabolic equivalents (MET) while in a sitting or reclining posture" [7]. The current work culture specially in urban areas, demands long hours of sedentary behaviour. Even students spend maximum time of their day in sitting or reclining positions. It could include hours of studying or commuting to and from places or recreational activities.

Many studies conducted worldwide have concluded that sedentary lifestyle and behaviour has prominently increased post the COVID 19 pandemic which adds up to the risk of developing CVDs being one of the risk factors [8,9].

It is proven that process of atherosclerosis often begins in childhood or during adolescence therefore as the primary prevention strategy for CVDs and to reduce the prevalence of developing CVDs the focus of improving awareness about risk factors and signs and symptoms of CVDs should be on adolescents and young adults in order to ensure inculcation of appropriate health habits early in life which they can sustain throughout their life. Inclusion of information and applied knowledge about risk factors, signs and symptoms of heart diseases in the higher secondary education and in the junior college curriculum would be of great help to gain an insight about it.

According to the Health Belief Model (HBM), for behaviour change to occur individual must perceive awareness of seriousness of the disease, susceptibility to the disease, benefits of achieving desired behaviour change and the fact that there are no barriers to change the behaviour [10]. It is generally observed that the young adults in this new age are more inclined towards deleterious lifestyle habits and behaviours including cigarette smoking, more sedentary time, unhealthy eating habits, less physical activity in turn leading to overweight and obesity, thereby increasing the risk of developing CVDs. Also, the young adults are either unaware or they do not consider themselves susceptible to developing CVDs and are not easily convinced for changing their lifestyle and behaviours.

This study will help to assess the level of awareness about the risk factors, signs and symptoms of CVDs in young adults between age group of 18-25 years. It will also evaluate their perception of their knowledge about CVDs, physical activity and sedentary behaviour. It will then help to plan specific strategies to create and improve awareness regarding the risk factors and signs and symptoms related to CVDs in this stratum of population.

Physical therapist can play a major role in making people not just understand the importance of regular physical activity but also help in designing and implementation of specific, tailor-made exercise programs. They have good expertise in exercise testing and exercise prescription and have thorough knowledge about anatomy and exercise physiology. They have an important role to play in managing other related comorbidities and conducting safe and accurate exercise programme.

METHODOLOGY

This cross-sectional study was carried out in the community setting. Clearance was sought from the Institutional ethics committee before commencing the study. Individuals belonging to any profession, unemployed, working young adults or students between the age group of 18-25 from Pune region was the major

sinclusion criteria to participate in the study. The exclusion criteria were set to be professionals and students belonging to medical and paramedical fraternity, individuals with cognitive impairments and individuals who are unable to read and comprehend the basic English language.

Focus Group Discussion was carried out to help in laying the frame work of the questionnaire; which aimed at knowing the level of awareness and perception of the knowledge about risk factors and signs and symptoms of CVDs, perception of their physical activity and sedentary behaviour. Questionnaire was framed under four different domains which included demographic data, knowledge about CVDs risk factors and signs and symptoms, perceived level of physical activity and sedentary behaviour. Under the domain of awareness and knowledge regarding CVDs risk factors, various modifiable and non-modifiable risk factors like increasing age, gender, family history, physical inactivity, sedentary lifestyle, excessive use of alcohol, cigarette smoking, passive smoking, tobacco consumption and unhealthy diet were included. This domain evaluated the participant's knowledge about risk factors of CVDs. The participants were also asked questions regarding their lifestyle in order to evaluate their risk profile for modifiable risk factors. The risk factor of unhealthy diet was graded as per the guidelines of healthy diet for adults given by WHO in WHO STEPS Instrument [11].

The principal investigator also graded the participants as being physically active or inactive, depending upon whether they completed 150 minutes/ week of moderate intensity physical activities [6]. The responses were grouped in terms of presence of 1-2 risk factors or 3-5 or 6-7 risk factors.

Domain of signs and symptoms included nausea or vomiting, pedal oedema, shortness of breath, pain/discomfort in chest, loss of consciousness, palpitations, excessive sweating, discomfort in the arms, left shoulder, elbow, jaw, upper back and dizziness. The responses obtained gave us insight about the knowledge and awareness about signs and symptoms of CVDs. Then the participants were asked to grade themselves for their perception of knowledge and awareness about risk factors and signs and symptoms of CVDs under "Poor", "Fair" and "Good" categories.

Also, questions regarding their opinion about inclusion of knowledge about CVD risk factors, signs and symptoms in the later years of schooling or junior college curriculum and if it was included in their curriculum of higher secondary school or junior college; were also included.

In the domain of perceived level of physical activity, participants were asked to grade themselves according to their perception of the level of physical activity they usually are engaged in , under "Poor", "Fair" and "Good" categories. The principal investigator had graded the participants as being physically active or inactive, depending upon whether they completed 150 minutes/ week of moderate intensity physical activities as recommended by WHO [6]. The responses obtained helped us find disparity if any between the perception of their physical activity status and their physical activity status assessed by the principal investigator.

In the sedentary behaviour domain participants were asked about the amount of time they spend sitting or reclining on a typical day. In the waking hours, amount of time spent in sitting, it could be work related, college hours, study hours, leisure time, sitting during travel to and from places. etc. They were thus asked to report their sedentary time on a typical day in terms of hours.

All the questions were framed in simple English language in the close ended format. Face validation of the questionnaire was done. Sample size was calculated using the formula $n=z^2pq/E^2$ (where z=1.96, p=77.09, q=22.91 and E which is absolute precision was considered as 8%). p was calculated using the study which evaluated knowledge with regard to CVDs risk factors among college students using Heart Disease Fact Questionnaire [12]. The sample size was calculated to be 106. Total 115 participants were included after screening for inclusion and exclusion criteria. Data was collected over period of six months on an interview basis. The procedure was explained

in detail, participants were provided Subject Information sheet and informed consent of the participants was taken before going ahead. the data was analysed using SPSS version 23 software and represented as descriptive statistics.

RESULTS

The sample size calculated was 106 whereas total of 115 participants were included in the study; out of which 43(37.4%) were male and 72(62.6%) were female participants. Out of total 115 participants;73(63.5%) were students and 42(36.5%) participants were working individuals. The participants of the study were from age group of 18-25 years; the mean age of the participants was 21.94 years with standard deviation of $\pm$ 2.26. The mean age of the male participants was 22.72 $\pm$ 2.02 years and it was 21.49 $\pm$ 2.29years for the female participants.

Domain of Awareness and knowledge about risk factors and signs and symptoms of cardiovascular diseases:

Awareness and knowledge about risk factors of cardiovascular diseases: The participants were asked about their awareness about various risk factors for cardiovascular diseases like age, gender, physical inactivity, unhealthy diet and so on. The responses were graded in terms of "Yes", "No" and "Not Sure". **Figure 1** demonstrates the distribution of responses regarding awareness and knowledge about risk factors of cardiovascular diseases in all the study participants. **Table 1** demonstrates gender wise distribution of responses regarding awareness and knowledge about risk factors of cardiovascular diseases.

Risk factors possessed by the study participants: The study participants were screened and assessed for the number of modifiable risk factors they possess. Participants were then grouped in terms of having "1-2 factors" "3-5 factors" and "6-7 factors". **Table 2** depicts the number of modifiable risk factors possessed by the study participants and **Figure 2** represents gender wise distribution of the same. Analysis for prevalence of each risk factor possessed by the study participants was done separately which is represented in **Figure 3**.

Awareness and knowledge about signs and symptoms of cardiovascular diseases: The participants were asked about their awareness and knowledge about the various signs and symptoms of cardiovascular diseases like chest pain, palpitations, dizziness, shortness of breath, loss of consciousness and so on. The responses were graded in terms of "Yes", "No", and "Not Sure". **Figure 4** demonstrates the distribution of responses regarding awareness and knowledge about signs and symptoms of cardiovascular diseases in all the study participants. **Table 3** represents gender wise distribution of the same.

Perceived level of awareness about CVD risk factors, signs and symptoms in the study participants: The study participants were asked to grade their level of awareness about the risk factors and signs and symptoms of the cardiovascular diseases into "Poor", "Fair" and "Good" categories, which is represented in **Table 4**. **Figure 5** represents gender wise distribution of the same.

Domain of perceived level of physical activity of the study participants: The study participants were also asked to grade their level of physical activity in terms of "Poor", "Fair", and "Good" categories. Responses for the same are depicted in **Table 5**. **Figure 6** represents gender wise distribution for the same.

Physical activity status of the study participants: The study participants were also graded as per the WHO recommended criteria for physical activity, which is 150 minutes per week of moderate intensity of physical activity and if an individual does not meet this criterion should be termed as being physically inactive [6]. 75(65%) of the study participants were physically inactive, with only 40(35%) of the total study participants being physically active. **Figure 7** depicts gender wise distribution of the participants as being physically active or inactive.

Domain of Sedentary behaviour of the study participants: Sedentary behaviour of the individuals was asked in terms of hours spent in sitting or reclining on a typical day. This would include amount of time spent in sitting at work or in lectures, travelling to and from

Table 1: Gender wise distribution of awareness and knowledge about risk factors of cardiovascular diseases.

Sr. no.	Risk factors of CVDs	Gender	Responses n (%)		
			Yes	No	Not sure
1	**Increasing age**	Male	34(79.1%)	4(9.3%)	5(11.6%)
		Female	54(75.0%)	15(20.8%)	3(4.2%)
2	**Gender**	Male	12(27.9%)	25(58.1%)	6(14.0%)
		Female	23(32.0%)	43(59.7%)	6(8.3%)
3	**Family history**	Male	33(76.7%)	8(18.6%)	2(4.7%)
		Female	49(68.1%)	14(19.4%)	9(12.5%)
4	**Physical inactivity**	Male	38(88.4%)	2(4.7%)	3(6.97%)
		Female	70(97.2%)	2(2.8%)	0(0.0%)
5	**Sedentary lifestyle**	Male	39(90.7%)	0(0.0%)	4(9.3%)
		Female	65(90.3%)	2(2.8%)	5(6.9%)
6	**Excessive use of alcohol**	Male	36(83.7%)	2(4.7%)	5(11.6%)
		Female	63(87.5%)	2(2.8%)	7(9.7%)
7	**Cigarette smoking**	Male	34(79.1%)	5(11.6%)	4(9.3%)
		Female	65(90.3%)	2(2.8%)	5(6.9%)
8	**Passive smoking**	Male	24(55.8%)	7(16.3%)	12(27.9%)
		Female	44(61.1%)	6(8.3%)	22(30.6%)
9	**Tobacco consumption**	Male	34(79.1%)	2(4.6%)	7(16.3%)
		Female	55(76.40%)	4(5.55%)	13(18.05%)
10	**Unhealthy diet**	Male	40(93.0%)	2(4.7%)	1(2.3%)
		Female	70(97.2%)	2(2.8%)	0(0.0%)

Table 2: The number of modifiable risk factors possessed by the study participants.

Risk factors possessed by the study participants	1-2 Factors	3-5 Factors	6-7 Factors
Frequency	36	79	0
Percent	31%	69%	0%

Table 3: Gender wise distribution of responses about awareness and knowledge regarding signs and symptoms of CVDs.

Sr. no.	Signs and symptoms of CVDs.	Gender	Responses n (%)		
			Yes	No	Not sure
1	Nausea or Vomiting	Male	19(44.2%)	15(34.9%)	9(20.9%)
		Female	13(18.05%)	34(47.22%)	25(34.72%)
2	Pedal Oedema	Male	13(30.23%)	9(20.93%)	21(48.83%)
		Female	30(41.7%)	6(8.3%)	36(50%)
3	Shortness of breath	Male	41(95.34%)	1(2.32%)	1(2.32%)
		Female	71(98.6%)	1(1.4%)	0(0.0%)
4	Pain/ Discomfort in Chest	Male	42(97.7%)	0(0.0%)	1(2.3%)
		Female	71(98.6%)	0(0.0%)	1(1.4%)
5	Loss of Consciousness	Male	36(83.7%)	3(7.0%)	4(9.3%)
		Female	67(93.1%)	0(0.0%)	5(6.9%)
6	Palpitation	Male	40(93.0%)	1(2.3%)	2(4.7%)
		Female	68(94.4%)	2(2.8%)	2(2.8%)
7	Excessive Sweating	Male	38(88.4%)	2(4.6%)	3(7.0%)
		Female	64(88.9%)	2(2.8%)	6(8.3%)
8	Discomfort in Arms, Left Shoulder, Elbow, Jaw, Upper Back	Male	33(76.7%)	3(7.0%)	7(16.3%)
		Female	56(77.7%)	3(4.2%)	13(18.1%)
9	Dizziness	Male	37(86.0%)	4(9.3%)	2(4.7%)
		Female	58(80.55%)	4(5.55%)	10(13.90%)

Table 4: Distribution of responses regarding grades of perceived level of awareness about risk factors and signs and symptoms of CVDs by the study participants.

Perceived Level of Awareness	Poor	Fair	Good
Frequency	39	63	13
Percent	34%	55%	11%

Table 5: Distribution of the responses regarding grades of the perceived levels of physical activity by the study participants.

Perceived level of Physical Activity	Poor	Fair	Good
Frequency	50	52	13
Percent	43.48%	45.22%	11.30%

places and also during recreational activities. The average amount of time spent sitting by the participants was found to be 10.8 hours with standard deviation of ± 2.86. **Table 6** Represents gender wise distribution of the same.

Table 6: Gender wise distribution of the average amount of time spent sitting or reclining by the participants.

Gender	Sedentary Behavior	
	Mean	Std. Deviation
Male	11.12	3.07
Female	10.61	2.75

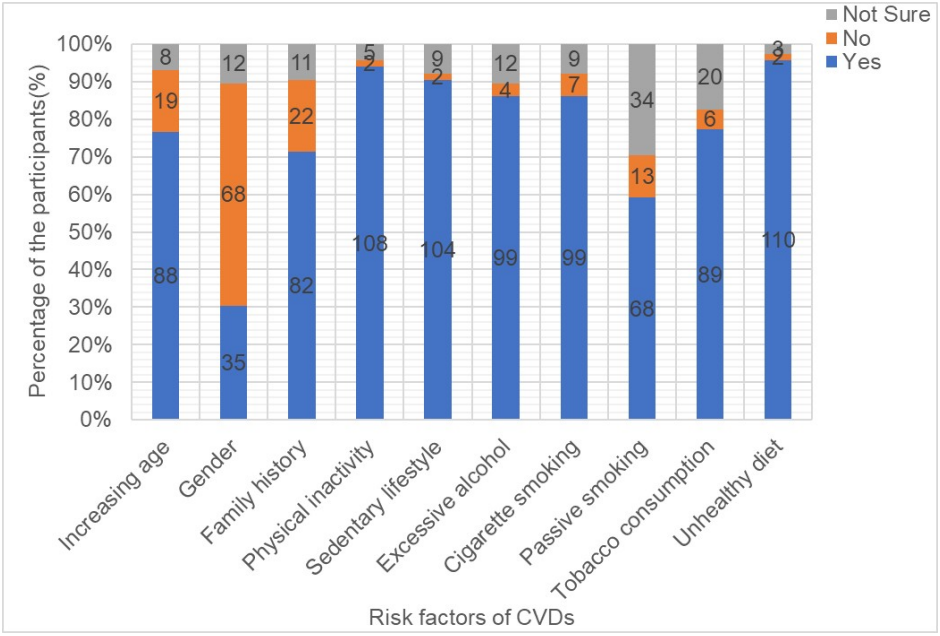

Figure 1: Distribution of responses regarding awareness and knowledge of risk factors of cardiovascular diseases in the study participants.

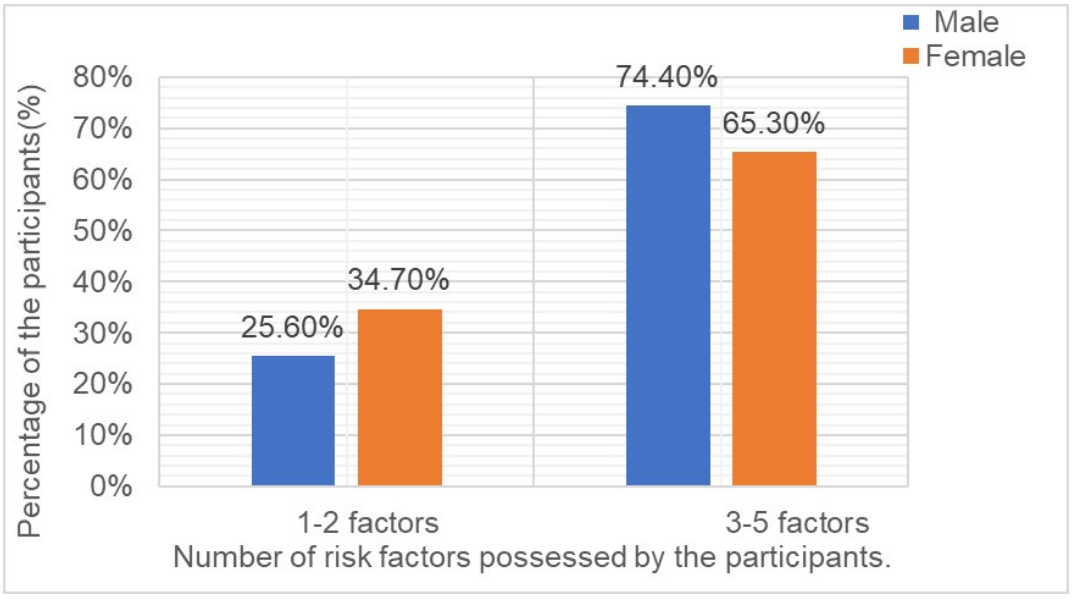

Figure 2: Gender wise distribution of the number of modifiable risk factors possessed by the study participants.

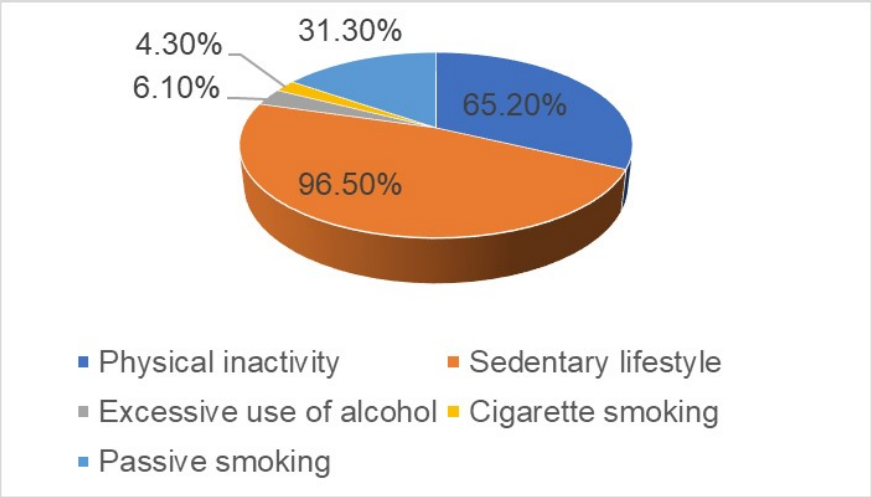

Figure 3: Distribution of the prevalence of each risk factor possessed by the study participants.

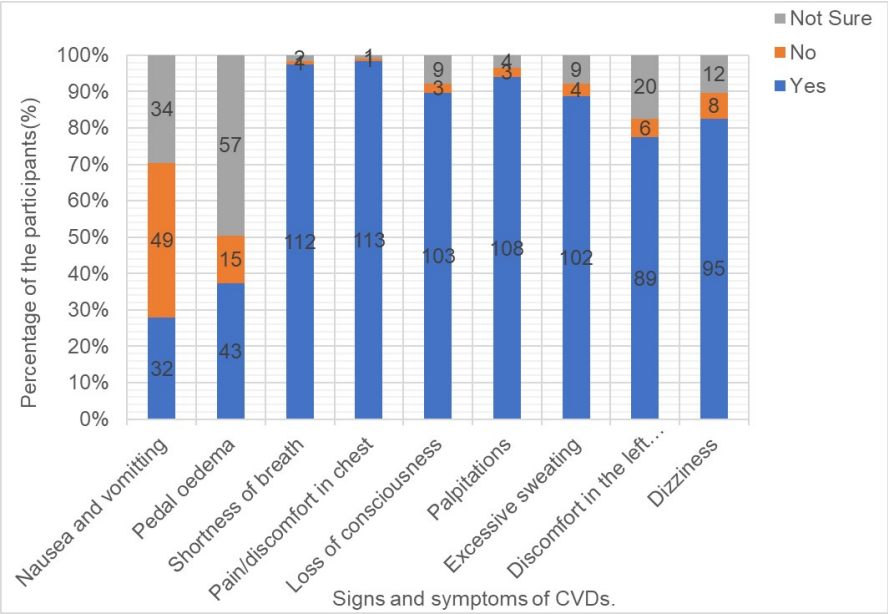

Figure 4: Distribution of awareness and knowledge about signs and symptoms of CVDs.

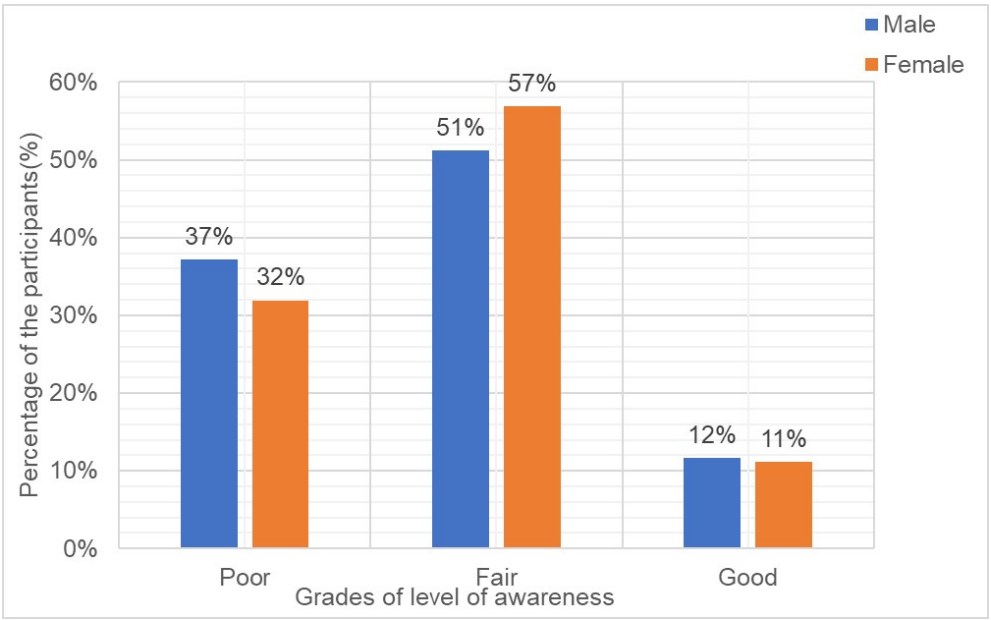

Figure 5: Gender wise distribution of grades of perceived level of awareness about risk factors and signs and symptoms of CVDs of the study participants.

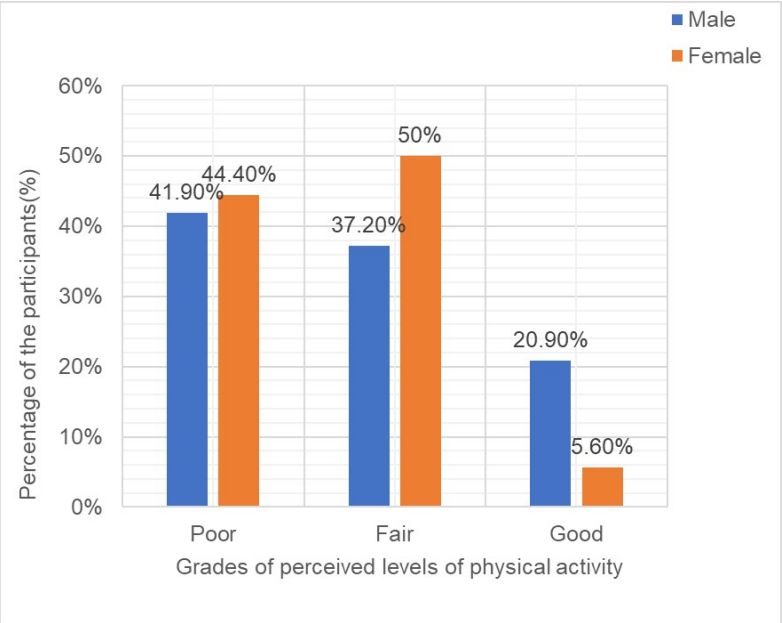

Figure 6: Gender wise distribution of the grades of perceived levels of physical activity of the study participants.

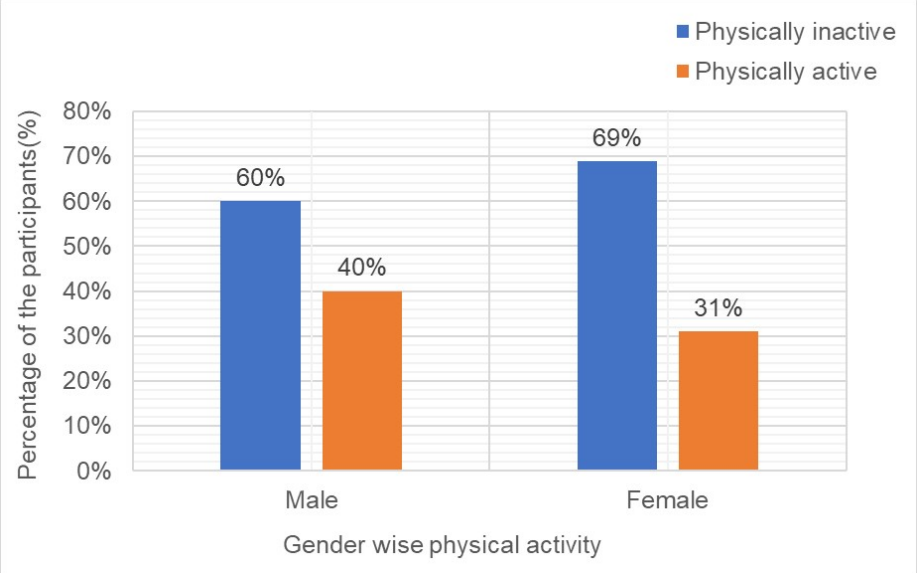

Figure 7: Gender wise distribution of the participants as being physically active or inactive.

DISCUSSION

A comprehensive and multidisciplinary approach is required to tackle the ever-increasing burden of CVDs. Creating awareness, imparting knowledge, implementing healthy lifestyle and behaviours at an early age should be emphasized in order to manage and reduce the morbidity and mortality due to CVDs.

This study aimed to estimate the awareness about risk factors and signs and symptoms of CVDs along with perceived level of physical activity and sedentary behaviour in young adults of Pune region. This study helped us estimate the awareness and knowledge about risk factors, signs and symptoms of CVDs and participant's perceived levels of physical activity and sedentary behaviour. This study also highlighted the need to include the knowledge regarding CVDs in the high school or junior college curriculum to improve the awareness and knowledge in the young adults.

The study participants had good knowledge about the risk factors that predispose to the development of cardiovascular disease. They were asked about age, gender, family history, physical inactivity, sedentary lifestyle, excessive use of alcohol, tobacco consumption, active and passive smoking and unhealthy diet. Even though majority of the study participants reported correctly 63 (55%)

participants perceived that they only have fair amount of awareness and need to improve their knowledge. Only in case of gender as a predisposing factor for cardiovascular diseases, 68 % of the study participants denied gender predisposition and 12% of participants were not sure about it. And 34 % of participants were not sure if passive smoking increases the risk for CVDS and 13 % of the participants denied passive smoking as a predisposing factor for the development of CVDs. With smoking becoming a routine habit for most of the youngsters, risk of active as well as passive smoking is increasing to a large extent. Youngsters need to be made aware that passive is equally harmful as active smoking. Many of them indulge in smoking, succumbing to mere peer pressure. Females can be seen equally involved in smoking as males, which was not the case few years back.

The participants were also screened to grade the number of risk factors they already have. It was alarming that 74.4% of the male participants and 65.3% of the female participants already had 3-5 risk factors whereas 25.6% of the male and 34.7% of the female participants had d" 2 risk factors. The study population belonged to the age group of 18-25, which is really not the age to have at least modifiable risk factors profile, as nonmodifiable risk factors are beyond one's scope of alteration. This highlights the importance of creating awareness about these modifiable risk factors that can predispose to the development of not only cardiovascular diseases but also increase the risk of other NCDs.

Further detailed analysis of all the risk factors possessed by the study participants revealed that sedentary behaviour was possessed by 111(96.5%) of the study participants; which was the highest amongst all the modifiable risk factors followed by physical inactivity being possessed by 75 (65.2%) of the study participants. Also, all of the study participants i.e., 115(100%) did not meet the WHO guidelines of healthy diet for adults.

Participants were also asked about the signs and symptoms for cardiovascular diseases including chest pain, shortness of breath, loss of consciousness, palpitation, excessive sweating, discomfort in left arm, shoulder, elbow, jaw or upper back, dizziness, nausea or vomiting and pedal oedema. Majority of the participants answered correctly in this domain. Some of the symptoms that the participants were not very well versed were nausea or vomiting and pedal oedema; where 49% denied it to be one of the symptom whereas 34% were not sure about nausea and vomiting as a symptom. 57 % of the participants were not sure about pedal oedema being one of the symptom of cardiovascular disease and 15 % of the participants denied it to be a symptom. With cardiac diseases increasing at an alarming rate, it is crucial that everybody is made aware of the early signs and symptoms of the same. Prompt identification and immediate action taken by the bystanders can help avert the chances of grave events. It is all the more necessary to educate our youth regarding the same, as they can be in position to help their family members, relatives as well as community dwellers.

Vanhecke TE, Miller WM, Franklin BA et.al. carried out a survey to assess knowledge, awareness, and perceptions of CVD in adolescents from class 9th to 12th. They observed an overall trend of low awareness, low perceived lifetime risk and lack of knowledge of CVD with significant ethnicity and sex difference. They concluded that the adolescents in this study population were not aware of high prevalence and mortality of CVD and do not consider themselves to be at risk of developing CVDs [13].

Our study however demonstrated that the study participants had good knowledge about the risk factors about signs and symptoms of cardiovascular diseases barring few of the factors and signs and symptoms.

100 % of the participants said that their school or junior college curriculum did not include much details about the risk factors or signs and symptoms of CVDs and 100% participants said that later years of schooling or junior college curriculum should include knowledge about the risk factors and signs and symptoms of CVDs. These responses highlight the need to incorporate the knowledge about CVDs during schooling and /or junior college so as

to educate the community as a whole at a very young age so that they can implement that knowledge to improve their health and use it as and when needed to identify signs and symptoms indicating heart related pathology.

The study participants were asked to grade themselves for their perception of level of awareness they have about risk factors and signs and symptoms of CVDs. Out of total 115 participants of the study, only 13 (11%) participants perceived that they had good level of awareness; whereas majority of them i.e.,63 (55%) participants perceived that they only have fair amount of awareness and need to improve their knowledge. A considerable amount i.e., 39 (34%) of participants thought that they have poor awareness about CVDs which indicates the need to create awareness about risk factors and signs and symptoms of CVDs in the young adult population.

When the study participants were asked to grade themselves for their perception of their own level of physical activity majority of the participants i.e., 52(45.22%) out of total 115 participants of the study perceived that they have fair levels of physical activity and 50 (43.48%) of the participants felt that they have poor levels of physical activity. Only a small portion i.e., 13 (11.30%) of the participants perceived that they have good level of physical activity. Even though majority i.e., 52 (45%) of the participants thought that they have fair levels of physical activity; 75(65%) participants including 26(60%) of the male participants and 49(69%) of the female participants did not meet the physical activity criteria of at least 150 mins of moderate intensity activity per week recommended by WHO. So even though approximately half of the study participants thought that they had fair level of physical activity if not good, hardly 35% of them were actually physically active. This disparity highlights the need to improve awareness amongst the youngsters regarding benefits of physical activity, hazards of physical inactivity as well as the recommended levels of physical activity.

The study participants were asked about sedentary behaviour in terms of number of hours they spend sitting or reclining on any typical day. It included the time spent in sitting for lectures, during travel, their work or recreationally. We calculated the mean sedentary time from the responses which was found to be around 11.12 hours of for males and 10.61 hours for females. This indicates a very high sedentary behaviour and suggests the need to modify the sedentary behavioural habits and incorporate small activity breaks in long sitting hours of studying or working. Sedentary behaviour contributes largely towards physical inactivity, thus predisposing an individual to hazards of physical inactivity.

Physiotherapists being the experts in exercise testing and prescription, have an important role to play in creating awareness about the importance of regular physical activity. They can use their sound knowledge of exercise physiology and can help in appropriate designing and implementation of the exercise programs.

Strength of our study was that we evaluated the awareness of such important risk factors, signs and symptoms in the youth, who if trained well can help avert adverse cardiac events. Not many studies have done to explore this strata of population.

Limitation of our study was that we could not ensure equal inclusion of both the genders in our study. Clinical implication of our study can be Implementation of strategies to create awareness in youth about the risk factors and signs and symptoms of cardiovascular diseases. Future Scope would be measurement of physical activity using pedometers and accelerometers instead of measuring perceived level of physical activity and sedentary behaviour.

CONCLUSION

In our study, participants had good knowledge and awareness about the risk factors and signs and symptoms of cardiovascular diseases except for few factors and symptoms but still their perception about their knowledge was found mainly to be fair or poor, and very less percent of the participants perceived that their knowledge is good. Majority of our study participants perceived that they have fair levels of physical activity but more than half of the

study participants failed to meet the WHO recommended criteria of physical activity. Majority of our study participants already possessed three to five modifiable risk factors with unhealthy diet, sedentary behaviour and physical inactivity being highest amongst all other modifiable risk factors. They are also engaged in high sedentary behaviour.

ABBREVIATION

CVDs - cardiovascular diseases.
NCDs - Non communicable diseases.
WHO - World Health Organization.
AHA - American Heart Association.

AUTHORS CONTRIBUTION

Both the authors have contributed in the conception and design of the study, analysis and interpretation of the data and preparing of manuscript. First author has additionally contributed towards collecting the data.

Conflicts of interest: None

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