



Awareness on the Risk factors of Atherosclerosis among adults

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ABSTRACT

Cardiovascular disease (CVD) is a main source of death for generally racial and ethnic gatherings of United States blacks and whites and represents 1 of every 4 passings. Atherosclerosis is a cardiovascular disease and it involves solidifying and narrowing of arteries. It can put the bloodstream into danger and supply routes get blocked. Self administrated questionnaire was designed based on risk factors of atherosclerosis. The questionnaire was distributed through an online survey link. The questionnaire was completed by 100 participants, and the data were analysed using SPSS software. Descriptive statistics and Pearson Chi square test were done to analyze the results of the survey. Majority of the participants are aware of the term atherosclerosis. Most of the participants were aware that hyper cholesterolemia, diabetes, family history and chronic stress are major risk factors associated with cardiovascular disease. The Chi square test showed that the respondents at the age group of 18-25 were more aware of the risk factors than the respondents of other age groups.



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INTRODUCTION

The evaluated predominance of cardiovascular diseases (CVDs) in India was assessed to be 54.5 million. One out of 4 passings in India are presently a direct result of CVDs with ischemic coronary illness and stroke. Atherosclerosis is one of the cardiovascular diseases. Atherosclerosis is a solidifying

and narrowing of arteries. It can put the bloodstream into danger and supply routes get blocked. Atherosclerosis is the main source of CVD bringing about a high pace of mortality in the population (Torres, 2015). Symptoms related to coronary arteries include arrhythmia, pain in the upper body, shortness of breath etc;. Atherosclerosis was diagnosed by Angiogram, Angel brachial index, chest X ray, blood test etc. Lesions of atherosclerosis contain macrophages, T cells and different cells of the resistant reaction, along with cholesterol that penetrates from the blood (Hansson and Hermansson, 2011). The risk factors of atherosclerosis are absence of physical action, undesirable blood cholesterol levels cause hypertension, diabetes, overweight, stoutness. Higher CVD chance among matured 40-75 were related with a more established age are current smoking, higher systolic circulatory strain, hypertriglyceridemia, and hyperglycemia. The component of incessant worry in atherosclerosis ought to be additionally explored to

give a hypothetical premise to endeavors to dispose of the impact of ceaseless weight on the cardiocerebral vascular framework (Hansson and Hermanson, 2011; Wu, 2019b; Yao, 2019).

Previous studies have concluded that cardiovascular hazard factors in ladies are sex hormones and their changes, the utilization of manufactured hormones in the counteraction of cardiovascular occasions in ladies brought to a great extent negative outcomes. Other explicit hazard factors in ladies are preeclampsia, hypertension in pregnancy and gestational diabetes mellitus. At present, in ladies more noteworthy accentuation ought to be set on smoking end, satisfactory physical action and on upgrading the lipid range, including triglycerides and HDL cholesterol (Pitha *et al.*, 2005). Atherosclerosis begins with greasy streaks development and advances with atheroma and atherosclerotic plaque formation. Hypercholesterolemia, LDL increment, HDL decline, lipid oxidation, hypertension, malproduction and brokenness of NO, and irritation are the most encouraging components for atherosclerosis (Rafieian-Kopaei, 2014). Eugenol is a major bioactive constituent present in the essential oils with numerous pharmacological benefits including neuroprotective activity. eugenol lowers serum cholesterol levels and inhibits lipogenesis in the liver, hence strongly suggesting that eugenol may protect against atherosclerosis and fatty liver disease (Li *et al.*, 2020). The most altogether examined receptors, protease enabled receptors (PARs), are 7-transmembrane proteins coupled to G proteins. PARs are broadly appropriated on the cells of the airways, where they add to the inflammatory reactions for unfavorable allergic infections.

Previous study on various aspects like phytochemistry (Chen *et al.*, 2019; Li *et al.*, 2020), biotechnology (Ma, 2019; Mohan *et al.*, 2015), cancer technology (Jainu *et al.*, 2018; Wang *et al.*, 2019; Rengasamy *et al.*, 2018; Menon *et al.*, 2016; Gayathri *et al.*, 2018), pharmacology (Rengasamy *et al.*, 2016; Shukri, 2016), nanotechnology (Wu, 2019a; Ke, 2019) as well as molecular toxicology (Gan *et al.*, 2019; Ponnulakshmi *et al.*, 2019) were conducted by our team.

The aim of the present study is to assess the awareness of the risk factors of atherosclerosis among adults.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted among adults to assess the awareness of the risk factor of atherosclerosis. Approval was obtained from the institutional review board. Simple convenient

random sampling was done. A total of 100 participants were involved in the study. Self administered questionnaire of close ended questions prepared related to atherosclerosis was circulated through "GOOGLE FORMS". Demographic details were also included in the questionnaire. The responses were collected, tabulated in excel sheet and analysed SPSS software version 22. The Chi square test was used to analyse the association of responses with the age group of the participants.

In Figure 1, X axis represents the age and Y axis represents the number of participants percentage of participants. Majority of the participants (42%) are in the age group of 18-25.

In Figure 2, X axis represents the age and Y axis represents the number participants. Majority of the participants are aware (95%).

In Figure 3, X axis represents the age and Y axis represents the number of participants. Majority of the participants are aware (91%) that atherosclerosis is a cardiovascular disease.

In Figure 4, X axis represents the age and Y axis represents the number of participants. Majority of the participants are aware (73%).

In Figure 5, X axis represents the age and Y axis represents the number of participants. Majority of the participants are aware (71%).

In Figure 6, X axis represents the age and Y axis represents the number of participants. Majority of the participants (88%) are aware that hypercholesterolemia, diabetes mellitus and cigarette smoking as risk factors of atherosclerosis.

In Figure 7, X axis represents the age and Y axis represents the number of participants. Majority of the participants are aware (87%) that low HDL cholesterol level as a risk factor for atherosclerosis.

In Figure 8, X axis represents the age and Y axis represents the number of participants. Majority of the participants are (75%) aware that high blood pressure is a risk factor.

In Figure 9, X axis represents the age and Y axis represents the number of participants. Majority of the participants (79%) are aware that unhealthy diet can cause atherosclerosis.

In Figure 10, X axis represents the age and Y axis represents the number of participants. Majority of the participants (78%) are aware that lack of physical activity can cause atherosclerosis.

In Figure 11, X axis represents the age and Y axis represents the number of participants. Majority of the participants (72%) are aware that family history is a risk factor.

In Figure 12, X axis represents the responses and Y axis represents the number of participants (Blue color indicates yes and green color indicates no). Majority of the participants in the age group of 18-25 (49 participants) were more aware about the term atherosclerosis. The difference in the awareness among different age groups is statistically significant. (Pearson Chi square value= 9.076, P value 0.02 (<0.05)- statistically significant).

In Figure 13, X axis represents the responses and Y axis represents the number of participants (Blue color indicates yes and green color indicates no). Majority of the participants in the age group of 18-25 (46 participants) were more aware about low HDL cholesterol being a causative factor for atherosclerosis than others. The difference in the awareness among different age groups is statistically significant. (Pearson Chi square value =2.939, P value 0.01 (>0.05)- which is statistically significant).

In Figure 14, X axis represents the responses and Y axis represents the number of participants (Blue color indicates hyper cholesterolemia, green color indicates diabetes, beige color indicates cigarette smoking and purple color indicates all of these). Majority of the participants in the age range of 18-25 yrs were more aware about the risk factors of atherosclerosis than other age groups. Majority of the participants in the age group of 18-25 (42 participants) were aware that hyper cholesterolemia, diabetes and cigarette smoking were the risk factors of atherosclerosis. But the differences in the awareness among different age groups is not statistically significant. (Pearson Chi square value= 10.803, P value 0.289 (<0.05)-statistically not significant).

In Figure 15, X axis represents the responses and Y axis represents the number of participants (blue color indicates yes and green color indicates no). Majority of the participants in the age range of 18-25 (40 participants) were aware that lack of physical activity can cause atherosclerosis. But the difference in awareness among different age groups is not statistically significant. (Pearson Chi square value= 1.394, P value 0.707 (<0.05), statistically not significant).

In Figure 16, X axis represents the responses and Y axis represents the number of participants (blue color indicates yes and green color indicates no). Majority of the participants in the age range of 18-25 (40 participants) were aware that family history of early heart disease is a risk factor of atherosclerosis. But the difference in awareness among the age groups is not statistically significant (Pearson Chi square value = 4.934, P value 0.177 (<0.05), statistically not significant).

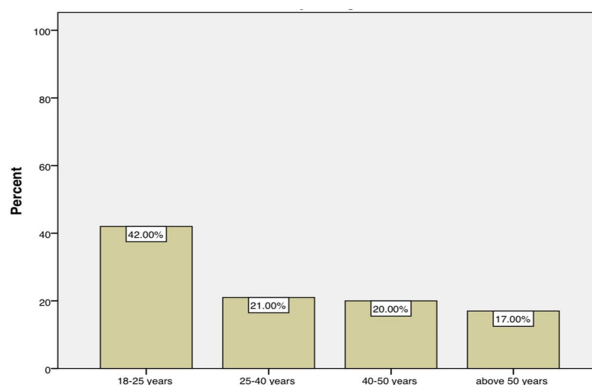


Figure 1: This bar graph represents the percentage distribution age of the participants

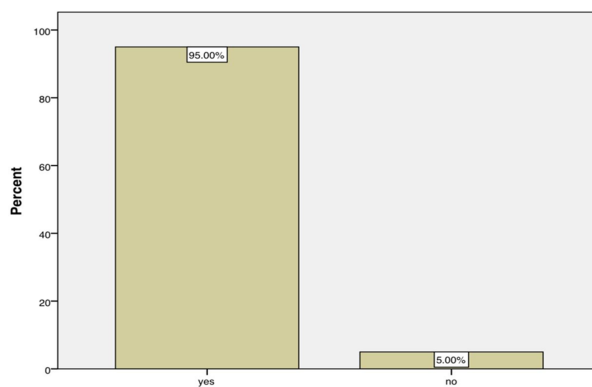


Figure 2: This bar graph represents the percentage distribution awareness about the term atherosclerosis

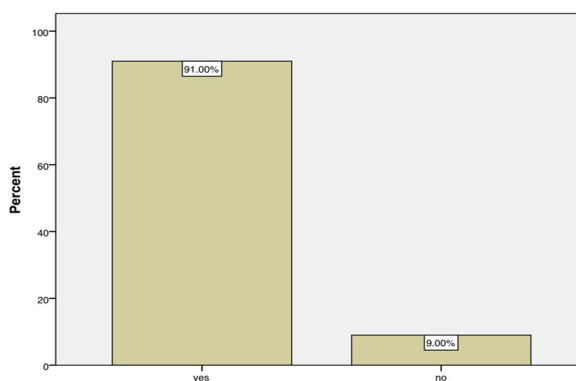


Figure 3: This bar graph represents the percentage distribution of awareness on atherosclerosis as a cardiovascular disease

RESULTS AND DISCUSSION

The responses from 100 participants were collected. Out of 100 participants, 42% of the participants were under the age group of 18-25 years, 21% of the participants are under the group of 25-40 years, 20% of the participants are under the group of 40-50 years, 17% of the participants are above 50 years (Figure 1). 95% of the participants heard of terminology atherosclerosis (Figure 2). 91% of the par-

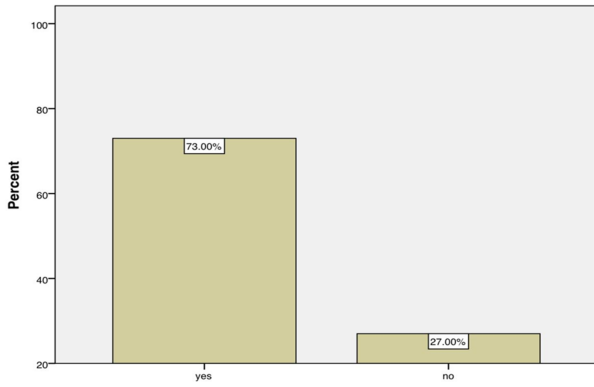


Figure 4: This bar graph represents the percentage distribution awareness on chronic stress as a risk factor for atherosclerosis

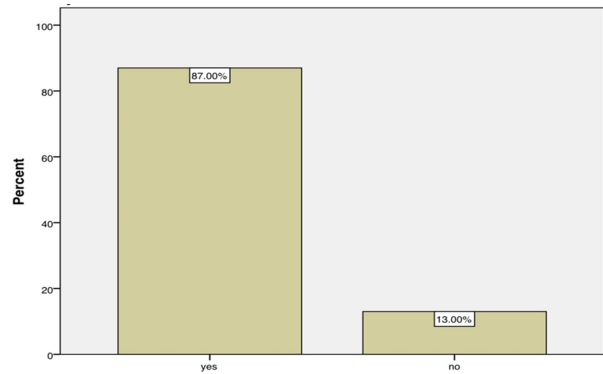


Figure 7: This bar graph represents the percentage distribution of awareness on low HDL cholesterol level as a risk factor for atherosclerosis

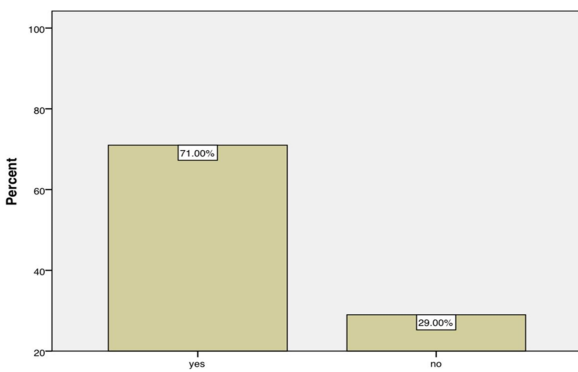


Figure 5: This bar graph represents the percentage distribution of awareness on atherosclerosis as a consequence of aging

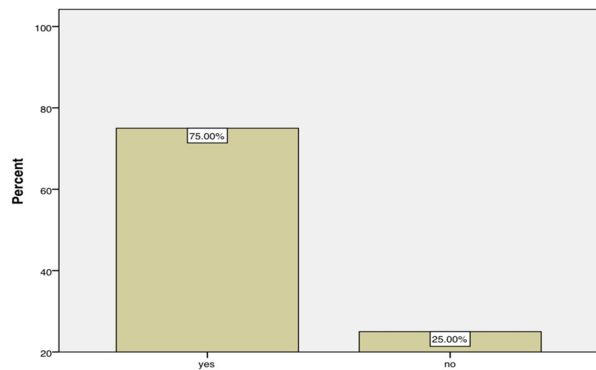


Figure 8: This bar graph represents the percentage distribution of awareness on high blood pressure as a risk factor for atherosclerosis

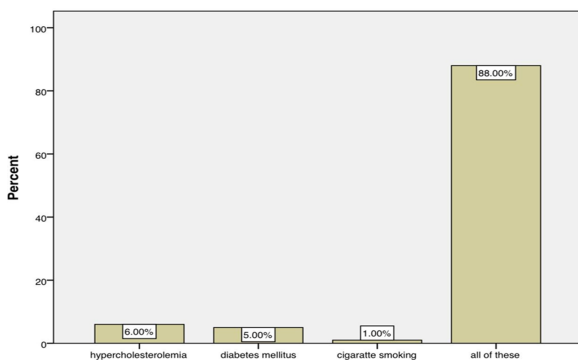


Figure 6: This bar graph represents the percentage distribution awareness on the risk factors of atherosclerosis

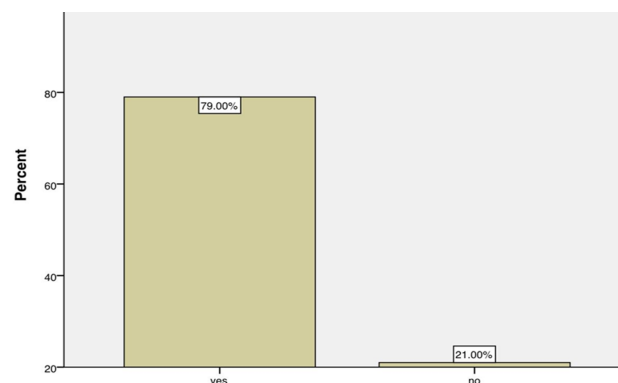


Figure 9: This bar graph represents the percentage distribution of awareness on unhealthy diet as a risk factor for atherosclerosis

Participants are aware that atherosclerosis is a cardiovascular disease while 13.6% of the participants are not aware (Figure 3). 73% of the participants are aware that chronic stress is a dependent risk factor for atherosclerosis while 27.3% are not aware (Figure 4). 71% of the participants are aware that atherosclerosis is a consequence of aging and therefore a degenerative disease while 20.1% of the participants are not specific (Figure 5). 88% of the participants were aware that hypercholesterolemia,

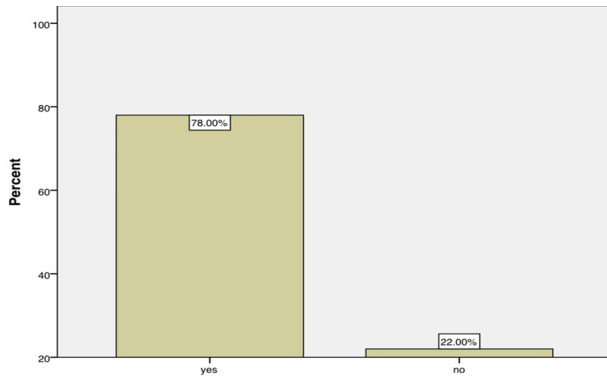


Figure 10: This bar graph represents the percentage distribution of awareness on lack of physical activity as a risk factor for atherosclerosis

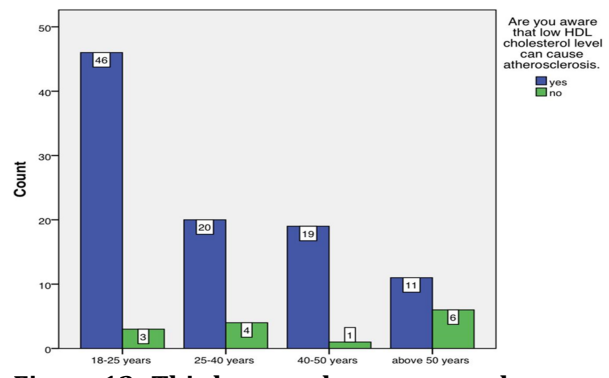


Figure 13: This bar graph represents the association of age with the awareness of low HDL cholesterol as a risk factor for atherosclerosis

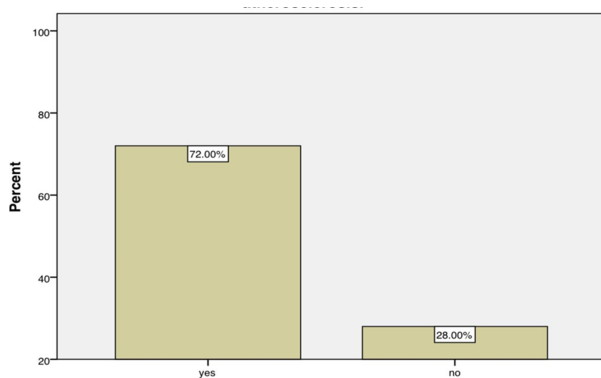


Figure 11: This bar graph represents the percentage distribution of awareness on family history as a risk factor for atherosclerosis

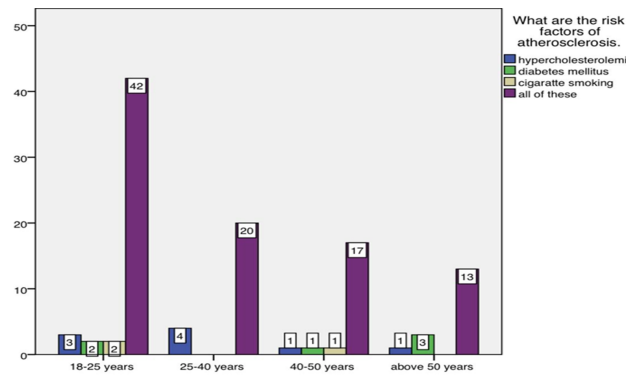


Figure 14: This bar graph represents the association of age with the awareness on the risk factors of atherosclerosis

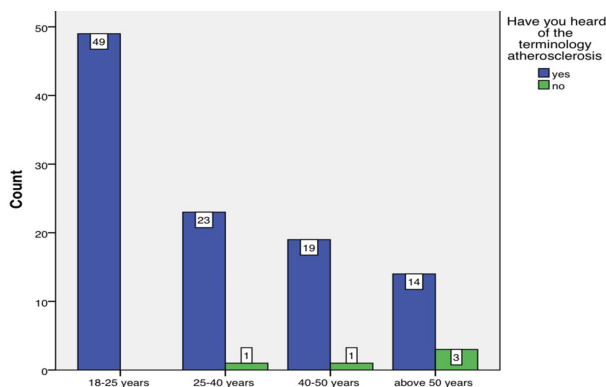


Figure 12: This bar graph represents the association of age with the awareness of the term 'atherosclerosis'

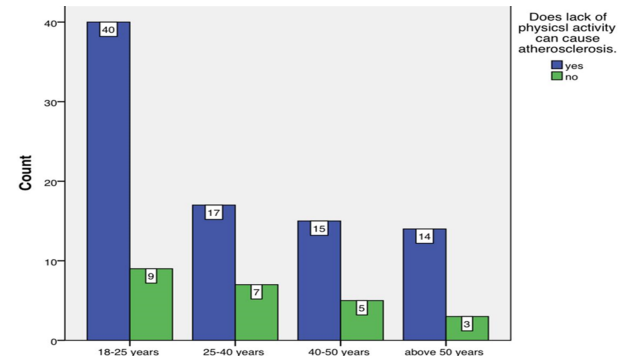


Figure 15: This bar graph represents the association of age with the awareness of lack of physical activity as a risk factor for atherosclerosis

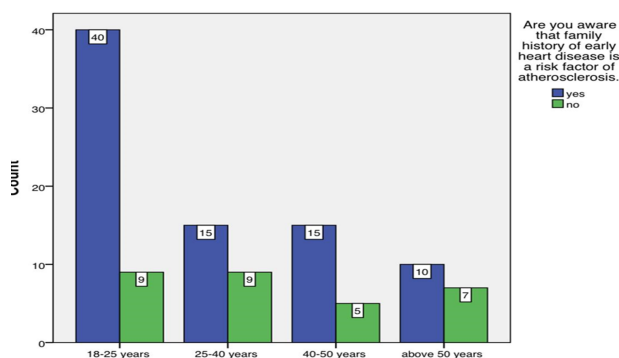


Figure 16: This bar graph represents the association of age with the awareness family history of early heart disease as a risk factor for atherosclerosis

cigarette smoking, diabetes mellitus are the risk factors of atherosclerosis (Figure 6). 87% of the participants are aware that low HDL cholesterol can cause atherosclerosis (Figure 7). 75% of the participants are aware that high blood pressure is a risk factor of atherosclerosis (Figure 8). 79% of the participants are aware that unhealthy diets can cause atherosclerosis (Figure 9). 78% of the participants agreed that physical activity can cause atherosclerosis (Figure 10). 72% of the participants are aware that family history of early heart disease is a risk factor of atherosclerosis while 28% of the participants are not aware (Figure 11). The Pearson chi square test was done in comparison with the age group of the respondents (Figures 12, 13, 14, 15 and 16).

In the present study, 95.5% of the participants are aware of the terminology atherosclerosis. The Pearson chi square test in association with the age group showed that there is a significant in the age group of 18-25 were more aware about the terminology (P value- 0.02). The study by Libby showed that 2.8% of the participants are aware of the terminology atherosclerosis (Libby *et al.*, 2016). The study Maria Charasson revealed that 96.5% of the participants are aware of the terminology atherosclerosis (Charasson *et al.*, 2018). In the present study 89.1% of the participants are aware that atherosclerosis is a cardiovascular disease. The study by Michael A Rosenberg concluded that 95% of the participants are aware that atherosclerosis is a cardiovascular disease (Balla *et al.*, 2013). The study by Kristina P vatcheva revealed that 55.4% of the participants are aware that atherosclerosis is a cardiovascular disease (Vatcheva *et al.*, 2019). In the present study 88.2% of the participants are aware of atherosclerosis. The study by Pei wing wu showed that 80.4% of the participants are aware of the risk factors of atherosclerosis (Wu, 2019b). The study by Ricky Champlain concluded that 95-96% of the partici-

pants are aware of the risk factors of atherosclerosis (Amar and Chamontin, 2006). Libby concluded that 2.8% of the participants are aware of atherosclerosis (Libby *et al.*, 2016). The study by Maria Charasson revealed that 96.5% of the participants are aware of atherosclerosis (Charasson *et al.*, 2018). In the present study 87.3% of the participants agreed that low HDL cholesterol can cause atherosclerosis. The chi square test showed that the participants in the age group of 18-25 are more aware on this (P value- 0.01). The study by Seth S Martin showed that 95% of the participants are aware of Low cholesterol levels can cause atherosclerosis (Martin, 2017). The study by M John Chapman concluded that 75% of the participants are aware that low HDL cholesterol can cause atherosclerosis (Vatcheva *et al.*, 2019). In the present study, 83.6% of the participants agreed that hypercholesterolemia, cigarette smoking, diabetes mellitus are the risk factors of atherosclerosis. The study by Pei wing wu concluded that 80.4% of the participants are aware that hypercholesterolemia, diabetes mellitus are the risk factors of atherosclerosis (Wu, 2019b). The study by Ricky Champlain revealed that 95-96% of the participants are aware that hypercholesterolemia, cigarette smoking are the risk factors of atherosclerosis (Amar and Chamontin, 2006). In the present study, 78.2% of the participants agreed that physical activity can cause atherosclerosis. The study by Timothy J Walker concluded that 75% of the participants are aware that physical activity can cause atherosclerosis (Vatcheva *et al.*, 2019). The study by Gabriella tikellis showed that 95% of the participants are aware that physical activity can cause atherosclerosis (Tikellis *et al.*, 2010). In the present study, 72.7% of the participants are aware that chronic stress is a dependent risk factor for atherosclerosis. The study by Casey M rebholz revealed that 81% of the participants are aware that chronic stress is a dependent risk factor for atherosclerosis (Lee, 2009). The study by Hasan H yeter showed that 53.6% of the participants are aware that chronic stress is a dependent risk factor for atherosclerosis (Tikellis *et al.*, 2010; Yeter, 2019). The less sample size is the major limitation of this study.

CONCLUSION

From the present study it can be concluded that the majority of the participants were aware of the various risk factors for atherosclerosis. The participants in the age group of 18-25 were more aware of the risk factors of atherosclerosis.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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The authors declare that they have no funding support for this study.

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