Threat to Coronary Heart Disease Risk Factors: Preponderance and Behavior Among Al Jouf University Dental Students in Sakaka City, Saudi Arabia

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Abstract: _Background: Cardiovascular diseases (CVD), hypertension and diabetes mellitus (DM) come on top list for causing mortality due to their common prevalence all over the world. Improved socioeconomic conditions in the Kingdom of Saudi Arabia (KSA) have been followed by rapid changes in life style of people. Consequently, diseases such as cancer, coronary heart disease (CHD), DM and obesity started to emerge. Material & Method: 15 students will be taken from each year studying in College of Dentistry from 1st March 2017. Data will be collected using an interviewer administered questionnaire. The following measurement will be performed: height, weight, BMI, RBS, BP. Results: Table (1) revealed that students of 2nd year had a family of educated people & income of family for 4th year students had more than 10000 SR. Table (2), observed that students of 3rd year followed more physical activity. Table (3) demonstrated the nutritional habits of students which was good in 1st & 3rd year. Table (4) showed that maximum students were of normal weight. All the year students had RBS level <200 mg/dl. 2nd, 4th & 5th year students showed BP. Conclusion: From the result of the present study it can be concluded that prevalence of CHD risk factor was overall high for 2nd, 4th & 5th year students. Significance for public health: The study helps in giving intervention programs to raise the health awareness of students about CHD risk factors and encourage them to adopt a healthy behavior, promote physical exercise and smoking cessation can be initiated._

Keywords: non-communicable diseases, cardiovascular diseases, hypertension, diabetes

1. Introduction

Chronic diseases are defined as "an impairment of bodily structure and/or function that necessitates a modification of the patient's normal life, and has persisted over an extended period of time." All over, noncommunicable Diseases (NCDs) are increasingly identified as a major source of morbidity and mortality. [1]

The World Health Report in 2001 had designated that NCDs account for almost 60% of deaths and 46% of the global burden of disease. Thus, most of the deaths (35 million) in todays world are attributed to NCDs. [1]

Diseases like cardiovascular diseases (CVD), hypertension and diabetes mellitus (DM) comes on the peak list for causes of mortality, as they are very prevalent globally. [2]

The important risk factors for cardiovascular disease are preventable through the reduction of behavioral risk factors and other specific measures focused mainly on identifying and treating individuals with increased CVD chance to prevent heart attacks and stroke. Thus many prospective studies have being documented to show the prevalence of CVD risk factors and also their synergistic effect on developing the disease. [3,4] The developed countries, show decreased prevalence of some CVD risk factors while, in contrast, developing countries show prevalence which is markedly increased. Thus by this it can be estimated that CVD would be the leading source of death by 2020 in the developing countries. Approximately 80% of death attributated to CVD disease occur in low - and middle-income countries, often in people with less than 60 years of age. [5]

The Kingdom of Saudi Arabia has experienced a major epidemiologic and nutritional transition in the last three decades. This is marked by economic growth, standard of living and life-style transformation, including a more sedentary lifestyle and access to higher energy-dense diet intake, and increased urbanization. [6]

Children and adolescents have the habit of adopting the lifestyle of their parents, whether healthy or unhealthy. Younger populations adopting unhealthy attitudes and practices will ultimately result in future generations of people with chronic NCDs. [2]

It has been documented that, many risk factors are associated with CVD within the last 25 years.[7,8] Several local studies have shown increased prevalence of diabetes mellitus (DM), smoking, obesity and hypercholesterolemia study conducted in the Eastern Province of the Kingdom, it was estimated that CVD conditions accounted for more than 26% of total death. [6]

It is evident that CVD risk starts in childhood and continues to adulthood specially in low socioeconomic conditions[9] In the low-mortality regions, the health situation is much worse for men than for women. The life expectancy at birth is

substantially longer for women than for men, as is disability-adjusted life expectancy at birth, and the percentage of the lifespan lived with disability is higher for men than women. These differences seem to be much greater than those expected purely on the basis of biological differences in maximum lifespan and health potential. Much of the difference can, however, be explained by the combined effects of tobacco, alcohol, and other addictions or exposures that lead to injuries. Narrowing of this gap will be a major challenge for health policy. [10]

A study on coronary heart disease (CHD) mortality in the Eastern Province of KSA, showed that 26% of total deaths were recorded as CHD deaths which included 27% of total male & 23.5% of total female deaths respectively. [11]

The relation between lifestyle and cardiovascular disease is now well established. Smoking, hypertension, diabetes mellitus, a high dietary fat intake, and lack of exercise have all been identified as independent risk factors for the development of atherosclerosis, acute myocardial infarction. To reduce a person's cardiovascular risk it is important first to identify the modifiable risk factors. Where appropriate, attempts may then be made to encourage change. [11] Studies among Saudi populations showed an increasing prevalence of DM [12,13], smoking [14], obesity and hypercholesterolemia [15]

Prochaska and DiClemente have suggested that the ability to initiate and sustain this change depends on several factors. Firstly, people must be aware of the harm caused to their health by their behaviour. Secondly, there must be a desire to change this behaviour. Thirdly, this desire must be translated into action. [16]

Cardiovascular disease has a multifactorial aetiology, and many risk factors act synergistically. [16]

Health maintenance of adolescents & adults is an intergral component of primary health care (PHC).The leading causes of death and disability among individuals are majorily related to personal health & lifestyle behaviors. [17]

Thus, three priority areas need to be addressed: first, to identify fully the risk characteristics of this population and define targets for preventive interventions; second, to formulate preventive strategies on the basis of available information; and last, to recognise and address issues that relate to prevention of CVD . [18]

There is very limited data about the problem of CVD especially CHD & its risk factors among young population in KSA. Estimating the hindrance of disease in young age groups will help in planning for prevention & control of risk factors for CHD. It will also assist in health promotion & in averting future CVD.

Thus, the aim of the present study is to determine prevalence of CHD risk factors among Al Jouf University dental students in Sakaka city, Saudi Arabia, KSA.

2. Material and Methods

Study Design and Sampling

This was a cross-sectional study conducted at Al Jouf University in Sakaka city, Saudi Arabia, KSA. The target population consisted of all male students (Saudis) studying in College of Dentistry. A sample size of 15 students was selected from 1st, 2nd, 3rd, 4th, 5th year comprising total of 75 students. The study sample was selected by random sampling technique.

Data Collection Method

Data was collected using the following tools:
1) An interviewer – administered questionnaire, which included the following parts:
a) Socio-demographic variables: Academic year of studying, Nationality, Marital status, parents education and family income.
b) Risk factors for CHD such as physical inactivity, smoking, dietary habits, obesity, time spent in watching TV and playing videogames.
2) Physical Measurements:
a) Weight and height: Weight and height were measured using a digital physician weighing scale. The scales were previously checked for reliability. Practical demonstrations were conducted to ensure accuracy of measurements. Weight was measured in kilograms (kg) with students barefooted and wearing their usual clothes. Height was measured in centimeters (cm). Obesity was defined by the body mass index (BMI), weight in kilograms divided by the square of height in meter. It was classified as: underweight (BMI <18.5 kg/m^2); normal (BMI = 18.5-24.99 kg/m^2); overweight (BMI = 25-29.99 kg/m^2); obese (BMI = 30-34.99 kg/m^2); and severe obesity (BMI $\geq$kg/m^2) [19]
b) Blood Pressure (BP) measurement: An electronic sphygmomanometer was used. Students were seated quietly for at least 5 minutes in a chair, with feet on the floor and arm supported at heart level. An appropriate-sized cuff (cuff bladder encircling at least 80% of the arm) was used to ensure accuracy. Two measurements were taken and the average was recorded. Systolic and diastolic BP were classified according to the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) as normal, prehypertension, Stage 1, and Stage 2 hypertension. [20]
c) Random blood glucose (RBG): using capillary blood was taken from each student with a one-touch Glucometer. RBG of less than 200 mg/dl was considered as normal. [21] Data collection and measurements were conducted by well trained 4th & 5th year students who received training on questionnaire administration, and measurements. Students with positive risk factors were given health education and advised to consult their health care providers.

Statistical Analysis:
 Data collected were checked for accuracy and completeness and were coded and entered into the Statistical Package for Social Sciences (SPSS) software. Descriptive statistics for

all studied variables and T- test were used and P-value level <0.05 was considered significant throughout the study.

3. Results

Table (1) shows the socio-demographic characteristics of the university students. It was evident that 100% of the students were from the college of dentistry & all were Saudis with marital status as single. Regarding education of parents , it was revealed that students of 2nd year had a family of educated people followed by 4th year, 5th year, 1st year & the 3rd year which was statistically significant. (P-value <0.01) Regarding the income of family, 86.66% of 4th year students had more than 10000 SR, followed by 5th, 2nd, 1st,3rd year students which was statistically insignificant. (P-value > 0.08)

According to table (2), it was observed that students of 3rd year followed more physical activity compared to 2nd year, 4th year , 5th year & 1st year with 73.33%, 46.66%,40%, 33.33%, 26.66% respectively. On an average 1st & 4th year students did not practice physical activity at all with 40% respectively. Moreover, 73.33% of 4th year students were watching TV < 14 hours / week, followed by 60% of 3rd & 1st years, 53.33 % of 2nd year and 46.66% of 5th years. Also 80% of 5th year students were using computer < 14 hours / week, followed by 66.66% of 2nd & 3rd years, 60% of 1st years and 46.66% of 4th years. (Statistically insignificant). About 73.33% of 3rd year students were non-smokers,

followed by 1st ,5th,4th, 2nd years with 66.66%,53.33%, 40%, 33.33% respectively with statistical significance. The 4th & 2nd years of students had smoking duration with < 2 years with 26.66%, followed by 1st & 3rd years (13.33% & 6.66%) (Statistically insignificant)

Table (3) demonstrated the nutritional habits of the university students. It was clear that students of 4th year (73.33%) consumed more fast food, while soft drink was consumed more by 1st & 2nd year (53.33%, 46.66%) , fruits were consumed more by 1st & 3rd year (80%, 73.33%) students. This showed a statistical insignificance. But vegetables were more consumed by 1st & 3rd year (80%, 60%). On an average, only 2nd years consumed unsaturated fat with 20% followed by 5th year with 6.66%. Remaining all years did not consume unsaturated fats. While 3rd year student did not know the type of fats used for cooking followed by 1st, 5th, 2nd & 4th years respectively. (66.66%, 46.66%, 33.33%, 26.66% for 2nd & 4th years).

Table (4) demonstrated that maximum students were of normal weight but 3rd & 5th year students were slightly overweight (6.66%) and 5th year were obese (40%) which was statistically insignificant. All the year students had random capillary blood glucose level <200 mg/dl. Hypertension of 1st & 3rd year students was normal while 2nd & 4th students were prehypertensive and 5th year students had stage 1 & stage 2 hypertension with statistical significance of P-value <0.003.

Table 1: Socio-Demographic Characteristics of Al Jouf University Dental Students

Characters	University students									
	1st		2nd		3rd		4th		5th	
	No.	%	No.	%	No.	%	No.	%	No.	%
1- **College** : Dentistry	15	100	15	100	15	100	15	100	15	100
2- **Nationality:** Saudi	15	100	15	100	15	100	15	100	15	100
3- **Marital status :**										
Single	15	100	15	100	15	100	15	100	15	100
Married	0	0	0	0	0	0	0	0	0	0
4- **Fathers Education:**										
• Illiterate or read & write	1	6.66	0	0	2	13.33	0	0	1	6.66
• Primary & Preparatory	2	13.33	0	0	3	20	0	0	5	33.33
• Secondary & Diploma	7	46.66	2	13.33	8	53.33	3	20	4	26.66
• Graduate & Postgraduate	5	33.33	13	86.66	2	13.33	12	80	5	33.33
5- **Mothers Education:**										
• Illiterate or read & write	6	40	0	0	6	40	0	0	3	20
• Primary & Preparatory	2	13.33	0	0	4	26.66	1	6.66	3	20
• Secondary & Diploma	2	13.33	6	40	3	20	8	53.33	2	13.33
• Graduate & Postgraduate	5	33.33	9	60	2	13.33	6	40	7	46.66
6- **Total family income in Saudi Riyal**										
• Less than 5000 SR	1	6.66	0	0	3	20	0	0	0	0
• 5000-10000 SR	7	46.66	6	40	11	73.33	2	13.33	4	26.66
• More than 10000 SR	7	46.66	9	60	1	6.66	13	86.66	11	73.33

Table 2: Physical activity and Smoking habits

Characters	University students									
	1st		2nd		3rd		4th		5th	
	No.	%	No.	%	No.	%	No.	%	No.	%
1- Practice of physical exercise:										
• Don't practice	6	40	3	20	2	13.33	6	40	4	26.66
• Football	4	26.66	7	46.66	11	73.33	6	40	5	33.33
• Walking	4	26.66	3	20	0	0	2	13.33	3	20
• Jogging	1	6.66	1	6.66	1	6.66	0	0	1	6.66
• Others (Basketball & Swimming)	2	13.33	0	0	0	0	0	0	1	6.66
• More than one type	1	6.66	1	6.66	1	6.66	1	6.66	1	6.66
2- Number of sport practice per week										
• < 3 times	5	33.33	6	40	9	60	2	13.33	5	33.33
• >3 times	4	26.66	6	40	4	26.66	7	46.66	6	40
• Not applicable	6	40	3	20	2	13.33	6	40	4	26.66
3- Time spent in sport practice										
• < 30 minutes.	5	33.33	8	53.33	4	26.66	4	26.66	5	33.33
• >30 minutes	5	33.33	4	26.66	7	46.66	5	33.33	6	40
• Not applicable	5	33.33	3	20	4	26.66	6	40	4	26.66
4- Number of hours spent in watching TV per week										
• Not watching	3	20	2	13.33	2	13.33	2	13.33	4	26.66
• <14 hours / week	9	60	8	53.33	9	60	11	73.33	7	46.66
• >14 hours / week	3	20	5	33.33	4	26.66	2	13.33	4	26.66
5- Number of hours spent in using computer per week										
• Not watching	1	6.66	0	0	0	0	1	6.66	0	0
• <14 hours / week	9	60	10	66.66	10	66.66	7	46.66	12	80
• >14 hours / week	3	20	5	33.33	5	33.33	7	46.66	3	20
6- Smoking										
• Non-smokers	10	66.66	5	33.33	11	73.33	6	40	8	53.33
• Cigarettes	0	0	5	33.33	1	6.66	5	33.33	2	13.33
• Shisha	5	33.33	3	20	3	20	0	0	5	33.33
• Both Cigarettes & Shisha	0	0	2	13.33	0	0	4	26.66	0	0
7- Year of smoking										
• No smoking	11	73.33	5	33.33	11	73.33	6	40	9	60
• < 2 years	2	13.33	4	26.66	1	6.66	4	26.66	1	6.66
• 2-6 years	2	13.33	3	20	3	20	2	13.33	4	26.66
• >6 years	0	0	3	20	0	0	2	13.33	1	6.66

Table 3: Nutritional habits

Characters	University Students									
	1st		2nd		3rd		4th		5th	
	No.	%	No.	%	No.	%	No.	%	No.	%
1- Fast food consumption per week										
• Don't consume	3	20	2	13.33	3	20	4	26.66	3	20
• 1-5 times	9	60	6	40	7	46.66	11	73.33	6	40
• 6-10 times	0	0	7	46.66	3	20	0	0	5	33.33
• >11 times	3	20	0	0	2	13.33	0	0	1	6.66
2- Soft drink consumption per week										
• Don't consume	1	6.66	2	13.33	2	13.33	4	26.66	4	26.66
• 1-5 times	8	53.33	7	46.66	8	53.33	4	26.66	5	33.33
• 6-10 times	3	20	4	26.66	3	20	6	40	5	33.33
• >11 times	3	20	2	13.33	2	13.33	1	6.66	1	6.66
3- Types of fats used for family cooking:										
• Unsaturated	0	0	3	20	0	0	0	0	1	6.66
• Saturated	5	33.33	4	26.66	1	6.66	4	26.66	4	26.66
• Combined	3	20	4	26.66	4	26.66	7	46.66	5	33.33
• Don't know	7	46.66	4	26.66	10	66.66	4	26.66	5	33.33
4- Fruits consumption per week:										
• Don't consume	2	13.33	1	6.66	1	6.66	4	26.66	5	33.33
• 1-5 times	12	80	9	60	11	73.33	9	60	9	60
• 6-10 times	1	6.66	3	20	3	20	2	13.33	1	6.66
• >11 times	0	0	2	13.33	0	0	0	0	0	0
5- Vegetables consumption per week:										
• Don't consume	1	6.66	7	46.66	2	13.33	3	20	5	33.33
• 1-5 times	12	80	4	26.66	9	60	7	46.66	6	40
• 6-10 times	2	13.33	0	0	4	26.66	4	26.66	3	20
• >11 times	0	0	4	26.66	0	0	1	6.66	1	6.66

Table 4: Physical measurements

Characters	University students									
	1st		2nd		3rd		4th		5th	
	No.	%	No.	%	No.	%	No.	%	No.	%
1- Body mass index										
• Underweight (<18.5)	0	0	1	6.66	1	6.66	0	0	0	0
• Normal weight (18.5-24.99)	12	80	7	46.66	13	86.66	8	53.33	4	26.66
• Overweight (25-29.99)	3	20	6	40	1	6.66	5	33.33	1	6.66
• Obese (30-34.99)	0	0	1	6.66	0	0	2	13.33	6	40
• Severe obese (≥35)	0	0	0	0	0	0	0	0	3	20
2- Random Blood Glucose (RBG): < 200 mg/dl	15	100	15	100	15	100	15	100	15	100
3- Systolic Blood Pressure										
• Normal systolic BP < 120mm Hg	12	80	1	6.66	10	66.66	3	20	11	73.33
• Prehypertension 120-139 mm Hg	3	20	14	93.33	5	33.33	11	73.33	3	20
• Stage 1 hypertension 140-159 mm Hg	0	0	0	0	0	0	2	13.33	1	6.66
• Stage 2 hypertension ≥ 160 mm Hg	0	0	0	0	0	0	0	0	0	0
4- Diastolic Blood Pressure										
• Normal systolic BP < 80mm Hg	9	60	1	6.66	11	73.33	2	13.33	4	26.66
• Prehypertension 80-89 mm Hg	6	40	14	93.33	3	20	6	40	1	6.66
• Stage 1 hypertension 90-99 mm Hg	0	0	0	0	1	6.66	4	26.66	10	66.66
• Stage 2 hypertension ≥ 100mm Hg	0	0	0	0	0	0	3	20	0	0

4. Discussion

According to the World Health Organization (WHO), NCD, mainly cancer, CVS, DM are major public health problems in almost all countries in the Eastern Mediterranean region. [22] Children and adolescents, age of transformation, is known for the susceptibility to taking up behavior that induces NCD development. Hence, their knowledge scope and behavioral pliability makes them an attractive group for intervention. The fundamental principle of public health with regard to primary prevention (health promotion and specific protection) thus acquires contextual value. As a long-term measure for NCD prevention, health education is a priority in this population. Health education should reflect in increased awareness resulting in adoption of healthy behavior. [1]

The majority of diseases share preventable lifestyle related risk factors including tobacco, smoking, unhealthy diet, obesity and physical activity. [22,23] The problem of CVD especially CHD and its risk factors in younger and old age groups will help in setting strategies for prevention and control of risk factors of CHD. [2] Thus the aim of the present study is to determine prevalence of CHD risk factors among Al Jouf University dental students in Sakaka city, Saudi Arabia, KSA [1]

The present study revealed the socio-demographic characteristics of the university students. It was evident that 100% of the students were from the college of dentistry & all were Saudis with marital status as single. Regarding education of parents , it was revealed that students of 2nd year had a family of educated people followed by 4th year, 5th year, 1st year & the 3rd year which was statistically significant. (P-value <0.01) Regarding the income of family, 86.66% of 4th year students had more than 10000 SR, followed by 5th, 2nd, 1st,3rd year students which was statistically insignificant. (P-value > 0.08) Ahmed Mandil et al (2013) gave an overview that non-communicable diseases were high in high-income countries by 64%. [24]

It was observed that students of 3rd year followed more physical activity compared to 2nd year, 4th year , 5th year & 1st year with 73.33%, 46.66%,40%, 33.33%, 26.66% respectively. A study done by Taha (2005), reported that 91% of male school students were practicing physical exercise. [25] On an average 1st & 4th year students did not practice physical activity at all with 40% respectively. Al Refaee and Al-Hazza study (2001) of 1333 Saudi males 19 years and older in Riyadh, KSA had shown that over 53% of Saudi males were totally physically inactive, and 27.5% were irregularly active [26]

Moreover, 73.33% of 4th year students were watching TV < 14 hours / week, followed by 60% of 3rd & 1st years, 53.33 % of 2nd year and 46.66% of 5th years. Also 80% of 5th year students were using computer < 14 hours / week, followed by 66.66% of 2nd & 3rd years, 60% of 1st years and 46.66% of 4th years.

Observations and current studies suggest that today's children are probably less fit than children years ago and tend to be more overweight and sedentary. [27] A survey of the associations between physical activity and other health behaviors in a sample of United States high school children showed that low physical activity was associated with several other negative health behaviors in teenagers [28] Numerous studies have shown that sedentary behaviors like watching TV and playing computer games are associated with increased prevalence of obesity. [29] Children and adolescents who watch more than 2 hours/day of TV or play video games are at risk of being obese. [30] This is not coinciding with the results of the present study, where no statistically significant association was found between physical inactivity and all studied risk factors. This may be attributed to the small number of students included in the study.

According to our study, 73.33% of 3rd year students were non-smokers, followed by 1st, 5th,4th, 2nd years with 66.66%,53.33%, 40%, 33.33% respectively with statistical significance. Chris Silagy et al (1993) [31] indicated that high

proportion of smokers and those who were physically inactive perceived their behaviour to be harmful. A study on medical students at KFU (1998) which showed a prevalence of 18% and 3.7% among male and female students, respectively. [32] On the other hand, another study of smoking pattern among nursing and medical laboratory technology female students in KFU (1999) showed a lower prevalence of 5.6%. [33] Al-Faris [34] in rural Riyadh showed a prevalence of 17% in male secondary school students with half of the smokers starting the habit before the age of 15. A study done by P.M. Nillson (2006) which indicated that smoking (prevalence in men 49%, women 37%) was the strongest risk factor [35]. All the above studies cleared that smoking is the risk factor for development of CHD. It was not co-relating with the results obtained from our study as many percentage of students from all the years were non-smokers with statistical significance.

Smoking usually starts at an earlier age during childhood and adolescence and almost everyone who smokes as an adult started smoking by the age of 18, and the earlier age a person begins, the more likely he or she is to continue.

Nutritional knowledge and dietary habits, particularly concerning fat, cholesterol and fiber are important determinants of the individual's dietary behavior. Children and adolescents need to have correct dietary knowledge so that they can adopt healthy eating habits. An increase in the fat content of the diet is one of the main changes in food habits observed in the 20th century. [36]

It was clear that students of 4th year (73.33%) consumed more fast food, while soft drink was consumed more by 1st & 2nd year (53.33%, 46.66%) , fruits were consumed more by 1st & 3rd year (80%, 73.33%) students. This showed a statistical insignificance. Remaining all years did not consume unsaturated fats. On an average, only 2nd years consumed unsaturated fat with 20% followed by 5th year with 6.66%. While 3rd year student did not know the type of fats used for cooking followed by 1st, 5th, 2nd & 4th years respectively. (66.66%, 46.66%, 33.33%, 26.66% for 2nd & 4th years). A high proportion of university students in the study of Amr A Sabra et al (2007) were consuming fast foods which contain a high amount of calories and saturated fats which was a little in contrast to our study. [2]

But vegetables were more consumed by 1st & 3rd year (80%, 60%). A study conducted in New Orleans, USA, [37] among high school students, showed that the knowledge and consumption levels of adolescents with regard to fruits and vegetables were low (39% had correct knowledge scores). Other studies in KSA had shown that dietary habits and obesity were among the main risk factors for DM. [12,13]

Maximum students were of normal weight but 3rd & 5th year students were slightly overweight (6.66%) and 5th year were obese (40%) which was statistically insignificant. The prevalence of overweight and obesity (BMI ≥30) in the study of Amr A sabra et al (2007) [2] (24.5% and 22.6% respectively) was higher than that found in the study done in Al-Khobar city, KSA among male secondary school students aged 14-19 years (14.1% were overweight and 16.7% were obese). [38] It was also higher than the National Survey of the

prevalence of overweight and obesity in Saudi population aged 15-20 years (a prevalence of 12% and 7% for males. [15] On the other hand, similar prevalence was reported in Jeddah among students of both sexes (with a mean age of 15.3 years). [39]

According to our study students were overweight & obese but as compared to other studies overall prevalence was less. Hypertension is an important single independent risk factor for heart disease and stroke. [40]

Hypertension of 1st & 3rd year students was normal (80% & 73.33%) while 2nd & 4th students were prehypertensive (93.33 %, 73.33% for systolic & 93.33%, 40% for diastolic) and 5th year students had stage 1 & stage 2 hypertension (60%, 6.66 for systolic & diastolic) with statistical significance of P-value <0.003.

A study by Amr A Sabra et al (2007) Up to 13.8% % of students showed systolic hypertension (BP>140 mmHg) and 3.7% showed diastolic hypertension (BP>90mmHg) [2] . A similar study done in Al-Khobar city, KSA showed that among male students 18 years and older, 13% had systolic and 8.4% had diastolic hypertension. [41] These studies where in contrast to our findings.

5. Conclusion

The present study revealed the socio-demographic characteristics, physical activity, smoking habits, nutritional habits and physical measurements like BMI, RBS & hypertension of dental students from 1st to 5th year studying in College of Dentistry, Al Jouf University , Sakaka, KSA.

From the result of the present study it can be concluded that prevalence of CHD risk factor was overall high for 2nd , 4th & 5th year students. Education of parents, income of family & habit of smoking did not effect for the CHD risk factor to develop among the students whereas, physical activity for 4th year students was less performed as compared to 1st, 2nd,3rd,5th year students. Moreover, a high proportion of 4th year students consumed fast food, while 1st & 2nd year students consumed more soft drink. Consumption of fruits & vegetables was more for 1st & 3rd year students while 5th year students had an overall poor nutritional habits. Normal weight, overweight, obesity were measured by BMI which suggested that 3rd & 5th year students acted as an indicator for CHD. Due to improper physical activity, nutritional habits & BMI, the hypertension values for 2nd & 4th year students suggested for prehypertensive & 5th year students were at Stage 1 & 2 of hypertension.

Thus according to the study, an urgent need for intervention programs to raise the health awareness and knowledge of 2nd, 4th, 5th years students about risk factors for heart disease and also encourage them to adopt a healthy dietary behavior, promote physical exercise and monitoring of BMI & hypertension could be promoted among students to avoid the risk of CHD to appear at younger age group.

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