Prevalence of Cardiovascular Disease and Associated Risk Factors among Adult Population Attending Fitness Center/Gymnasium in Arar

Anshoo Agarwal[1]*, Rahma Hamayun Fazeel[2], Hana El-Sayed Abdel Rahman[3], Atheer Muteb K Alenezi[1], Dhari Atallah S Alshammari[1], Manal Hajea E Alenzi[1], Talal Ahmed Albalawi[1], Yazed Muteb K Alenezi[4], Rahaf Hajea E Alenazi[4]

[1]Department of Pathology, Faculty of Medicine, Northern Border University, Arar, Saudi Arabia. [2]Department of Pharmacology, Faculty of Medicine, Northern Border University, Arar, Saudi Arabia. [3]Department of Family and Community Medicine, Faculty of Medicine, Northern Border University, Arar, Saudi Arabia. [4]Faculty of Pharmacy Northern Border University, Rafha, Saudi Arabia.

Abstract

Cardiovascular disease is the most frequent cause of death in Saudi Arabia; next to road traffic accidents. Both resistance and aerobic exercises provide the greatest benefits as the best exercise modality for the prevention of cardiovascular diseases. To determine the prevalence of cardiovascular disease and associated risk factors among the adult population attending the Fitness center/Gymnasium in Arar, Kingdom of Saudi Arabia. In a randomized cross-sectional prospective study, unselected adult population attending a Fitness center/Gymnasium in Arar, Kingdom of Saudi Arabia was screened for Obesity, Diabetes mellitus, and hypertension and its risk factors. The outcomes of this study were analyzed using the SPSS program using a pre-tested questionnaire. The study included 213 participants more than half of them 57.7% 20-30 years old, 63.8% females, and 36.2% males. 72.3% of participants joined the club for general health and fitness, 33.8% to lose weight, and 22.1% to spend spare time. Only 10.8% had been diagnosed with high blood pressure. 89.2% correctly answered that practicing physical activity can reduce the risk of cardiovascular disease. 84% said that walking can prevent the risk of cardiovascular disease and 68.5% said that usual physical activity for 150 minutes a week will reduce your chance of having a heart attack or stroke. Participants showed good awareness of cardiovascular disease risk factors among participants which was in the same line with other reported studies. Also, they know the role of physical activity in reducing the risk of cardiovascular disease risk.

Keywords: Fitness, CVD, Cardiovascular risk, Gym, Fitness center, KSA

INTRODUCTION

Cardiovascular diseases have become a global epidemic and are an important public health challenge in both economically developing and developed countries [1]. The global prevalence of these risk factors is being increased every day. Cardiovascular disease is the frequent cause of death in Saudi Arabia; next to road traffic accidents. Hypertension that is not controlled is related with an end-organ damage which includes heart disease, stroke, blindness, and renal disease [2]. One of the most damaging complications of hypertension may be prevented with proper blood pressure control [3]. As there is a high prevalence of cardiovascular risk factors in the Kingdom of Saudi Arabia and these days many people are aware of it but many are still ignorant. We wish to study how many adults in Arar in the Kingdom of Saudi Arabia join a gymnasium and fitness centre to do regular exercise to reduce the risk for cardiovascular diseases. Many of these adults attending fitness centres may have been spending most of the day at home and therefore are at risk of various metabolic disorders due to ignorance about the food they eat that may be salt-laden or high in oil adding to their physically inactive lifestyle [4]. This subpopulation requires intensive care comprising intensive health education in cardiovascular risk factors management [5, 6]. Massive population screening for cardiovascular risk is needed and adequate blood pressure and glycemic control are essential to reduce associated mortality and morbidity [7].

Aerobic exercise training yields important health benefits. Just 15 minutes of moderate-intensity exercise a day can reduce the risk of premature death from cardiovascular disease [8, 9]. The Health benefits of exercise are usually

Address for correspondence: Anshoo Agarwal, Faculty of Medicine, Northern Border University, Arar, Saudi Arabia. dranshoo30@gmail.com

based on endurance training, such as running and cycling [8]. Resistance training and strength training are already known to reduce the risk of type 2 diabetes and improve bone health, but much research is lacking on its impact on the development of cardiovascular disease and metabolic syndrome. Not done [9]. People who follow exercise guidelines (two or more sessions per week) have a lower risk of developing cardiovascular diseases [10-12]. Resistance exercise for even less than one hour per week is associated with a 29 percent lower risk [13-15]. Both resistance and aerobic exercises provide the greatest benefits as the best exercise modality for the prevention of cardiovascular diseases [16].

We aim to study if our study results can indicate that exercise, such as two 30-minute sessions per week, has the most beneficial effect among adults attending a gymnasium. Fitness center. Based on our results we wish to create awareness by giving medical recommendations for preventing metabolic syndrome and future cardiovascular disease."

Aims
To determine the prevalence of cardiovascular disease and associated risk factors among the adult population attending the Fitness center/Gymnasium in Arar, Kingdom of Saudi Arabia.

Objectives
1. To study the prevalence and awareness of obesity among the adult population attending a Fitness center/Gymnasium in Arar, Kingdom of Saudi Arabia.
2. To study the prevalence and awareness of cardiovascular disease risk factors among the adult population attending the Fitness center/Gymnasium in Arar, Kingdom of Saudi Arabia.
3. To study the effect of different types of exercises undertaken by the adult population attending the Fitness center/Gymnasium in reducing cardiovascular risk factors.

MATERIALS AND METHODS
In a randomized cross-sectional prospective study, unselected adult population attending a Fitness center/Gymnasium in Arar, Kingdom of Saudi Arabia was screened for Obesity, Diabetes mellitus, and hypertension and its risk factors. To study the demographic details and to get data for our research objectives, a structured questionnaire was given randomly to the participants who were taken from most of the Fitness centers/Gymnasium for adults in Arar, Kingdom of Saudi Arabia.

Step 1: The questionnaire addressing personal information, bio-data, habits, and practices related to the risk factors of cardiovascular diseases as well as their educational status [includes age, nationality, occupation, education, employment status, marital status, diet intake, fast food intake, smoking, drinking energy drinks, hypertension awareness, history of diabetes or any other cardiovascular disease, the status of exercise].

Stage 2: Measurement of blood pressure by sphygmomanometer for three consecutive days with one-week intervals for more accurate assessment Hypertension was described as BP ≥ 140 and/or ≥ 90 mmHg or being on drug therapy (WHO 2011 guidelines).

Stage 3: Anthropometric data collection includes Body mass index (BMI), Waist-hip ratio Height, and body mass was determined using a stadiometer and scales respectively.

Statistics
The data obtained from the Feedback form analysis was entered into Microsoft Excel 2013. Microsoft Excel and Statistical Package for Social Science (SPSS) software program (IBM SPSS v.20 Inc., Chicago Il, USA) were used for descriptive analysis of the data. The results were presented as percentages and frequency distribution. The Chi-square test was utilized to evaluate the relationship between various categorical variables. P-value< 0.05 was regarded considerable.

RESULTS AND DISCUSSION
Table 1: show the sociodemographic characteristics of participants, the study included 213 participants more than half of them 57.7% 20-30 years old, 63.8% females, and 36.2% males. 62.9% were single and 34.7% were married. 52.1% were healthy weight, 29.1% overweight, and 9.4% were obese.43.7% were students and 38.5% were the employee. As regards educational level 81.2% had collegiate. 39.9% of participants had a monthly income of more than 2000.

Table 2: show the prevalence of CVS risk factors and physical activity, 72.3% of participants joined the club for general health and fitness, 33.8% to lose weight, and 22.1% to spend spare time. The majority (95.8%) of participants have not been diagnosed with heart disease, a third of them (31.5%) are worried about getting heart disease but 68.5% know that heart disease can be prevented and 26.8% have a family history of heart disease. Only 16% reported a family member who died of heart disease in 32.4% of them the family member was grand and 61.8% reported that the person who died of heart disease was over 60 years. Only 15% were smokers of them 37.5% had been smoking for 6-10 years. 67.1% reported that they eat healthy meals but 54.5% prefer fast food and 43.7% said that they eat fruits and vegetables daily. 78.4% had an idea about an unhealthy diet, 81.7%had information about obesity and overweight, 69.5% tried to lose weight and only 18.8% suffer from a chronic disease. 28.2% of participants reported low-intensity physical activity most weeks and 22.1% had high-intensity physical activity three or more times a week. Only 10.8% had been diagnosed with high blood pressure, 56.5% from them taking prescription medications to lower blood pressure, 30.4% follow a special

diet to lower their blood pressure and 82.6% monitor their own blood pressure. 13.6% had been diagnosed with an increased level of body fat, and 37.9% of them follow a special diet to lower blood cholesterol. 8.5% of participants had been diagnosed with diabetes, 33.3% of them administrate insulin as a treatment, and the same percentage for oral antidiabetic medications. 43.7% of participants had a family history of diabetes and for women, only 12.5% had a history of gestational diabetes. 40.8% of participants reported they were under pressure all the time.

Table 3: show the knowledge of participants about CVD risk factors and their prevention, most participants 89.2% correctly answered that practicing physical activity can reduce the risk of cardiovascular disease, and nearly half of participants 55.4% know that eating a lot of red meat increases the risk of cardiovascular disease, 54% said that high blood pressure is defined as 120/80 or higher (systolic/diastolic).

As shown in **Table 4**, 70.9% know that eating a diet rich in fibers lowers blood cholesterol also 69.5% said that Eating fruits and vegetables prevents cardiovascular diseases. 84% said that walking can prevent the risk of cardiovascular disease and 68.5% said that usual physical activity for 150 minutes a week will reduce your chance of having a heart attack or stroke. 76.5% of participants said that being overweight or obese makes them more likely to develop cardiovascular disease, 56.3% know that people with diabetes are more at risk of having a heart attack or stroke and nearly third 36.2% said that trans fats are healthier for the heart than most other types of fats.

Table 1. Sociodemographic characteristics of participants (n=213)

Parameter		No.	%
Age	Less than 20 years	27	12.7
	20 -30	123	57.7
	31 - 40	51	23.9
	41 -50	8	3.8
	51- 60	4	1.9
Gender	Male	77	36.2
	Female	136	63.8
Nationality	Saudi	211	99.1
	Non-Saudi	2	.9
BMI	under weight	20	9.4
	healthy weight	111	52.1
	over weight	62	29.1
	obese	20	9.4
Occupation	Student	93	43.7
	female teacher	1	.5
	employee	82	38.5
	free work	10	4.7
	I do not work	27	12.7
Educational level	primary	2	.9
	secondary	20	9.4
	diploma	3	1.4
	collegiate	173	81.2
	high degree	15	7.0
Monthly income	2000>	85	39.9
	2000-7000	43	20.2
	7000<	85	39.9
Marital status	Single	134	62.9
	married	74	34.7
	Divorced	5	2.3

Table 2. Determinants of cardiovascular disease among participants (n=213)

Parameter		No.	%
Reason to join the gym	to lose weight	72	33.8
	General health and fitness	154	72.3
	spending spare time	47	22.1
Diagnosed with heart disease	yes	9	4.2
	no	204	95.8
Worried about getting heart disease	yes	67	31.5
	no	146	68.5
Heart disease can be prevented	yes	146	68.5
	no	67	31.5
Family history of heart disease	yes	57	26.8
	no	156	73.2
Family member who died of heart disease	yes	34	16.0
	no	179	84.0
If the answer is "yes", what is the relationship	the father	10	29.4
	Grand	11	32.4
	Brother	1	2.9
	Son	1	2.9
	maternal uncle	7	20.6
	paternal uncle	4	11.8
Age of the person who died of heart disease	less than 20	1	2.9
	30- 39	6	17.6
	40 - 49	5	14.7
	50 -59	1	2.9
	over 60	21	61.8
Smoking status	Yes smoker	32	15.0
	non smoker	172	80.8
	Ex smoker	9	4.2
If the answer is "yes", how long	15th	9	28.1
	6 - 10	12	37.5
	11-15	8	25.0
	16 - 20	2	6.3
	more than 20	1	3.1

Table 3. Special health problems among participants (n= 213)

Parameter		No.	%
Eat healthy meals	yes	143	67.1
	no	70	32.9
Prefer fast food	yes	116	54.5

Eat fruits and vegetables daily	no	97	45.5
	yes	93	43.7
	no	120	56.3
Have an idea about an unhealthy diet	yes	167	78.4
	no	46	21.6
Have information about obesity and overweight	yes	174	81.7
	no	39	18.3
Tried to lose weight	yes	148	69.5
	no	65	30.5
Suffer from a chronic disease	yes	40	18.8
	no	173	81.2
Generally active	Only low intensity physical activity most weeks	60	28.2
	High-intensity physical activity once or twice a week	42	19.7
	High-intensity physical activity three or more times a week	47	22.1
	I don't know/not sure	34	16.0
	There is no weekly physical activity	30	14.1
Diagnosed with high blood pressure	yes	23	10.8
	no	190	89.2
If yes, how long	1	9	4.2
	2	5	2.3
	3	3	1.4
	5	4	1.9
	10	2	.9
If the answer is "yes" taking prescription medications to lower blood pressure	yes	13	56.5
	no	10	43.5
If the answer is "yes" following a special diet to lower blood pressure	yes	7	30.4
	no	16	69.6
If the answer is "yes" monitor own blood pressure	yes	19	82.6
	no	4	17.4
Diagnosed with hyperlipidaemia	yes	29	13.6
	no	184	86.4
If the answer is "yes", for how long	1	16	7.5
	2	6	2.8
	3	2	.9
	4	3	1.4
	5	2	.9
If the answer is "yes", follow a special diet to lower blood cholesterol	yes	11	37.9
	no	18	62.1
Diagnosed with diabetes	yes	18	8.5
	no	195	91.5
If the answer is "yes", what is treatment for diabetes	insulin	6	33.3
	Oral antidiabetic medications	6	33.3
	Self-monitoring of blood sugar	2	11.1
	following a diet	4	22.2

Family history of diabetes	yes	93	43.7
	no	120	56.3
History of gestational diabetes in women	yes	17	12.5
	No	119	87.5
Under pressure all the time	yes	87	40.8
	No	126	59.2

Table 4. Knowledge of participants of risks and prevention of cardiovascular disease (n=213)

Parameter	Yes	No	Don't know
You can reduce the risk of cardiovascular disease by practicing physical activity	190 89.2%	5 2.3%	18 8.5%
Eating a lot of red meat increases the risk of cardiovascular disease	118 55.4%	31 14.6%	64 30.0%
High blood pressure is defined as 120/80 or higher (systolic/diastolic)	115 54.0%	42 19.7%	56 26.3%
Eating a diet rich in fibre lowers blood cholesterol	151 70.9%	13 6.1%	49 23.0%
Eating fruits and vegetables prevents cardiovascular diseases	148 69.5%	19 8.9%	46 21.6%
Walking can prevent the risk of cardiovascular disease	179 84.0%	7 3.3%	27 12.7%
Usual physical activity for 150 minutes a week will reduce your chance of having a heart attack or stroke	146 68.5%	16 7.5%	51 23.9%
People with diabetes are more at risk of having a heart attack or stroke	120 56.3%	23 10.8%	70 32.9%
Trans fats are healthier for the heart than most other types of fats	77 36.2%	56 26.3%	80 37.6%
You are more likely to develop cardiovascular disease if you are overweight or obese.	163 76.5%	15 7.0%	35 16.4%

Cardiovascular diseases (CVDs) are a group of illnesses associated with heart and blood vessels. (CVDs) are common in the general population, mainly among adults [17]. Based on the WHO, heart disease more specifically coronary heart disease is the major cause of death worldwide and among the major health burdens globally and more than 17 million people die annually (30% of all deaths) [17]. According to various epidemiological studies, many nonmodifiable and modifiable CVDs risk factors were recognized. Old age, family history, and male gender are nonmodifiable risk factors, but modifiable risk factors comprises smoking, hypertension, diabetes, dyslipidemia, obesity, physical inactivity, unhealthy diets, and heavy alcohol intake [18]. One study indicates the prevalence of CVD mortality rate in the Kingdom of Saudi Arabia is 46% [19]. This significantly high percentage might be related to the lack of awareness of cardiovascular risk factors. Encourage people to adopt a cardio-protective lifestyle. Little is known about cardiovascular risk factors in the general population. Knowledge is an essential step in developing a cardiovascular

protective lifestyle [20]. This is a cross-sectional prospective study conducted among 213 unselected adult populations attending the Fitness center/Gymnasium in Arar, Kingdom of Saudi Arabia. The study aims at determining the incidence and awareness of cardiovascular disease risk factors among the adult population attending the Fitness center/Gymnasium in Arar, Kingdom of Saudi Arabia.

According to national studies [21-23] the incidence rates of CVDs risk factors are disturbing drift over time. Smoking is said to cause almost ten percent of all CVDs then physical inactivity (6%), as well as overweight and obesity (5%) [24]. An increase in BP levels also increases the risk of stroke and coronary heart disease [25]. Moreover, individuals with diabetes have a two-fold risk of vascular disease, and surged cholesterol and triglyceride levels are independent risk factors for coronary heart disease [26, 27]. Individual knowledge of cardiovascular disease risk factors is paramount in combating these factors. However, few studies worldwide have addressed knowledge of cardiovascular disease risk factors. As regards awareness of cardiovascular disease risk factors and their prevention among participants, results from our study showed that nearly half of participants 55.4% know that eating a lot of red meat increases the risk of cardiovascular disease, 54% said that high blood pressure is defined as 120/80 or higher (systolic/diastolic), 70.9% know that eating a diet rich in fibers lowers blood cholesterol also 69.5% said that Eating fruits and vegetables prevents cardiovascular diseases. 76.5% of participants said that being overweight or obese makes them more likely to develop cardiovascular disease, 56.3% know that people with diabetes are more at risk of having a heart attack or stroke and nearly third 36.2% said that trans fats are healthier for the heart than most other types of fats. In Egypt, another study conducted among 200 participants reported that 59% of them know that eating a lot of red meat increases heart disease risk, 41% reported stress as the most important cause of heart attacks, 44% think that high blood cholesterol is a risk factor for heart diseases, 37% think that eating a high fibers diet increases the risk of getting heart disease, 28% said that obese people are more at risk for getting heart disease and only 13% said that elevation of blood sugar for a long time is a risk factor for heart disease [28]. In India, another study carried out among the adult population found that all of the participants said that being overweight increases a person's risk for heart disease followed by 98% knowing that high cholesterol is a risk factor for developing heart disease, 94% reported High Blood pressure as a risk factor for heart disease and 92% reported Smoking as a risk factor for heart disease [29]. In Nepal, a descriptive cross-sectional study included 200 adults reported that most of the respondents (90.5%) were aware of smoking as a risk factor for CVD, 82.5% know that high blood pressure is a risk factor for heart disease, 81% said that daily intake of fruits and vegetables reduces the risk for developing heart disease, 79.5% think that stress and anxiety increase the risk of heart disease, 78.5% said that keeping blood pressure under control will reduce a person's risk for developing heart disease, 72.5% of participants reported that being overweight

increases a person's risk for heart disease, 60.5 % said that high cholesterol is a risk factor for developing heart disease and 59.5% know that diabetes is a risk factor for developing heart disease [30]. In Cameron, another study reported that participants were aware that smoking (82%), unhealthy diet (70.6%), lack of exercise (67.0%), obesity (69.7%), stress (73.1%), high blood pressure (HBP) (73.3%) and diabetes (60.8%) were potential risk factors for CVD [31]. Physical activity (PA) and exercise training play a central role in maintaining good health and preventing primary and secondary diseases. Gyms and fitness centers are currently largely reachable in large city and several smaller towns and have a critical role in employing strategies to decrease the population's CV risk factors [32]. Multiple physiological mechanisms are involved, and the impact of PA on reducing cardiovascular (CV) risk factors is well established across different exercise modalities [33]. Recent first-line management of arterial hypertension, hypercholesterolemia, obesity, diabetes, and non-alcoholic fatty liver disease depends on dietary management, lifestyle modification, and, particularly, physical exercise [34, 35]. In accordance with this, our study reported that most participants 89.2% correctly answered that practicing physical activity can reduce the risk of cardiovascular disease, 84% said that walking can prevent the risk of cardiovascular disease and 68.5% said that usual physical activity for 150 minutes a week will reduce your chance of having a heart attack or stroke. Similar to our results another study reported that 42% of participants know that only exercise in a GYM decrease risk of heart disease and 34% said that regular exercises decrease the risk of heart disease [28]. Also, in India, results from another study show that 92% of participants correctly answered that only exercising at a gym or in a class will help lower a person's chance of developing heart disease and 90% said that regular Physical activity will person's chance of getting heart disease [29]. In Nepal, another study found that 86.5% know that regular physical activity will lower a person's chance of getting heart disease, and 82.5% said that walking and gardening are considered an exercise that will help lower a person's chance of developing heart disease, however, half of the participants (50%) were aware of only exercising at a gym will not help lower person's chance of developing heart disease [30].

According to the prevalence of CVD risk factors among participants, our study reported that the majority (95.8%) of participants have not been diagnosed with heart disease but 26.8% have a family history of heart disease, only 15% were smokers, 67.1% reported that they eat healthy meals and 43.7% said that they eat fruits and vegetables daily. 28.2% of participants reported low-intensity physical activity most weeks and 22.1% had high-intensity physical activity three or more times a week. Only 10.8% had been diagnosed with high blood pressure, 13.6% had been diagnosed with an increased level of body fat and 8.5% had been diagnosed with diabetes. In Nepal, another study reported that most of the participants (89.5%) of them had unhealthy dietary practices, only 10.5% had adequate consumption of fruits and

vegetables daily, 11.5% were current smokers, about physical activity, almost (96.5%) of respondents were physically active which contrasted with our results, 60.5% had normal BMI, only 12.5% were hypertensive and 11.5% had a family history of CVD [30]. In Lebanon, another study found that 42% of the studied population reported smoking either cigarettes or waterpipe only 2.1% reported heavy alcohol consumption of ≥3 drinks/day, and 17.3% and 8.7% reported not consuming at all fruits and vegetables, respectively. However, the prevalence of moderate exercise and walking was high, were 54.5%, and 70% reported engaging in moderate activities and walking for at least 10 minutes for ≥4 times/week, 46.5% of the study participants were overweight and 29.4% were obese and the prevalence of reported hypertension, diabetes, and dyslipidemia previously diagnosed by a doctor was 29.8% 22.8% and 22.5% respectively [36].

CONCLUSION

The present study concluded that there was good awareness of cardiovascular disease risk factors among participants which was in the same line with other reported studies. Also, they know the role of physical activity in reducing the risk of cardiovascular disease risk.

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