



Role of lifestyle in the development of Cardiovascular diseases among the workers working in the offices.

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ABSTRACT... Objectives: The incidence of coronary heart disease in Pakistan is not well established. While the role of lifestyle risk factors and job-related conditions in the development of such diseases, still needs more clarification. **Study Design:** Cross-sectional study. **Settings:** Faisalabad Medical University, Faisalabad. **Period:** Jan, 2018 – Dec, 2018. **Material & Methods:** 30 office workers of FMU were approached including males & females. A semi-structured questionnaire was used. For evaluation of habitual physical activity Baecke questionnaire was used. **Results:** 30 office workers of FMU of age groups ranging from 20 above to 59 years (37.333 ± 12.103) were being studied. A questionnaire to evaluate lifestyle and awareness of cardiovascular diseases and risk factor profile and prevalence was administered to the participants with 23 males and 7 females. Among all, reported smokers were 19%. 47% participants had never performed exercise, overall statistical analysis for physical exercise was 1.4000 ± 0.62146 , $df = 29$, $p < 0.000$, 95% CI. Job strain intensity was assessed according to Job Strain Index (JSI) Scale. It was reported that 53% workers had hard intensity while overall we found $JSI 3.3333 \pm .75810$, $df = 29$, $p < 0.000$, 95% CI. **Conclusion:** Some flexibility regarding their job, proper awareness about Cardiovascular Diseases (CVDs) and their risk factors is the need of the day.

Key words: Awareness, Developing Countries, Lifestyle.

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INTRODUCTION

Cardiovascular diseases are a major cause of mortality and morbidity all over the world. It is the number one killer of men worldwide. According to the latest data almost 17.5 million people were died due to cardiovascular diseases making 31% of total deaths all over the world. It is widely accepted that most of cardiovascular diseases can be prevented by decreasing risk factors like smoking, unhealthy diet, overweight, lack of exercise, having family history of any disease like hypertension, diabetes, hyperlipidaemia, poverty, lack of education and long duty hours.¹ CVDs belongs to such group of diseases which are either related to the blood vessels or heart like stroke, coronary artery diseases, heart failure, peripheral artery disease, hypertension, arrhythmias, and atherosclerosis.² Individual patient may have the accompanying elevated glucose, raised blood pressure, lack of exercise,

smoking, excessive alcohol consumption, obesity, and dyslipidemia as well. Luckily, CVDs can not only be managed properly but also be prevented by strictly controlling glucose, blood pressure, smoking, lipid profile and by avoiding alcohol drinking. Moreover, through lifestyle modifications for emotion, sleep, diet, and exercise, all of which are grouped as which a intervention.³ With the increase in the world population, CVDs have become one of the leading cause of death worldwide. According to the data of 2015, CVDs caused almost 17.9 million deaths in the world⁴ while in Chinese older than 60, with 16% increased death rate, it became the leading cause of their death.⁵

There are multiple risk factors leading to CVDs such as diabetes, excessive weight gain, high blood pressure, old age and lack of physical activity more profound in office workers. Over the

past few decades, worldwide, with excessive use of laptops, the prevalence of obesity has crossed 50% in most of the countries and is increasing in both children and adults.⁶ Due to high lipid profile, these patients are more prone to have high blood pressure, myocardial infarction (MI), stroke, and develop insulin resistance, which are all the leading causes for CVDs.⁷ Furthermore, morbidity and mortality of these diseases have increased in obese patients, especially in those with abdominal obesity.⁸

So, we planned to conduct a study to summarize the new findings about the multiple benefits of exercise on CVDs and role of lifestyle affecting these diseases among the workers working in the offices. We paid attention to the prevalence and risk factors of CVD and mechanisms and recommendations of physical activity. To prevent CVDs, American Heart Association recommended the general exercise of moderate intensity of 30 minutes, 5 times per week.⁹ Even the slightest exercise is better than doing nothing or continuous sitting for several hours such as for office workers. Furthermore, due to the different physique of every individual, a fix exercise training schedule cannot give the exact benefit to everyone. This study reviewed the exercise advantages for human body especially in CVDs through the most advance mechanism studies.

MATERIAL & METHODS

30 office workers of FMU which comprises both males and females of different age groups ranging from 20 above to 59 years (37.333 ± 12.103) are being studied. A questionnaire to evaluate lifestyle and awareness of CVDs and risk factor profile and prevalence was administrated to the participants with 23 males and 7 females. Proper written consent was taken and confidentiality was ensured. The participants were also asked questions regarding awareness of cardiovascular diseases and lifestyle included awareness for heart attack and effect of various risk factors such as diabetes and hypertension on the genesis of cardiovascular disease. Lifestyle assessment included determination of physical activities, smoking and food choices. The physical activities were evaluated by using Habitual physical activity

(HPA) Baecke questionnaire¹⁰, in terms of formal games, exercises, jogging and in terms of daily activities such as climbing stairs at home or work. It includes 16 questions comprising three HPA scores from the past 12 months: 1) occupational physical activities score (8 questions); 2) physical exercises in leisure (PEL) score (4 questions); 3) leisure and locomotion physical activities (LLA) score (4 questions). The intensity of mental stress was assessed according to job strain index (JSI)¹¹, which was published by Moore et al, to elaborate the guidelines for assigning a rating criteria to minimize the job strain. All the clinical assessment was done according to the lab investigation reports.

It was a cross-sectional study conducted at Faisalabad Medical University, Faisalabad, for a period of Jan 2018 – Dec, 2018.

Inclusion Criteria

- Only those individuals working in office, sitting for at least 6 hours.
- Male & female.
- Age between 20 to 60yrs.

Exclusion Criteria

- All those workers working in the office with outdoor activities.
- History of any major illness other than CVDs.

Objectives

- To determine the prevalence of risk factors for cardiovascular diseases among the office workers.
- To assess the relationships of various risk factors with the diagnosis of cardiovascular diseases among office workers.

RESULTS

Total 30 office workers were approached. Of these respondents 23 were males and 7 were females of different age ranging from 20 above to 59 years (37.333 ± 12.103) (Table-I). Among all, reported smokers were 19%. Most of the participants (47%) had never performed exercise (Figure-1). For Baecke's HPA¹⁰ questionnaire formulas to calculate scores were as 0.76 for modalities of mild energy exertion, or 1.26 for modalities of

moderate energy exertion, or 1.76 for modalities of strenuous energy exertion, 1.4000 ± 0.62146 , $df = 29$, $p < 0.000$, 95% CI. Rating criterion for JSI¹¹ was according to Borg Scale: light ≤ 2 , somewhat hard =3, hard =4-5, very hard = 6-7, near maximum > 7 , 3.3333 ± 0.75810 , $df=29$, $p < 0.000$, 95% CI.

Statistical Analysis

The results were statistically analyzed by using IBM SPSS Version 20.00 All variables were expressed as mean \pm SD. The student's t test was applied where needed. P value < 0.05 was considered statistically significant. Scores for Baecke's habitual physical activity questionnaire were calculated in accordance with Likert's

scale¹⁰ responses.

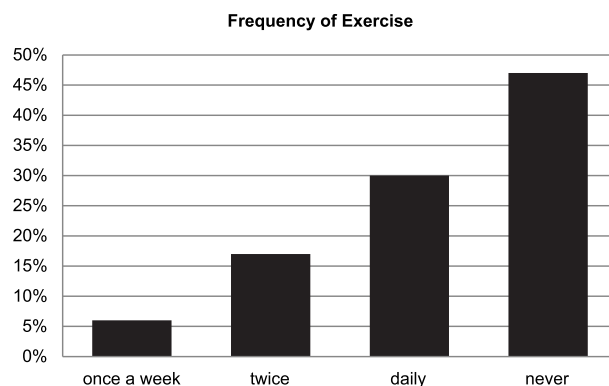


Figure-1. Graphical presentation of frequency of exercise.

Salary	< 20,000	20,000-50,000	> 50,000		
	6 (20%)	20 (66%)	4 (14%)		
Smoking	Smokers	Non-smokers			
	6(19.7%)	24(80.3%)			
Type of food intake	Vegetables	meat	mix		
	1(1.6%)	5 (17%)	24(81.4%)		
Physical activities	Light intensity	Moderate intensity	Vigorous intensity		
	20 (66%)	8 (26%)	2 (8%)		
Duration of physical exercise (Hours/week)	Less than 1	1-2	2-3	3-4	More than 4
	12 (40%)	11 (38%)	6 (20%)	1 (2%)	
(Months/yr)	Less than 1	1-3	4-6	7-9	More than 9
	1 (2%)	2 (7%)	4 (13%)	9 (31%)	14 (47%)
Exercise frequency	Once a week	twice	daily	never	
	2 (6%)	5 (17%)	9 (30%)	14 (47%)	
Duration of job	4-8 hrs	10-12 hrs			
	24 (80%)	6 (20%)			
Intensity of Job Strain Index	Light	Somewhat hard	hard	Very hard	Near maximum
	1 (2%)	1 (2%)	16 (55%)	11 (39%)	1 (2%)
Education	Matric	F.A	B.A		
	13 (43%)	9 (30%)	8 (27%)		
Family history	hypertension	diabetes	angina	none	All
	12 (40%)	7 (24%)	4 (13%)	6 (20%)	1 (3%)
Age in yrs	Male	female			
	37.13 \pm 19.97	31.85 \pm 7.15			

Table-I. Sample characteristics (n= 30)

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Age	30	20.00	59.00	37.3333	12.10396
Valid N (listwise)	30				

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Male	23	20.00	55.00	37.1304	10.96815
Female	7	22.00	42.00	31.8571	7.15142
Valid N (listwise)	7				

Physical Activity				
One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
mild=1, moderate=2,severe=3	30	1.4000	.62146	.11346

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
mild=1, moderate=2,severe=3	12.339	29	.000	1.40000	1.1679	1.6321

Job Strain Index(JSI)				
One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
light=1,somewhat hard=2, hard=3, very hard=4, near maximum=5	30	3.3333	.75810	.13841

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
light=1,somewhat hard=2, hard=3, very hard=4, near maximum=5	24.083	29	.000	3.33333	3.0503	3.6164

DISCUSSION

Cardiovascular diseases (CVDs) involve the heart and the blood vessels. There are many risk factors for their development involving unhygienic conditions, poor diet, smoking, lack of physical activities and excessive alcohol intake.¹ These factors are reflected in patients as hypertension, diabetes, obesity and can lead to heart attack and/or cerebral strokes.

Now-a-days evidence-based medicine and shared decision making have to face many barriers like environmental and systemic issues.¹²

For this, Australia government took timely action and changed their policies to support these areas.¹³ At international levels, especially in UK and US, consultants have been called to change CVDs prevention guideline in light of shared decision making.¹⁴

Generally, Type 2 diabetes may lead to different vascular complications like hypertension, MI, coronary heart disease and peripheral vascular diseases.¹⁵ In the present study 10% of the subjects had diabetes. A study conducted in Korea, the researchers concluded that the

individuals with the lowest income were more prone to have type II diabetes as compared to the highest income group.¹⁶

Among males and females, different CVDs prevalence rate was reported. Through clinical studies, a delay of 9 years in the onset of heart attack, in women as compared to males, was found.¹⁷ The report was strengthened by hospitalized patients' cross-sectional survey for coronary artery disease in which women were found 3.1 years older than men.¹⁸ Most commonly accepted reason is the protective role of estrogen in females.⁹ While on the other side, lifestyle behavior regarding smoking and alcohol drinking in men, make them more prone to CVDs complications.¹⁹ In our study, we found that 19% of office workers were smokers while the smoking prevalence for Pakistani population is 36% for males and 9% for females.²⁰ In a similar study on young adults in Pakistani university students, smoking prevalence was 23% with a preponderance of males.²¹ Our study, therefore, highlights that office workers are smoking less than the general population.

Lack of exercise not only causes obesity but also leads to increase in endogenous inflammatory and coagulation factors. Through different reports, we have strong evidence that exercise has a definite role in decreasing the overall risk of CVDs. According to WHO recommendations, regular exercise, healthy diet and no smoking, are the three basic pillars.⁹ In our study work, we found only 20% workers performed light exercise and exercise frequency was found to be just twice in a week in only 17% of the workers.

In 2018, Giovanni V²² reported that lifestyle risk factors and work-related conditions are equal clinical risk factors to identify cardiovascular diseases. Although cholesterol smoothes different body functions but when it exceeds its homeostatic levels too much, it becomes a strong risk factor for the development of different CVDs like heart attack, stroke or atherosclerosis.²³ These patients must have their lipid profile regularly, paying special focus to LDL, TG and HDL.²⁴ After conducting a research on rats, Tsukiyama et al,

reported vasodilatation and a decrease in lipid profile after a moderate intensity exercise which drops diastolic blood pressure as well.²⁵ In our study, 24% were hypertensive, the same as that in the general Pakistani population.²⁶

McPhee et al, reported physical exercise as the best way to prevent and counteract age-related changes in muscle and organic function.²⁷ Moreover, slight intensity exercise is better than continuous sitting. It doesn't matter whenever you start, it never too late.²⁸

We strongly recommend old office workers, continuously sitting for longer time, the regular consultation regarding their muscular strength and endurance and cardiorespiratory status with graded exercise tests.²⁹ The patients with some baseline disease, exercise may trigger the progression of the disease. So tailored exercise may give maximum benefits in normal humans as well as in these patients.³⁰

CONCLUSION

There are strong evidence in support of the role of job strain, lack of exercise and poverty contributing to CHD. It is further strengthened by evidence showing strong relationship between job stress and profound pathological mechanisms. However, the domain still needs more clarification and further research work is needed to determine its specific role in the development and prevention of CHDs.

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2	Waqar Arif	Data collection.	
3	Sana Arif	Data collection.	