Role of Lifestyle in the Development of Cardiovascular Diseases Among the Workers Working in the Offices of FMU, Faisalabad

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ABSTRACT

Background: The emerging cardiovascular diseases (CVD) are becoming a leading cause of death in the developing countries. In Europe, 45% of total deaths are due to cardiovascular diseases (CVD) 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. **Objective:** (1) To determine the prevalence of risk factors for cardiovascular diseases among the office workers. (2) To assess the relationships of various risk factors with the diagnosis of cardiovascular diseases among office workers. **Study Design:** It was cross-sectional study. **Settings:** Faisalabad Medical University, Faisalabad Pakistan. **Duration:** One year from January 01, 2018 to December 31, 2018. **Methods:** 30 office workers were approached including males & females. A semi-structured questionnaire was used. For evaluation of habitual physical activity Baecke questionnaire was used. All workers were belonging to Faisalabad Medical University, Faisalabad Pakistan. **Results:** 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 cardiovascular diseases and risk factor profile and prevalence was administrated to the participants with 23 males and 7 females. Among all, reported smokers were 19%. Most of the participants (47%) had never performed exercise, overall statistical analysis for physical exercise was 2.95 ± 1.72, 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 4.966 ± 1.449, df=29, p < 0.000, 95% CI. **Conclusion:** The majority of office workers had the same or lower prevalence of risk factors of CVD as the general Pakistani population. Some flexibility regarding their job, proper awareness about CVDs and their risk factors is the need of the day.

Keywords: Developing countries, Awareness, Lifestyle.

INTRODUCTION

Cardiovascular diseases are a major cause of mortality and morbidity all over the world. It is the number one killer of men worldwide.[1] 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.[1] 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, hyperlipidemia, poverty, lack of education and long duty hours.[1]

Worldwide, cardiovascular diseases are more common in Indo-Asian population.[2] Although the association of these diseases with body fat, any other chronic disease or body mass index (BMI) is different.[3,4] It was suggested that perhaps it might be due to poverty and malnutrition.[5] Due to these differences International

Association for the Study of Obesity (IASO) and the International Obesity Task Force (IOTF) reported low body mass index for the definitions of overweight (23.0–24.9 kg/m²) and obesity (25.0 kg/m² or greater) in Asian populations.[6,7] The overweight prevalence rate in countries like Pakistan, India, Sri Lanka and Bangladesh based on these specific values have not been reported yet.[8]

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.

METHODS

It was a cross-sectional study conducted at Faisalabad Medical University, Faisalabad, for a period of Jan 2018 – Dec, 2018. 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 cardiovascular diseases 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 Baecke questionnaire,[9] in terms of formal games, exercises, jogging and in terms of daily activities such as climbing stairs at home or work. The intensity of mental stress was assessed according to job strain index (JSI)[10]. All the clinical assessment was done according to the lab investigation reports. Only those individuals working in office environment for at least 6 hours were included in the study. All those workers working in an office but whose job include outdoor activities were excluded from the study.

The results were statistically analyzed by using SPSS Version 20.00 All the variables were expressed as mean ± 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 scale[9] responses.

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 1).

Table 1: Sample characteristics (n= 30)

Characteristic	n= 30				
Salary	< 20,000	20,000-50,000	> 50,000		
	20%	66%	14%		
Smoking	smokers	Non-smokers			
	19%	81%			
Type of food intake	vegetables	meat	mix		
	2%	17%	81%		
Physical activities	Light intensity	Moderate intensity	Vigorous intensity		
	66%	26%	8%		
Duration of physical exercise (Hours/week)	Less than 1	1-2	2-3	3-4	More than 4
	40%	38%	19%	2%	1%
(Months/year)	Less than 1	1-3	4-6	7-9	More than 9
	2%	7%	13%	31%	47%
Exercise frequency	Once a week	twice	daily	never	
	6%	17%	30%	47%	
Duration of job	4-8 hours	10-12 hours			
	80%	20%			
Intensity of Job Strain Index	light	Somewhat hard	hard	Very hard	Near maximum
	4%	4%	53%	37%	2%
Education	Matric	F. A	B. A		
	43%	30%	27%		
Family history	hypertension	diabetes	angina	none	All
	40%	24%	13%	20%	3%
Age in years	male	female			
	37.13 ± 19.97	31.85 ± 7.15			

Among all, reported smokers were 19%. Most of the participants (47%) had never performed exercise (Fig: 1). For Baecke's HPA 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, 2.95 ± 1.72, df =29, p < 0.000, 95% CI. Rating criterion for JSI was according to Borg Scale: light <=2, somewhat hard =3, hard =4-5, very hard = 6-7, near maximum > 7, 4.966 ± 1.449, df=29, p < 0.000, 95% CI.
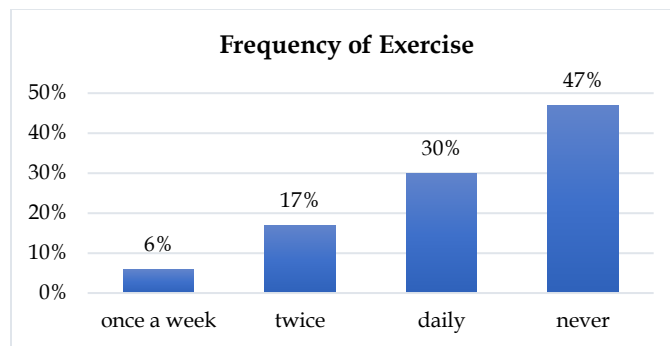
Table 2: Statistical analysis of variables

	N	Minimum	Maximum	Mean	Std. Deviation	
Age	30	20.00	59.00	37.333	12.10396	
Male	23	20.00	55.00	37.1304	10.96815	
Female	07	22.00	42.00	31.8571	7.15142	
Physical Activity	N	Mean	Std. deviation	Std. Error Mean		
	30	2.9567	1.72160	.31432		
	t	df	Sig. (2-tailed)	Mean difference	95% confidence interval of the difference	
					Lower	Upper
	9.407	29	.000	2.95667	2.3138	3.5995
Job Strain Index (JSI)	N	Mean	Std. deviation	Std. Error Mean		
	30	4.9667	1.44993	.2472		
	t	df	Sig. (2-tailed)	Mean difference	95% confidence interval of the difference	
					Upper	Lower
	18.762	29	.000	4.96667	4.4253	5.5081

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.

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.[11] In a similar study on young adults in Pakistani university students, smoking prevalence was 23% with a preponderance of males.[12] Our study, therefore, highlights that office workers are smoking less than the general population.

It is reported, all over the world, a lack of physical activity with atherosclerosis is responsible for almost half of all the deaths over 60yrs in industrialized nations[13,14]. Moreover, with genetic and lifestyle factors, at present, job-related problems are becoming more risk for diseases.

In 2018, Giovanni V[15] reported that lifestyle risk factors and work-related conditions are equal clinical risk factors to identify cardiovascular diseases

In 2010, Danielle Hartung[16] found workplace-related stressors in their study group. The researchers confirmed these results from the stress self-assessment test. The stress was mainly related to the jobs and other factors effect less. Fourteen other prospective cohort studies also demonstrated 50% increase risk for coronary heart diseases among employees with workplace stress.[16,17]

In our study, 24% were hypertensive, the same as that in the general Pakistani population.[18] A study of Karachi also revealed hypertension among 26.7% population.[19] In our study stress was strongly associated with hypertension similar results were found among office workers in another study[20]. Another study in Poland comparing women working in different fields found that among women office workers, the increase in stress was associated with increasing hypertension.[21]

Different studies have proved that the unhealthy diet without minerals and vitamins can lead to the development of CD e.g., metabolic syndrome. Duo to

poverty and lack of education, these people have less fish and mix diet with abundant fat.[22,23,24,25]

In the present study 10% of the subjects had diabetes. Socioeconomic status (SES) had a strong relationship with the prevalence of diabetes in urban population of Chennai, 12% were diabetic, increasing with age and the prevalence of diabetes being higher in higher SES[26]. However, our results were in contrast to a study done in Korea where they found an inverse relation between SES and prevalence of diabetes.

CONCLUSION

The majority of office workers had the same or lower prevalence of risk factors of CVD as the general Pakistani population. The most important risk factors were age, family history and occupational stress.

LIMITATIONS

This was a small sample size and single center study.

SUGGESTIONS / RECOMMENDATIONS

Further large-scale studies are recommended.

CONFLICT OF INTEREST / DISCLOSURE

No conflict of interest is involved.

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REFERENCES

1. World health organization cardiovascular diseases (CVDs) 17 May 2017
2. Jafar TH, Jafary FH, Jessani S, Chaturvedi N. Heart disease epidemic in Pakistan: women and men at equal risk. Am Heart J. 2005;150(2):221-6.
3. Dhurandhar NV, Kulkarni PR. Prevalence of obesity in Bombay. Int J Obes Relat Metab Disord. 1992;16(5):367-75.
4. Deurenberg-Yap M, Schmidt G, van Staveren WA, Deurenberg P. The paradox of low body mass index and high body fat percentage among Chinese, Malays and Indians in Singapore. Int J Obes Relat Metab Disord. 2000;24(8):1011-7.
5. Bhargava SK, Sachdev HS, Fall CH, et al. Relation of serial changes in childhood body-mass index to impaired glucose tolerance in young adulthood. N Engl J Med. 2004;350(9):865-75.
6. Choo V. WHO reassesses appropriate body-mass index for Asian populations. Lancet. 2002;360(9328):235.
7. World Health Organization, Western Pacific Region. The International Association for the Study of Obesity and the International Obesity Task Force. The Asia–Pacific perspective: redefining obesity and its treatment. Sydney, Australia: Health Communications Australia Pty Limited; 2000. Available:www.diabetes.com.au/pdf/obesity_report.pdf (accessed 2006 Aug 23).
8. Jafar TH, Chaturvedi N, Pappas G. Prevalence of overweight and obesity and their association with hypertension and diabetes mellitus in an Indo-Asian population. CMAJ. 2006;175(9):1071-7.
9. Hertogh EM, Monninkhof EM, Schouten EG, Peeters PH, Schuit AJ. Validity of the modified Baecke questionnaire: comparison with energy expenditure according to the doubly labeled water method. Int J Behav Nutr Phys Act. 2008;5:30.
10. Hedge Alan, Moore, J.S. Garg, A; Job Strain Index (JSI) DEA4700, (1995) Cornell University, Am Indust Hygi J. 2014, 56:443-58.
11. Ahmed R, Rizwan-ur-Rashid, McDonald PW, Ahmed SW. Prevalence of cigarette smoking among young adults in Pakistan. J Pak Med Assoc. 2008;58(11):597-601.
12. (www.aku.edu/aboutaku/News) accessed on 26 April, 2015.
13. Danielle Hartung, Martina Stadeler, Romano Grieshaber, Sylvia Keller; Work and diet-related risk factors of cardiovascular diseases: comparison of two occupational groups. J Occup Med Toxicol. 2010;5:4.
14. Gebbers JO. Atherosclerosis, cholesterol, nutrition, and statins--a critical review. Ger Med Sci. 2007;5:55.
15. Veronesi G, Borchini R, Landsbergis P, et al. cardiovascular disease prevention at the workplace: assessing the prognostic value of lifestyle risk factors and job-related conditions. Int J Public Health. 2018;63(6):723-32.
16. Albus C, Siegrist J. Primärprävention-Psychosoziale Aspekte [Primary prevention-psychosocial aspects]. Z Kardiol. 2005;94(3):105-12.
17. Kivimäki M, Virtanen M, Elovainio M, Kouvonen A, Vaananen A, Vahtera J. Work stress in the etiology of coronary heart disease -a meta-analysis. Scand J Work Environ Health. 2006;32:431–42.
18. Neupane D, McLachlan CS, Sharma R, et al. Prevalence of hypertension in member countries of South Asian Association for Regional Cooperation (SAARC): systematic review and meta-analysis. Medicine (Baltimore). 2014;93(13):74.
19. Aziz, Kalim Uddin et al. "Prevalence and Awareness of Cardiovascular Disease Including Life Styles in A Lower Middle Class Urban Community in An Asian Country." Pak Heart J. 2008:41(3-4);11-20.
20. Hartung D, Stadeler M, Grieshaber R, Keller S, Jahreis G. Work and diet-related risk factors of cardiovascular diseases: comparison of two occupational groups. J Occup Med Toxicol. 2010;5:4.
21. Bojar I, Humeniuk E, Owoc A, Wierzba W, Wojtyła A. Exposing women to workplace stress factors as a risk factor for developing arterial hypertension. Ann Agric Environ Med. 2011;18(1):175-82.
22. Deshmukh-Taskar P, Nicklas TA, Yang SJ, Berenson GS. Does food group consumption vary by differences in socioeconomic, demographic, and lifestyle factors in young adults? The Bogalusa Heart Study. J Am Diet Assoc. 2007;107(2):223-34.
23. Galobardes B, Morabia A, Bernstein MS. Diet and socioeconomic position: does the use of different indicators matter?. Int J Epidemiol. 2001;30(2):334-40.
24. Erkkilä AT, Sarkkinen ES, Lehto S, Pyörälä K, Uusitupa MI. Diet in relation to socioeconomic status in patients with coronary heart disease. Eur J Clin Nutr. 1999;53(8):662-668.
25. Popkin BM, Siega-Riz AM, Haines PS. A comparison of dietary trends among racial and socioeconomic groups in the United States. N Engl J Med. 1996;335:716–20.
26. Mohan V, Shanthirani CS, Deepa R. Glucose intolerance (diabetes and IGT) in a selected South Indian population with special reference to family history, obesity and lifestyle factors--the Chennai Urban Population Study (CUPS 14). J Assoc Physicians India. 2003;51:771-7.