

ORIGINAL ARTICLES

PATTERN OF LIPID PROFILE AND OBESITY AMONG SECRETARIAT EMPLOYEES OF BANGLADESH

MD. BILLAL ALAM¹, HAM NAZMUL AHASAN², MD. ZIAUL ISLAM³, MD. NAZRUL ISLAM⁴, FAZLE RABBI MOHAMMED⁵, ZANNATUN NUR⁵, MD. SHAHRIAR MAHBUB⁵, MD. ABUL FAIZ⁶

Abstract:

Background: By the dawn of this modern era of science, the prime challenge of physician is cardiovascular diseases (CVD). The most important modifiable risk factors of CVDs are unhealthy diet, physical inactivity and tobacco use. The effects of unhealthy diet and physical inactivity include abnormal blood lipid and obesity. We tried to evaluate the lipid profile and obesity among the employees of Bangladesh Secretariat.

Methods: This cross sectional type of descriptive study was carried out among 1000 employees of Bangladesh Secretariat in December, 2008. All classes of employees irrespective of age or sex were included. Body mass index (BMI) and fasting lipid profile were measured in each case. Socio-demographic variables and different related risk factors were also evaluated.

Result: Out of 1000 employees with a male, female ratio of 4.75:1, 65% had sedentary life style. 20.6% were smoker and only 0.05% had a history of taking alcohol regularly. 10.1% had a history of hyperlipidemia in first degree relatives. Only 2.1% were known cases of hyperlipidemia. BMI of 47% employees were in normal range with a mean 24.38 ± 3.14 SD. Mean fasting total cholesterol, LDL, HDL and triglyceride (TG) level was found 170.65 ± 39.37 , 103.72 ± 30.9 , 36.45 ± 5.93 and 169 ± 97.69 SD respectively. Abnormal fasting total cholesterol, LDL, HDL and TG were found in 17.3%, 48.5%, 75.6% and 48.5% employees respectively.

Conclusion: Dyslipidemia and obesity are two important modifiable risk factors of CVDs. Early detection and prevention of obesity and abnormal lipid profile can largely reduce morbidity and mortality and alleviate undue burden on our limited health budget.

Introduction:

By the dawn of this modern era of science, the prime challenge of physician is cardiovascular diseases (CVD). According to World Health Organization (WHO), CVDs are the number one cause of death globally. An estimated 17.5 million people died from CVDs in 2005, representing 30% of all global deaths. Over 80% of CVD deaths take place in low- and middle-income countries like Bangladesh. By 2015, almost 20 million people will die from CVDs, mainly from heart disease and stroke and they will remain the single leading causes of death. ¹ CVD is caused by disorders of the heart and blood vessels, and includes coronary heart disease, stroke, hypertension, peripheral artery disease, rheumatic heart disease,

congenital heart disease and heart failure. The most important modifiable risk factors of CVDs are unhealthy diet, physical inactivity and tobacco use and the effects of unhealthy diet and physical inactivity include abnormal blood lipid, obesity etc. Low physical activity and excess fat rich diet are two major health concerns in affluent society. A study in Bangladesh revealed 27.93%, 21.08% and 13.41% stroke patients with lipid disorder had high cholesterol, low density lipoprotein (LDL) and triglycerides (TG) level respectively. 42.67% patients had low high density lipoprotein (HDL) level showed in the same study.² In our study, we tried to evaluate the abnormal lipid profile and overweight or obese people associated with the above risk factors among the employees of

1. Associate Professor, Department of Medicine, Dhaka Medical College, Dhaka.
2. Professor, Department of Medicine, Dhaka Medical College, Dhaka.
3. Assistant professor, Department of Community Medicine, NIPSOM, Dhaka.
4. Director, Planning, Directorate General of Health Services, Dhaka.
5. Post-graduate Trainee, Department of Medicine, Dhaka Medical College & Hospital, Dhaka.
6. Professor of Medicine, Department of Medicine, Sir Salimullah Medical College, Dhaka.

Correspondence : Prof. HAM Nazmul Ahasan, Professor, Department of Medicine, Dhaka Medical College, Dhaka, E-mail: editorjom@yahoo.com

Bangladesh Secretariat. We choose this people as because most of them had sedentary life style.

Methods:

This cross sectional type of descriptive study was carried out among 1000 employees of Bangladesh Secretariat in December, 2008. This study place was selected because a large number of government workers are employed there and they were vulnerable to develop hyperlipidemia and obesity because of their job pattern. The sample size was detected statistically where degree of accuracy was 0.02. All types of employees irrespective of age, sex or class were included randomly. Employees were distributed in four age groups including group I (18 - 30), group II (31 - 40), group III (41 - 50) and group IV (>50). Employees were put in three groups according to 6th pay scale of Bangladesh government: group I (<5100 taka), group II (5100-14999 taka) and group III (≥ 15000). Depending on physical activity they were divided into group of sedentary or low physical activity, moderate physical activity and vigorous physical activity. They were also asked about regular exercise and weekly consumption of fat (<280 gm / ≥ 280 gm) in diet. They were asked about cigarette smoking and alcohol intake. History of hyperlipidemia in first degree relative and known cases was detected. Body mass index (BMI) was evaluated according to WHO guideline. Fasting lipid profile was done in each case and adult treatment panel III (ATP - III) guideline was followed. Consent was taken in each case and ethical clearance was sought from proper authority. Data were collected in a preformed questionnaire and face-to-face interview was carried out. Laboratory investigation for lipid profile was conducted in a reputed centre. Data were analyzed in computer.

Results:

Out of 1000 employees with a male, female ratio of 4.75:1, 17.9%, 34.8%, 30.6% and 16.7% were fallen in age group I, II, III and IV respectively. All the employees were literate and 94.4% were married. 23.9%, 50.7% and 25.4% employees were placed in monthly basic income group I, II and III respectively. 65% had sedentary life style and only 6.6% performed vigorous physical activity (Fig.-1).

20.9% had a history of weekly fat consumption ≥ 280 gm. 20.6% were smoker and only 0.05% had a history

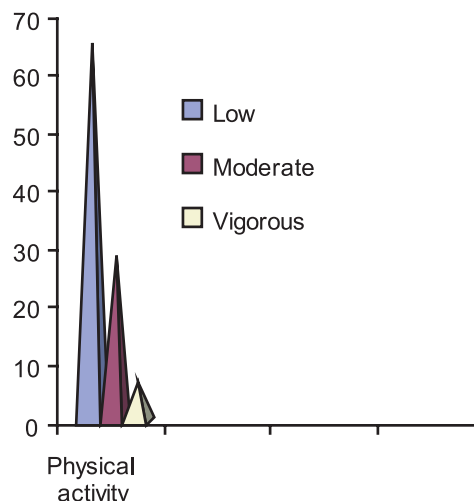


Fig.-1: Physical activity among secretariat employees.

of taking alcohol regularly. 10.1% had a history of hyperlipidemia in first degree relatives. Only 2.1% were previously diagnosed cases of hyperlipidemia. BMI of 47% employees were in normal range with a mean 24.38 ± 3.14 SD. Obesity was present only in 4.7% employees (Fig. - 2).

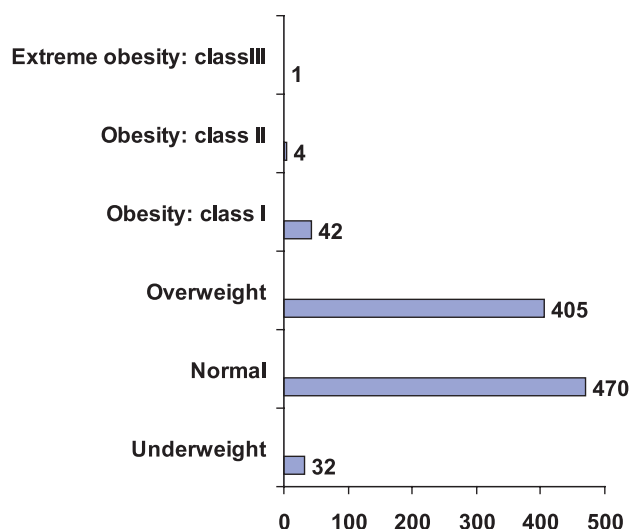


Fig.-2: Distribution of BMI among secretariat employees.

We followed the ATP III guideline for lipid profile and grouped people in different categories. Mean fasting total cholesterol, LDL, HDL and triglyceride (TG) level was found 170.65 ± 39.37 , 103.72 ± 30.9 , 36.45 ± 5.93 and 169 ± 97.69 SD respectively.

Table-I
Lipid profile among secretariat employees.

Fasting Blood Lipid	Result(in mg/dL)	Remarks	Number
Total cholesterol	<200	Desirable	783
	200-239	Borderline high	118
	>240	High	55
LDL	<100	Optimal	471
	100-129	Near optimal/above optimal	323
	130-159	Borderline high	111
	160-189	High	33
	>190	Very high	18
HDL	<40	Low	756
	40-59	Desirable	196
	≥ 60	High	4
Triglyceride	<150	Normal	470
	150-199	Borderline-high	251
	200-499	High	215
	>500	Very high	19

Abnormal fasting total cholesterol, LDL, HDL and TG were found in 17.3%, 48.5%, 75.6% and 48.5% employees respectively (Table 1).

Discussion:

As the number of mortality and morbidity of cardiovascular diseases is increasing day by day, scientists are trying to identify the underlying risk factors and implementing both primary and secondary prevention programme in the view to reduce their unbearable burden on economy. Abnormal blood lipid level and obesity are two well established risk factors of CVDs. In this study, we also depict some other typical relevant scenario.

We did this study on thousand people where male, female ratio was 4.75:1. This indiscrimination of gender is not uncommon among employed people in Bangladesh. The age of the participants in our study were fallen in between 31 to 50 years in 65.4% cases. 91.2% subjects had at least secondary school education and no one was illiterate. This educational status was well above our country situation, because we did this among secretariat employees.³ 76.1% subjects in this study had a monthly basic income above 5100 taka (900 US \$ yearly). This is actually near about the double in comparison with per capita income of Bangladeshi people.³ In our study, 65%

employees had sedentary life style. This percentage was well above the report (3.4% and 10.7% participants respectively) found in two studies performed in Indian industrial areas.^{4,5} Of our study, 20.6% employees were smoker and only 0.05% had a history of taking alcohol regularly. Both the results were lower than the reports of Reddy and Kaur et al where 33.6% and 33.3% were smoker and 12% and about 33% took alcohol regularly.^{4,5} Among the employees, 10.1% had a history of hyperlipidemia in first degree relatives and only 2.1% were known cases of hyperlipidemia.

Obesity is becoming a global epidemic.^{6,7} Currently overweight and obesity are classified by BMI. BMI is frequently used as a surrogate measure of fatness in children and adults. Through the use of the BMI, the epidemic of obesity that began in the 1980s has been tracked through the end of the century.^{8,9} In our study, BMI of 47% employees were in normal range with a mean 24.38 ± 3.14 SD. Obesity was present only in 4.7% employees but 40.5% subjects were overweight. The mean BMI in Reddy's study was 23.1 kg/m² and the prevalence of overweight was 30.9%.⁴ But in another study, the mean BMI was found extremely high among the American Indian and Alaskan native adults with diabetes where it was found 32.1 kg/m².¹⁰ But Kaur's data showed the prevalence of overweight and obesity was 36.3% and 6.9% respectively.⁵

This study reveals the prevalence of hypercholesterolemia, hypertriglyceridemia and abnormally high LDL-C and low HDL-C levels which are well-known risk factors for cardiovascular diseases in all age groups. Mean fasting total cholesterol, LDL, HDL and TG level was found 170.65 ± 39.37 , 103.72 ± 30.9 , 36.45 ± 5.93 and 169 ± 97.69 SD respectively in this study. A study among adult Indian population showed the mean total cholesterol, TG, HDL and LDL level was 186.39 ± 40.94 SD, 141.96 ± 91.80 SD, 40.06 ± 9.89 and 118.03 ± 35.99 SD respectively.¹¹ Interestingly, both LDL and TG was high abnormally in 48.5% cases in our study. But we detected large number of people with low HDL level (75.6%). A Mexican nationwide study showed the similar high prevalence of HDL where 36% had low HDL concentration and this was followed by hypertriglyceridemia (24.3%) and increased LDL cholesterol (11.2%).¹² According to ATP III, recent clinical trials robustly show that LDL-lowering therapy reduces risk for coronary heart disease. For these reasons, ATP III focuses on elevated LDL cholesterol as the primary target of cholesterol-lowering therapy.

The magnitude of the burden of CVDs is large enough to demand urgent attention and action. Implementation of prevention programme may alleviate this undue burden on our limited health budget. Government should take measures to improve public awareness about healthy lifestyle and food habit. Early detection and prevention of obesity and of course abnormal lipid profile can help to reduce morbidity and mortality to a greater extent in this regard.

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