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Original Research Article

Risk Factor Analysis and Levels of Dyslipidemia in Type 2 Diabetes Mellitus Subjects of an Industrial Population- Bijapur City

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ABSTRACT

Non communicable diseases (NCDs), also known as chronic diseases, are not passed from person to person. They are of long duration and generally slow progression. The human lifestyle changes leads to four key metabolic/physiological changes that increase the risk of NCDs: raised blood pressure, overweight/obesity, hyperglycemia (high blood glucose levels) and hyperlipidemia (high levels of fat in the blood).In the study, a total of 34 type 2 diabetics were identified from an industry of Bijapur. Information pertaining to various risk factors like heredity, lifestyle factors and medical history was obtained using a structured questionnaire. All the subjects were in their productive years with the subjects in the age range of 40-60 years. Mean age was 51.1 ± 3.7 years. Majority (53.7%) of the participants in our study were hypertensive during our study period. The other Risk factors in the study population were overweight (43.7%), Obesity (14.8%), Smoking (47.4%), alcohol (47.4%) and tobacco consumption (14.8%). The mean Triglyceride level was 185± 99 (higher), Total Cholesterol was 175 ± 22 (higher), High Density Lipoprotein was 35 (lower), Low density Lipoprotein was 119 (normal).{units in mg/dl}. There should be regular screening of the industrial population by the management for the risk factor evaluation and to take necessary preventive measures for it.

Key Words: Diabetics Mellitus, Dyslipidemia, Cholesterol, Non Communicable Disease, Lifestyle Modifications.

INTRODUCTION

Noncommunicable diseases (NCDs), also known as chronic diseases, are not passed from person to person. They are of long duration and generally slow progression. The four main types of noncommunicable diseases are cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma) and diabetes. [1]

Noncommunicable diseases (NCDs) kill more than 36 million people each year. Nearly 80% of NCD deaths - 29 million - occur in low- and middle-income countries. More than nine million of all deaths attributed to NCDs occur before the age of 60. 90% of these "premature" deaths occurred in low- and middle-income

countries. Cardiovascular diseases account for most NCD deaths, [2]

These four groups of diseases account for around 80% of all NCD deaths. They share four risk factors: tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets.

The behaviours lead to four key metabolic/physiological changes that increase the risk of NCDs: raised blood pressure, overweight/obesity, hyperglycemia (high blood glucose levels) and hyperlipidemia (high levels of fat in the blood).

The World Health Organization (WHO) has recommended surveillance of common risk factors with the "STEP" approach, which uses standardized instruments and protocols for collecting, analyzing and monitoring trends for risk factors within and across countries .Thus, STEPS approach focuses on the collection of data on key risk factors of major NCDs at regular intervals in order to design community-based interventions targeted at the reduction of these risk factors and monitoring the results of such interventions. This type of information is vital to promoting disease prevention and control programmes. [1]

Dyslipidemia has been closely linked to the pathophysiology of CVD and is a key independent modifiable risk factor for cardiovascular disease. While Asian Indians are known to have a unique pattern of dyslipidemia with lower HDL cholesterol, increased triglyceride levels and higher proportion of small dense LDL cholesterol, there have been no large scale representative studies on dyslipidemia to assess the magnitude of the problem in India. [3]

As few studies with focus on the risk profile of a diabetic industrial population and tracking the trends of dyslipidemia and hypertension in the diabetic industrial population are available in literature. The present study thus made an attempt to evaluate the diabetes risk profile in an industrial productive population.

MATERIALS AND METHODS

In the study, a total of 34 type 2 diabetics were identified from an industry of Bijapur. Information pertaining to various risk factors like heredity, lifestyle factors and medical history was obtained using a structured questionnaire. Anthropometric data (height, weight), fasting blood sugar, lipid profile values and blood pressure measurements were obtained from medical records. Data on fasting blood sugar, lipid profile and blood pressure was obtained for 23 of the 34 diabetic subjects. This data was used to arrive at the level of dyslipidemia and blood pressure Results are expressed as Mean ± S.D and percentages.

RESULTS

All the subjects were in their productive years with the subjects in the age range of 40-60 years. Mean age was 51.1 ± 3.7 years. Family history for diabetes, hypertension and heart disease was found in 67.4%, 48.8% and 11.2 % of the subjects respectively. Information on the medical history showed that the complication of hypertension was common in the diabetic subjects. Around 25.3 % of the subjects confirmed having blood pressure as a complication in addition to diabetes.

Majority (53.7%) of the participants in our study were hypertensive during our study period on examination. Joint National Committee guidelines were used to classify the subjects as hypertensive. The other Risk factors in the study population were overweight (43.7%), Obesity (14.8%), Smoking (47.4%), alcohol (47.4%) and tobacco consumption (14.8%). Majority (60.4%) were practicing the habit of doing exercise of more than 3 hours per week either as early morning or evening walk.

Consumption of green leafy vegetables and fruits for more than three times a week was practiced by majority of the study population. (Table 1)

Table -1: Risk factor and Life style behaviour in the study subjects

Variable	N	%
A. Risk Factors		
Prehypertension	10	27
Hypertension	29	53.7
Overweight	19	43.7
Obesity	8	14.8
Smoking	21	47.4
Tobacco use	8	14.8
Alcohol consumption	21	47.4
B. Exercise pattern		
<3 hours per week	12	19.6
>3 hours per week	18	60.4
C. Fruits and vegetable consumption		
<3times/ week	15	32.6
>3 times/week	13	47.4

Out of the 23 participants in the study s dyslipidemia level and glycemic status was measured , the mean Triglyceride level was 185± 99 (higher) , Total Cholesterol was 175 ± 22 (higher), High Density Lipoprotein was 35 (lower) , Low density Lipoprotein was 119 (normal).{units in mg/dl}.The mean fasting blood sugar of the study subjects was 158± 37 mg/dl. (table 2)

Table 2: Estimation of Mean level of Lipidemic status and fasting Blood Sugar in Study subjects

Variable	(Mean ± SD) mg/dl
Triglyceride	185± 99
Total cholesterol	175 ± 22
HDL-Cholesterol	35 ± 6
LDL- Cholesterol	119 ± 28
VLDL- Cholesterol	29 ± 20
Non HDL- Cholesterol	149 ± 34
Fasting Blood Sugar	158 ± 37

Majority (52.96%) of the participants LDL level was less than 100 mg/dl with 43.7% participants HDL level was less than 40mg/dl. (table 3)

Table 3. Prevalence of Dyslipidemia in the subjects

Variable	(%)	95 % CI Limits
TC ≥ 200	15.9	12.0-27.8
TG ≥ 150	29.6	16.3-42.9
LDL ≥ 100	52.96	39.8-66.1
HDL < 40	43.7	30.1-57.3
Non HDL ≥ 130	54.8	41.8-67.8

The persons suffering from diabetics and hypertension should be subjected for the periodic examination by the qualified medical practitioner once in six months at least. Though the majority of the participants were aware about the periodic examination to be done, very few used to get periodic laboratory investigations. Only 38.1% used to get there hemoglobin estimation, 58.5% Kidney Function test, 75.2% Lipid Profile, 10.4% used to get there foot examination for diabetic ulcers, 62.2% used to get there eye sight tested regularly and only 28.9% were getting there ECG and Stress test at frequent intervals.

Table 4: Regular and periodic examination done by the study subjects.

Test	N (%)	%
Hb	16	38.1
Kidney Function Tests	17	58.5
7Lipid Profile	26	75.2
Foot Examination	09	10.4
Eye Examination	29	62.2
ECG/Stress Test	11	28.9

DISCUSSION

In our present study we found a high prevalence of Hypertension among the study subjects. The other risk factors like obesity, Smoking and alcohol consumption was also seen in higher proportion among the study subjects. Physical inactivity, low fruits and vegetables intake was also seen in good proportion of subjects. Hypercholestero-lemia, Hypertriglyceridemia and high LDL cholesterol level and low HDL cholesterol level was seen among the study subjects. Earlier studies done by Venugopal S [4] Reddy K S, [5] MehanMB, [6] Kantharaj N B, [7] Vasen RS [8] also identified similar type of risk factors in non communicable diseases. [9]

It was also emphasized that vegetarianism in Indians does not necessarily mean adequate intake of fruits and vegetables. There is a need to improve awareness among Indians to increase fruit

and vegetable intake. An attempt to quantify fruit and vegetable intake may substantiate the claims made by the diabetic subjects. Nevertheless the positive habit needs to be encouraged for maintaining health benefits.

CONCLUSION

There should be regular screening of the industrial population by the management for the risk factor evaluation and to take necessary preventive measures for it .Health Awareness regarding consumption of proper nutrition and benefits of healthy lifestyle habits need to be emphasized.

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