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Risk Factors of Diabetes in Morning Walkers

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Abstract: ***Diabetes is a major non communicable disease, ranking as a leading cause of death and disability worldwide. It is no longer a disease of predominantly rich nations, the prevalence of diabetes steadily increasing everywhere. Unfortunately, in many settings the lack of effective policies to create supportive environments for healthy lifestyles and the lack of access to quality health care means that the prevention and treatment of diabetes, particularly for people of modest means, are not being pursued. The aim of the study was to estimate the prevalence of diabetes among morning walkers. In the survey done from Jan-march 2017, the prevalence of diabetes came 39.18% (152) among 388 total numbers of subjects. Early identification of at-risk individuals and appropriate lifestyle intervention would significantly help in preventing or postponing the onset of diabetes.***

Keywords: Diabetes, non communicable disease, death, prevalence, lifestyle

1. Introduction

Diabetes mellitus, a major lifestyle disease is undoubtedly the most challenging public health problem of 21st century with a worldwide prevalence of 387 million (8.3%) and predicted to be 592 million by 2035 (international diabetes federation 2013;Kaveeshwar SA. et al. 2014). 77% of people with diabetes live in low- and middle-income countries. India, once known as the 'diabetes capital of the world' was home to 61.3 million patients with type 2 diabetes in 2011 with predictions of 101.2 million diabetics by 2030 (International diabetes federation 2013; Mohan V. et al. 2004). India is second only to China which is home to 92.3 million diabetics. The International Diabetes Federation estimated a doubling of diabetic population between 1995 and 2005, and predicted 70 million diabetics by 2025.(Monica G. et al. 2015). As per the WHO, diabetes mellitus is defined as a heterogeneous metabolic disorder characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism.

Diabetes is a serious, chronic disease that occurs either when the pancreas does not produce enough insulin (a hormone that regulates blood glucose), or when the body cannot effectively use the insulin it produces.(WHO 1999). Raised blood glucose, a common effect of uncontrolled diabetes, may, over time, lead to serious damage to the heart, blood vessels, eyes, kidneys and nerves. No longer is a disease of predominantly rich nations, the prevalence of diabetes steadily increasing everywhere. There are three types of diabetes: Type 1 diabetes mellitus results from the pancreas's failure to produce enough insulin. This form was previously referred to as "insulin-dependent diabetes mellitus" (IDDM) or "juvenile diabetes". The cause is unknown. Type 2 diabetes mellitus begins with insulin resistance, a condition in which cells fail to respond to insulin properly. As the disease progresses a lack of insulin may also develop. This form was previously referred to as "non insulin-dependent diabetes mellitus" (NIDDM) or "adult-onset diabetes". The primary cause is excessive body weight and not enough exercise. Type 3 Gestational diabetes is the third main form and occurs when pregnant women without a previous history of diabetes develop high blood-sugar levels. It is a temporary condition that occurs in pregnancy and carries long-term risk of type 2 diabetes (Bellamy L. et al. 2009). The condition is present when blood glucose values are above normal but still below those diagnostic of diabetes (WHO 2013).

2. Methodology

This study reports results of a cross sectional survey conducted in the premises of Bhawartal garden morning walk area, which is located at the center of the city of Jabalpur, which comes under urban area. Where, about 450 walkers come for walking, jogging and exercise on regular basis. During the early morning, adults and senior citizens visit there for the morning walk and to attend their yoga classes. This survey was done during January to March 2017, from 6:00 am to 10:00 am. This study was done for 3 months regularly so all the subjects can be contacted and a brief report of their health and personal information can be prepared.

Preparation of Case Report-A pre prepared Questionnaire was filled exactly as told by the morning walkers, which helped to assess data. A brief case report was made of diabetic people as per their test reports issued by pathologies.

Assessment of Data-Assessment was done according to Sex (male and female), Age, and nature of occupation in terms of sedentary and non sedentary. Food Habits of the people was studied under their vegetarian and non-vegetarian nature.

Subjects were divided into four study groups, below 41 years, there were no subjects identified as diabetic.

Group1- 41-50 years, Group2- 51-60 years, Group3- 61-70 years and Group4- 71 years above.

Prediabetes and diabetes were defined according to WHO and American Diabetes Association criteria (International diabetes federation 2006; American diabetes association 2005). Prediabetes was defined as a fasting blood glucose level of 6.1 mmol/L to 6.9 mmol/L. Diabetes was defined as a level greater than or equal to 7.0 mmol/L.

3. Result

Based on the sample size calculation 450 subjects were contacted for the study of which complete data was available only for 388 subjects. The results were concluded after 3 months of regular survey done. Non responsive rate was 13.78%. As shown in the table 1, 52.63% of subjects were male and 47.37% were females. Most of the subjects were between 50-60 years. Males, almost in all age groups, had a higher prevalence of diabetes than females.

Table 1: The age- standardized prevalence stratified by sex and age.

Age Groups	Male N (%)	Female N (%)	Total N (%)
41-50 Years	19 (23.75)	16 (22.22)	35 (23.03)
51-60 Years	30 (37.5)	29 (40.27)	59 (38.82)
61-70 Years	24 (30.0)	22 (30.55)	46 (30.26)
>70 Years	7 (8.75)	5 (6.94)	12 (7.89)
Total	80 (52.63)	72 (47.37)	152 (100)

Table 2: Results of diabetes screening in the study population

Diabetes Status	Frequency	Percent (%)
Normal (< 110mg/dl)	189	48.71
Diabetic (> 126 mg/dl)	152	39.18
Prediabetic (>108 mg/dl)	47	12.11
Total	388	100

Table 2 shows the screening result of diabetes in the study population. Survey revealed that 39.18 % study population was diabetic that is the prevalence of diabetes in the study population is 39.18 %. According to nature of occupation the survey revealed that comparatively business class are more prone to diabetes than service class people due to physical inactivity and sedentary lifestyle at their work place. 48.71% of total population was normal (non-diabetic) and 39.18% was diabetic.

Table 3: Risk factors associated with diabetes

Risk factors	Frequency (n=388) N (%)	Diabetes (n=152) N (%)
Ill-literacy	66 (17.01)	48 (31.57)
Physical inactivity (Sedentary)	102 (26.29)	56 (36.84)
Family history of diabetes	127 (32.73)	77 (50.66)
Blood pressure	156 (40.21)	106 (69.74)
Heart disease	96 (24.74)	60 (39.47)
Eye complication	101 (26.03)	81 (53.29)
Kidney problem	57 (14.69)	52 (34.21)
Non- vegetarians	174 (44.80)	62 (40.70)
Vegetarians	214 (55.15)	90 (59.21)

Table 3 shows the association of various risk factors with presence of diabetes. Prevalence of risk factors for diabetes like physical inactivity (36.84%), family history of diabetes (50.66%), blood pressure (69.74%), heart disease (39.47%), hypertension (74.34%) and eye complication (53.29%) was high in study population. In case of food habits, survey showed that out of total diabetic population 59.21% were vegetarians whereas non-vegetarians were 40.70%.

4. Conclusion and Discussion

Diabetes is a serious, chronic disease that occurs either when the pancreas does not produce enough insulin (a hormone that regulates blood sugar, or glucose), or when the body cannot effectively use the insulin it produces. Both the number of cases and the prevalence of diabetes have been steadily increasing over the past few decades.

In the survey done, the prevalence of diabetes came 39.18% as 152 subjects were diabetic among 388 total numbers of subjects. All the cases reported during the survey were of type 2 diabetes as per the reports by the pathologist. Survey revealed that sex, age, nature of occupation and food habits of people are the major risk factors among the population. Our study showed that, age group 51-60 years was having higher prevalence (38.82%) of diabetes as compared to other age groups. Our finding that the prevalence of diabetes increased with age is consistent with studies in other countries. Age is known to be an important determinant of diabetes since blood glucose concentrations tend to rise with age (West KM. 1978).

During survey, in diabetic cases other complications besides diabetes was eye complications, skin complications, kidney problem, heart disease, neuropathic damage and blood pressure. Wayne J Miller and T. Kue Young reported that, people been diagnosed with diabetes which more likely than non-diabetics to have high blood pressure, heart disease, urinary incontinence and stroke. Vision problems, too, were more common. Given these high percentages, it is not surprising that diabetics (37%) rated their health as poor or fair, whereas this was true of 11% of non-diabetics. This conclude that, over time diabetes can damage the heart, blood vessels, eyes, kidneys and nerves, and increase the risk of heart disease and stroke. Such damage can result in reduced blood flow, which – combined with nerve damage Because of increasing burden of the disease, its iceberg nature, its complications and potential to prevent these complications with earlier diagnosis and treatment; active and opportunistic efforts are required for early diagnosis of Diabetes by means of screening (Strong K. et al. 2005).

The combination of a healthy diet and regular physical activity can help to fight diabetes. Walking fights diabetes in ways other than weight loss. Poor physical activity was also associated with diabetes as supported by earlier studies [12, 13]. The protective effects of physical activity against cardiovascular disease, and metabolic syndrome have already been proven [14]. Family history of Diabetes is a strong predictor of the disease which is supported by most other studies [15]

When diabetes is uncontrolled, it has dire consequences for health and well-being. In addition, diabetes and its complications impact harshly on the finances of individuals and their families, and the economies of nations. People with diabetes who depend on life-saving insulin pay the ultimate price when access to affordable insulin is lacking. Given the lifelong costs associated with diabetes, many individuals and families are unable to cope with the economic, emotional and social disease burden.

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