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SCREENING IN MEDICAL CAMPS - AN EFFECTIVE TOOL FOR EARLY IDENTIFICATION AND TIMELY INTERVENTION THAT CAN AID TO REDUCE DIABETES BURDEN IN INDIA

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ABSTRACT

Background: *India faces a major challenge of Diabetes as it's a developing country with limited resources. It may be because of various factors like obesity, sedentary lifestyle, urbanization, unhealthy food habits. Though the awareness for signs and symptoms of diabetes may be less in rural areas due to poor resources and medical facilities as well as lack of education, people in urban areas are also equally unaware and negligent about their blood sugar levels and overall health due to the stress of making a living and surviving in a metropolitan city. Many a time, patients are not aware that they have diabetes until they present with certain complications in the form of gangrene or infections or certain cardiovascular complications. Sometimes the patients are aware that they have diabetes but do not follow the drug regime and lifestyle changes thus, landing themselves with complications of diabetes and burdening the already burdened healthcare system in India. It's the need of the hour to have a robust screening and awareness programme for diabetes, thus preventing complications. Medical camps can bridge the gap between the disease process and diagnosis so that disorders like diabetes may be caught in a prediabetic phase and proper followup, diet regimen and lifestyle changes may be advised to these prediabetic individuals. Also, those patients who are detected with diabetes may be advised to use oral hypoglycemic drugs or insulin after confirmation of their diabetes by oral glucose tolerance test, fasting blood sugar, post prandial blood sugar and HbA1C levels.*

Aim: *This study was conducted to assess the prevalence of diabetes amongst patients who attended medical camps and to compare the prevalence in relation to gender and age.*

Materials and Methods: *A cross sectional record based study was done. 876 patients were screened for Random Blood Sugar (RBS) levels with a Glucometer in camps organized by a tertiary care centre in nearby areas of Navi Mumbai. The data regarding age, sex and RBS levels were collected. A random blood sugar (RBS) value of >200 mg/dl in a patient with classic symptoms of hyperglycaemia or hyperglycaemic crisis was defined as having diabetes.*

Results: *The overall prevalence of diabetes was 26.94%. Among the study population, 440 (50.22%) were males and 436 were (49.77%) females. The Prevalence was higher in the female population, 32.5%, as compared to males 21.36%. Most of the diabetes cases were in the age group of 50-65years in females and below 35 years of age in males. It was also found that 29.6% of the diabetics were newly diagnosed.*

Conclusions: *Medical camps can serve and bridge the gap between early diagnosis and treatment of Diabetes. RBS by glucometer is a cost effective test that can be used for mass screening of Prediabetes and Diabetes in camps. As Diabetes can lead to various complications, such camps can be effectively used for screening, diagnosis and initiation of treatment, thereby help reduce the burden of diabetes in India.*

KEY WORDS: *diabetes, prediabetes, random blood sugar, RBS, camps, screening, HbA1c, fasting blood sugar, postprandial blood sugar, blood sugar*

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INTRODUCTION

According to the Data from the World Health Organization (WHO) the prevalence of diabetes across the globe was estimated to be 9 % among the adult population as of 2014.[1] There are nearly 69.2 million people across the world living with diabetes.[1] The prevalance of Diabetes in India is 7.8 % and is a challenging health condition to India.[2] The population in an age group of 20 to 70 years has almost 8.7 % of Diabetes.[3] 87 million people in India have been predicted to have diabetes by 2030.[3] Diabetes is known to have various acute metabolic and late systemic complications in the form of retinopathy, nephropathy, cardiovascular diseases which in turn poses a major economic challenge. Unfortunately, more than half of the diabetics in India remain unaware of their diabetes status, which adds to the disease burden.[4] India has more than 62 million individuals diagnosed with Diabetes as of 2014 and, hence India has become the Diabetes Capital of the World.[5] A study conducted by the Indian Council of Medical Research (ICMR) showed that in the year 2011, 62.4 million people in India had Diabetes and by the year 2030 there will be an exponential rise in these diabetes cases in India to 101.2 million.[3] People should be screened for Diabetes so that proper treatment can be initiated and compications can be prevented. Active and exhaustive screening efforts are the need of the Hour.[6] Undiagnosed Diabetes is seen many times because patients usually go through a prediabetic phase for several years which is referred to as Abnormal Glucose Regulation [AGR].[7] Hence, such type of population should be targeted by adequate and comprehensive screening programmes. Also, large amount of mortality and morbidity due to Diabetes may be avoided by adequate screening and treatment. Keeping this in view, the current paper aims to estimate the prevalence of undiagnosed and uncontrolled type 2 diabetes mellitus identified through camps conducted by a tertiary care centre in Navi Mumbai region.

METHODS

Study Type and Settings:

This is a cross-sectional record based study wherein data was collected retrospectively from the camp register for patients who had attended the medical camps conducted by a tertiary care centre in various areas of Navi Mumbai. A sample size of 876 was obtained. All patients who have attended medical camps and have undergone a blood glucose level check by glucometer.

Data Collection and Analysis

RBS values, age and gender of the patients were collected from the camp register for a period of one year. An operational definition of RBS glucometer values of >200 mg/dl was defined as having diabetes. This was done by referring Mayo Clinic criteria to diagnose patients as diabetic when RBS levels were 200mg/dl or more.[8] Similarly, WHO mentions that RBS levels greater than 200mg/dl may be used as a screening tool for diagnosis of diabetes.[9] The American Diabetic Association also states that if a patient presents with classic symptoms of Hyperglycemia with a RBS level value greater than 200mg/dl is defined to be having Diabetes.[10] Data obtained was entered into excel sheets and then statically analyzed using SPSS ver.20 software.

RESULTS

In the current cross sectional record based study data was collected from 876 adults who had attended various medical camps at different places in Navi Mumbai organized by a tertiary care centre over a period of one year. Out of these 876 individuals 440 were males (50.22%) and 436 were females (49.77%). Out of 440 males 94 (21.36%) individuals had blood sugar levels greater than 200mg/dl. Out of 436 females 142 (32.5 %) had blood sugar levels greater than 200mg/dl. 28 (29.78%) out of 94 males were newly diagnosed with diabetes. 42 (29.57 %) out of 142 females were newly diagnosed with Diabetes. The overall prevalence of Diabetes was 26.94%. The prevalence for males was 21.36 %, whilst the prevalence for females was 32.5%. The maximum number of Diabetic patients in females were found to be in the age group of 50 to 65 years. The maximum number of Diabetic patients in males were found to be in the age group of less than 35 years. The prevalence for newly detected diabetes was 29.6 %. Of the 70 newly detected cases, 42 were females and 28 were males. In females the maximum number of patients with newly detected Diabetes were in age group of 35-50 years. In males the maximum number of patients with newly detected Diabetes were in age group 35-50 years.

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Figure 1: Sex wise distribution of Diabetic patients in Females and Males

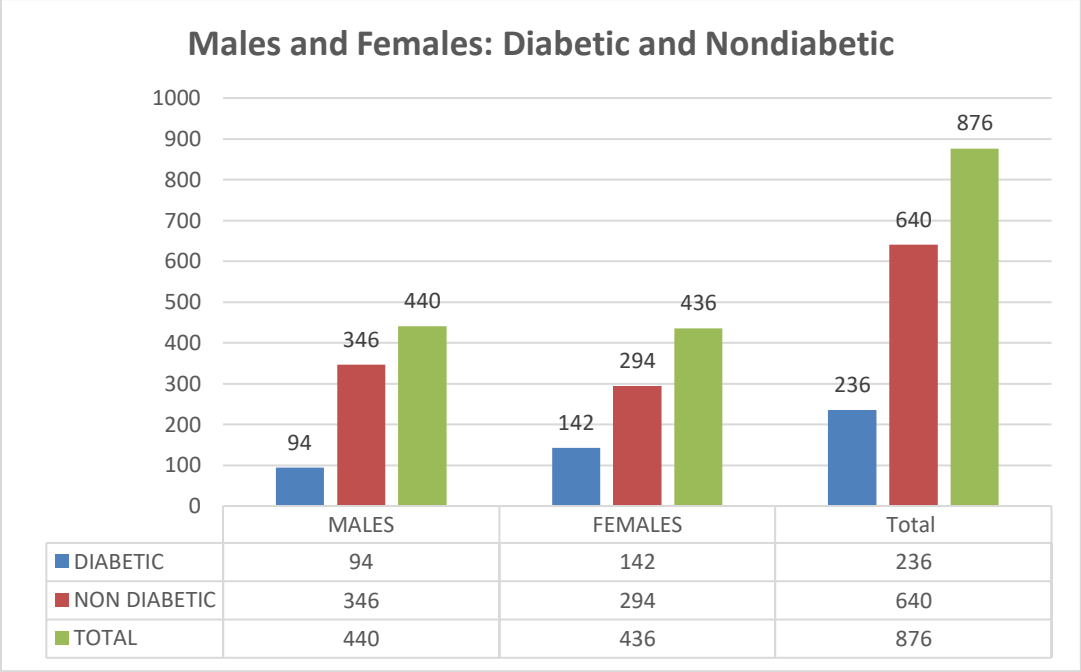

Figure 2: Age wise distribution of Diabetic patients in Females and Males

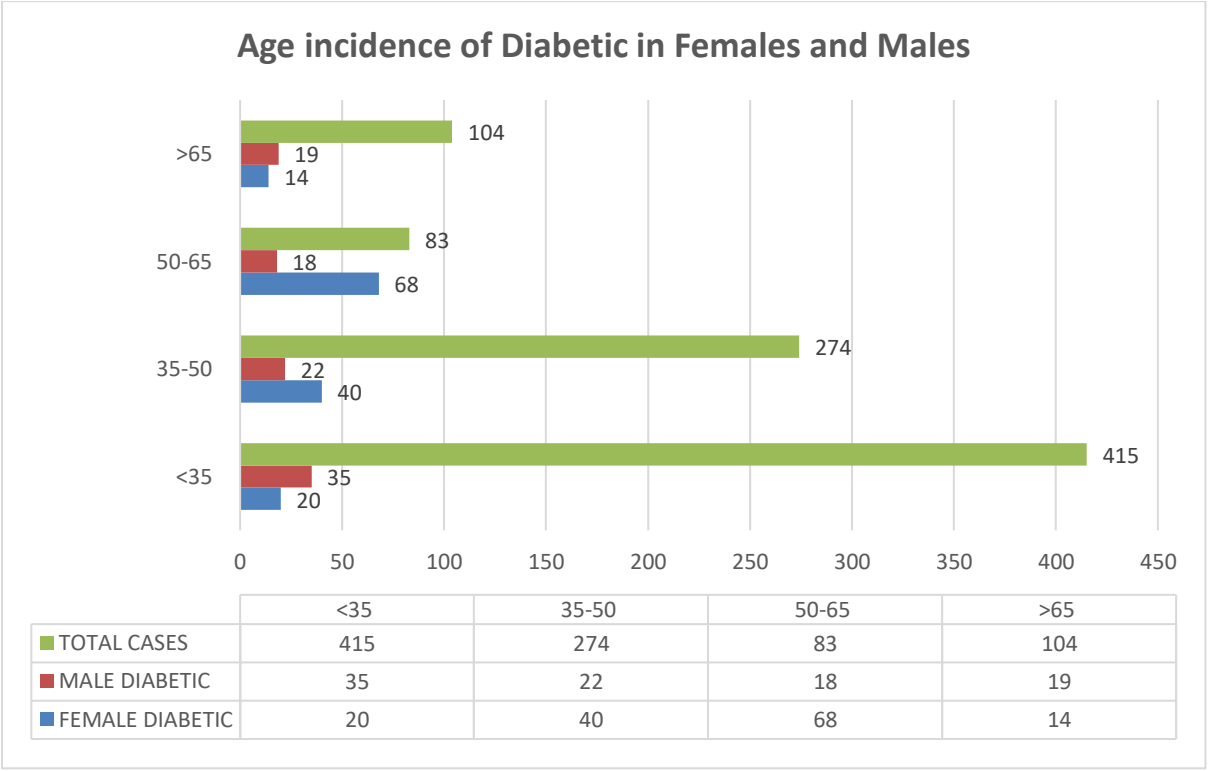

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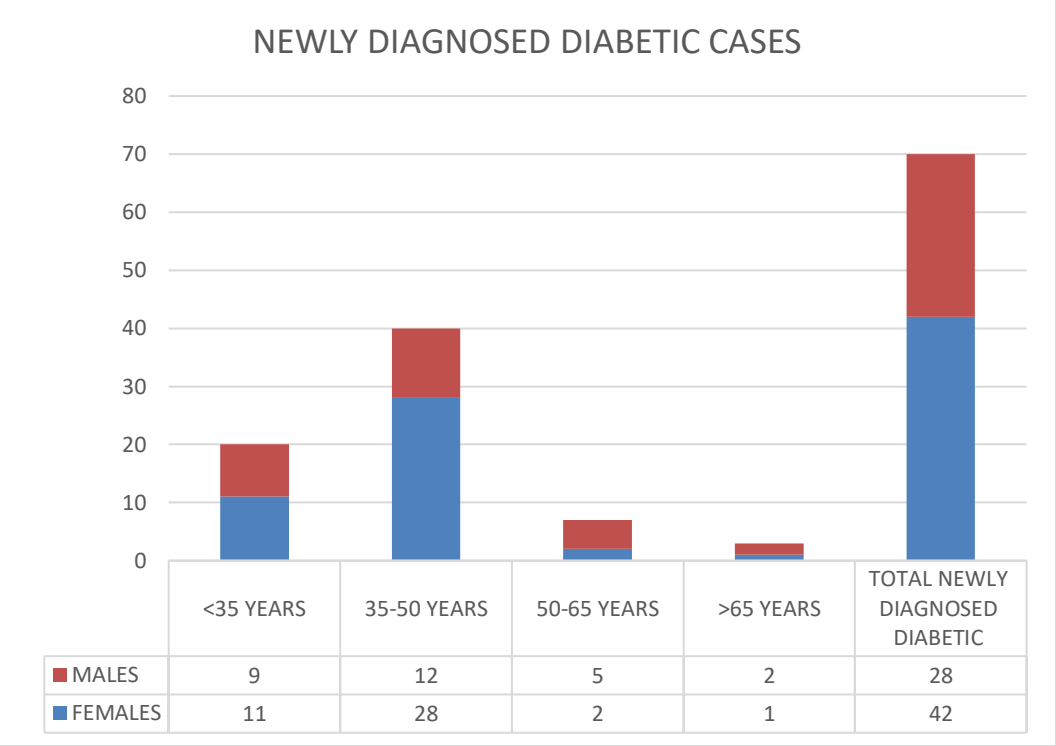
Figure 3: Age and Sex wise distribution of Newly Diagnosed Diabetic Cases



DISCUSSION

This cross sectional record based study was carried out to assess the prevalence of Diabetes in the Navi Mumbai Population. There are various National Programmes being run in India to prevent and control diabetes, cardiovascular diseases, stroke as well as cancer, and RBS can be used as a screening tool for diabetes under the umbrella of these National Programmes.[11] The major advantage of doing RBS with a Glucometer is that it can be used in camp screening where large numbers of patients are attending camps and the time, and skilled manpower required to collect blood from veins can be saved as RBS can be done by a layperson also.[12]

The prevalence of Diabetes found in our study was 26.94 %, which is more than the prevelance reported by various studies carried out in metropolitan cities.[13,14] The prevalence of Diabetes ranges from 8-18 % in individuals age group greater than 20 years in various studies which have been carried out in large in metropolitan cities in India (Mumbai, Delhi, Calcutta, Chennai, Bangalore, and Hyderabad).[13,14] This is worth worrying and indicates the need of more screening for early diagnosis. As the duration of Diabetes increases beyond 10 years it becomes more difficult to control diabetes and conditions of these patients becomes worse.[14,15] Thus, making timely detection and intervention a crucial step in reducing diabetes burden in India.

In our study we found the prevalence of Diabetes was higher in females (32.5 %) as compared to males (21.3 %). This is similar to study conducted by Singh P S *et al*. who also found a higher prevalence in females as compared to males.[16] This is also similar to the findings of Ahmad *et al.* who also showed that prevalence of diabetes was higher in females.[17] The reason for the higher prevalence in females could be that females do not prioritize their health and tend to neglect their health or do not go to a physician even if they are suffering from health issues.

The current study found that the prevalence for newly detected diabetes was 29.6% which is similar to the study conducted by Singh PS *et al.* wherein they found the newly detected diabetes prevalence to be 35.77%.[16] Of the newly diagnosed diabetic cases, more were females and were in the age group of 35-50 years. The reason could be that in this age group, majority of the females have had their responsibilities of rearing children and looking after family-done so that they may start focusing on their own wellbeing and health and hence, turn up to such type of community screening checkups frequently.

The overall higher prevalence in our study could be because it was conducted in a metropolitan area like Navi Mumbai that witnesses a stressful lifestyle due to rapid urbanization. Less physical activity, stress for cost of living and sustaining life in big cities as expenses are more for a living could be triggering factors. Similar findings were also observed in Maharashtra by Patil and Gothankar. They observed prevalence of 36.55% and key factors that played a role were, socioeconomic class, less physical activity, and high waist

circumference.[18] The IDF has estimated that almost 52.1 % of all people with diabetes are unaware that they have diabetes and

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hence, here comes the role of proper screening, health education, robust community- based screening and awareness for diabetes.[19]

LIMITATIONS

The study was conducted on individuals attending health camps in Navi Mumbai, hence the findings may not be valid for, general population. Also the diagnostic criteria used was Random Blood Sugar Level (>200 mg/dl) by glucometer in patients presenting with classic symptoms of hyperglycemia which is not sufficient for Diagnosis but can surely and effectively be used as a screening tool.

CONCLUSION

A robust screening programme should be initiated and encouraged for early diagnosis of diabetes and prevention of complications. Apart from early diagnosis of Diabetes and Prediabetes, camps can be used as effective tools to educate the masses about diet regimen, glucose monitoring at home, regular eye checkups, care of non-healing wounds and ulcers and various complications, associated with Diabetes. Medical camps can serve and bridge the gap between early diagnosis and treatment of Diabetes. RBS by glucometer is a cost effective test that can be used for mass screening of Prediabetes and Diabetes in camps. As Diabetes can lead to various complications such camps can be effectively used for screening, diagnosis and initiation of treatment and thus, help can reduce the burden of Diabetes in India.

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