Prevalence of Prediabetes among Bengaluru Urban Population: A Pilot Study.

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Abstract:

Objective:

To Estimate, the Prevalence of Prediabetes among the Bengaluru Urban Population by identifying elevated Random Blood Sugar (RBS) and elevated Glycated Hemoglobin (HbA1c) levels

Background

In recent decades there has been a huge transition in the incidence of prediabetes which is higher than the incidence of diabetes worldwide. This pilot study addresses the lack of data on the prevalence of prediabetes among the Bengaluru population in the year 2023.

Methods:

The screening was conducted free of cost in 4 different sites throughout Bengaluru. The study population comprised 500 subjects screened over a month time. Prediabetes was defined based on Random blood sugar levels > 150 mg/dl and biomarkers like Glycated hemoglobin levels > 5.7 % and < 6.5 %. Co-morbid conditions and anthropometric measurements like height, weight, waist circumference, and hip circumferences were also compared. The data obtained was statistically analyzed and interpreted.

Results

The prevalence of prediabetes was 16.2 % with a mean value of Random blood sugar 135 mg/dl ± 63.8, HbA1c 6.36% ± 2.29, BMI 26.19 mg/dl ±4.28, and Waist-to-hip ratio 0.94 ± 0.10. Subjects with High BMI, High waist-to-hip ratio, and preexisting co-morbid conditions were more prone to prediabetes. The results exhibited that

the prevalence of prediabetes among the Bengaluru population was higher than the average prediabetes status of the Indian urban population.

Conclusion

Observations of the study revealed that there is a high and increased rate of prediabetes in the Bengaluru population which requires immediate public health initiatives and lifestyle modification with Diet and Exercise interventions to control and prevent prediabetes and its future complications.

Keywords: Prediabetes, Bengaluru, Glycated hemoglobin, Lifestyle modification.

Introduction

Prediabetes is the condition where blood sugar levels are below the threshold of developing diabetes which eventually leads to diabetes.[1]

According to the results from the ICMR – INDIAB population-based cross-sectional study, the overall prevalence of Prediabetes among 15 states of India varied from 6.0% in Mizoram to 14.7% in Tripura.[2]

A population study conducted in Bengaluru Urban showed the prevalence of Prediabetes to be 6% in the year 2020[3]. However, the prevalence of prediabetes is increasing drastically every year and this study gives insight into the status of Prediabetes in the Bengaluru Urban population.

Methodology.

Free diabetes and prediabetes screening camp was conducted in 4 different areas of Bengaluru city. Totally 500 people were screened which included both men and women.

Anthropometric data of Height, Weight, Hip and waist circumference were measured, and Body mass index (BMI) and waist-to-hip ratio were calculated and assessed.

Random Blood glucose was checked. Glycated hemoglobin was estimated for the subjects whose RBS was more than 150 mg/dl. Medical History was collected to capture preexisting co-morbid conditions

HbA1c of more than 5.7% and less than 6.5 % were considered prediabetics based on American Diabetes Association ranges.

Results

Of all the 500 subjects screened 81 subjects were prediabetics and the prevalence of Prediabetes was found to be 16.2 % among Bengaluru's Urban Population.
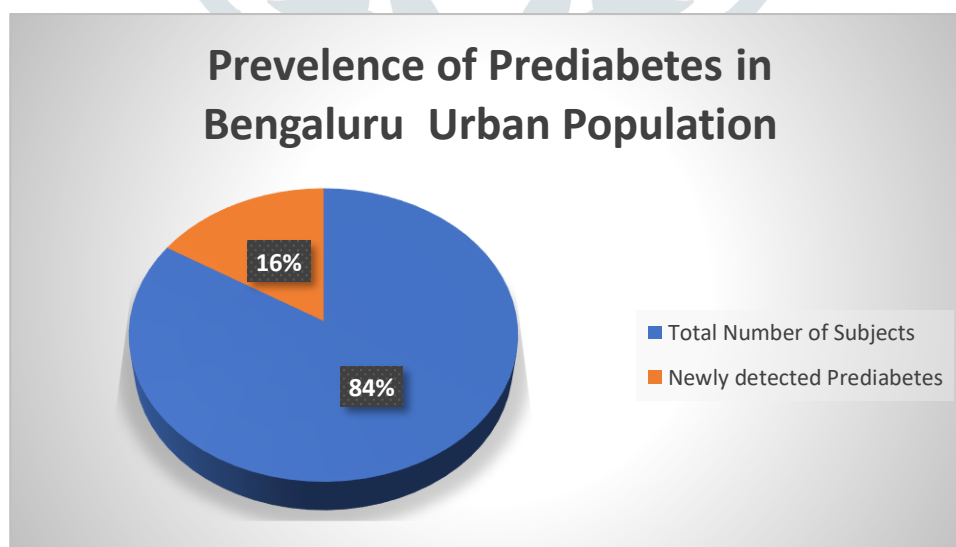

Figure 1 Prevalence of prediabetes in Bengaluru Urban population.

From the data obtained, it is clear that all the prediabetic subject's BMI was more than the Normal BMI range and waist-to-hip ratio more than 0.8.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
age	500	18	77	48.52	15.096
height cm	500	136	185	162.70	9.791
weight kg	500	38	120	69.98	13.919
BMI	500	15.50	42.60	26.1921	4.28016
waist cm	500	70	198	95.68	15.018
hip cm	500	82	192	102.09	14.083
W:H	500	0.69	1.60	0.9425	0.10442
GRBS mg/dl	500	75	384	135.05	63.896
HbA1c %	200	4.43	15.87	6.3608	2.29858
systolic	500	13	220	134.12	22.731
diastolic	500	60	130	83.16	10.795
Valid N (listwise)	200				

Table 1: Descriptive Statistics of Data

The statistical Analysis shows the mean value of Random blood sugar 135 mg/dl ± 63.8, HbA1c 6.36% ± 2.29, BMI 26.19 mg/dl ±4.28, and Waist-to-hip ratio 0.94 ± 0.1 which were main risk factors for developing diabetes.

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				**95% Confidence Interval of the Difference**	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
BMI	Equal variances	0.540	0.468	0.549	29	0.293	0.587	1.00810	1.83500	-2.74490	4.76109
	Equal variances not assumed			0.516	15.312	0.307	0.613	1.00810	1.95409	-3.14958	5.16577

Table 2: Levene's Test Results

Levene's Test showed no significant connection between BMI and the incidence of Prediabetes however High mean value for BMI was noted among Prediabetics.

Of all the prediabetic subjects detected 19 % of subjects had Hypertension, 5 % had Polycystic ovarian disease and 5% had Hypothyroidism.

Conclusion

The observations of the study exhibited a high prevalence of Prediabetes among the Bengaluru Urban Population and demands immediate public health policies to be implemented and requires Diabetes Education, Proper diet, increased physical activity, Ideal body weight, and Lifestyle Modification to prevent and Control Prediabetes in Bengaluru.

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