SCREENING OF DIABETES RISK FOR UNDIAGNOSED DIABETICS IN COASTAL REGION OF MAHARASHTRA: AN INVESTIGATIONAL REPORT

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ABSTRACT

The report of World Health Organization (WHO) shows that India tops the world with the largest number of diabetic subjects. This increase is attributed to the rapid epidemiological transition accompanied by urbanization, which is occurring in India. There is very little data regarding the influence of affluence on the prevalence of diabetes and its complications particularly retinopathy in the Indian population. Furthermore, there are very few studies comparing the urban / rural prevalence of diabetes and its complications. In this report we followed the same parameters which were reported by V Mohan et al whether same parameters are applicable in different region of india or it may vary as per altitudes and climatic conditions.

Keywords: Diabetes Mellitus, Case Study, Coastal Region, Maharashtra.

INTRODUCTION

Diabetes in India is becoming a major problem and we are expecting the incidence to rise sharply over the next two decades. Just as we have a wide variety of cultures, languages, communities, we also have a wide variety of types of Diabetes. We have Malnutrition Modulated Diabetes Mellitus, Type 1 DM, Type 2 DM, Fibrocalculous Pancreatic Diabetes (FCPD), Lean Type2 DM, as well as other syndromes and secondary diabetes in India.

The recent World Health Organization report suggests that over 19% of the world's diabetic population currently resides in India. This translates to over 35 million diabetic subjects, and these numbers are projected to increase to nearly 80 million by 2030. This rising trend predicts a significant health burden due to diabetes in India. Unfortunately more than 50% of the diabetic subjects in India remain unaware of their diabetes status, which adds to the disease burden. This underscores the need for mass awareness and screening programmes to identify and overcome the burden due to diabetes in India. In this paper we report on a simplified Indian Diabetes Risk Score [IDRS] for identifying undiagnosed diabetic subjects using four simple parameters, which requires minimum time and effort but can help to considerably reduce the costs of screening. We took reference of the same kind of study which was conducted in Chennai; we are also aiming to check whether the parameters quoted by V Mohan et al will be applicable in the few parts in coastal region of Maharashtra.

Procedures and Methodology

The data for the present study was collected with survey from the methodology of which is detailed elsewhere (V Mohan et al). Phase 1 study recruited 981 individuals; Phase 2 focused on the self-reported diabetic subjects identified in Phase 1. These individuals were invited to our centre for blood glucose test (known diabetic subjects underwent fasting and post-prandial glucose tests). In all subjects, family history of diabetes was obtained and details on physical activity were assessed using a validated questionnaire. Waist measurements in centimetres were obtained using standardized techniques. To interpret data

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we followed the same standards which were followed in previous study which was conducted in Chennai (Table1).

The modified risk factors used for this study are as follows:
1. Age: This was categorized into 3 groups; age <35 years was coded as 0, 35- 49 years as 1 and ≥ 50 years as 2.
2. Abdominal obesity: Males: Individuals with waist circumference ≥ 90 – 99 cm for males as 1, those with ≥ 100 cm as 2 and the rest as 0. Females: individuals with waist circumference ≥ 80 -89 cm as 1, those with ≥ 90 cm as 2 and the rest as 0.11.
3. Family history of diabetes: Individuals with no family history of diabetes were coded as 0, those with one diabetic parent as 1 and those with both parents diabetic as 2.
4. Physical activity: Individuals were coded as 0 if they did leisure time exercise and in addition had physically demanding work in their occupation; individuals who either did exercise or performed physically demanding work were graded as 1 and the rest as 2.

Table1. Diabetes Risk Score [IDRS] developed based on multiple logistic regression analysis derived from CURES

Particulars Score	Particulars Score
Age [years]	Age [years]
< 35 [reference] 0	< 35 [reference] 0
35 - 49 20	35 - 49 20
≥ 50 30	≥ 50 30
Abdominal obesity	Abdominal obesity
Waist <80 cm [female] , <90 [male] [reference] 0	Waist <80 cm [female] , <90 [male] [reference] 0
Waist ≥ 80 – 89 cm [female], ≥ 90 – 99 cm [male] 10	Waist ≥ 80 – 89 cm [female], ≥ 90 – 99 cm [male] 10
Waist ≥90 cm [female], ≥ 100 cm [male] 20	Waist ≥90 cm [female], ≥ 100 cm [male] 20
Physical activity	Physical activity

Table 2. Subject Details as per High Risk of Diabetes

	Number of Subjects	Number of Positive Subjects on Basis of Score	Number of Subjects Appeared for Blood Test	Number of Positive Subjects with High Blood Glucose Level	%
Male	502	66	66(+40)	30	45.45
Female	479	135	67	12	17.91

Figure 1. Comparison between Higher Risk Diabetics

Comparison between High Risk of Diabetes in Males and Females
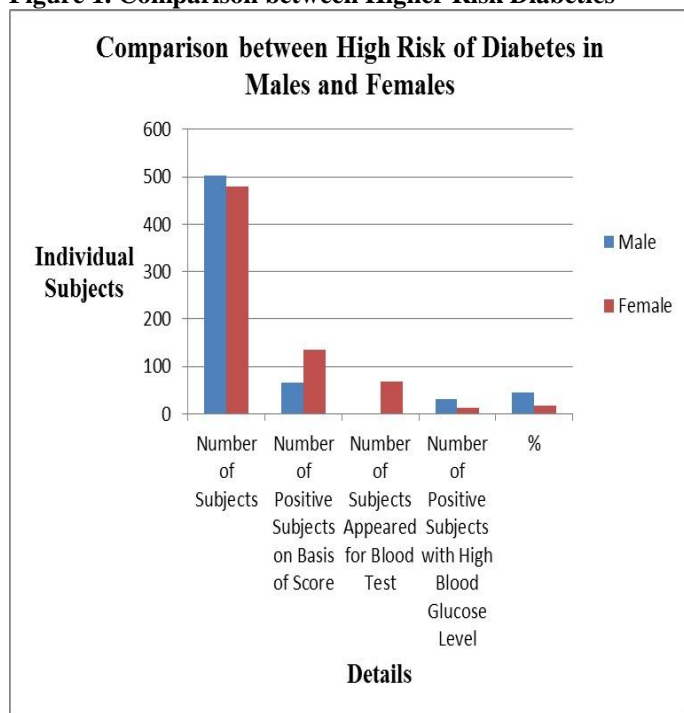
DISCUSSION AND CONCLUSION

There were total 981 individuals from coastal region of Maharashtra i.e. Mumbai suburbs to the Maharashtra Gujarat border involved in the study. In phase one all subjects undergone test for diabetes; in phase two of study, the subjects those who got positive results were selected (66 males and 135 females). In phase three or for higher risk diabetes mellitus test these subjects were invited, (66 males plus more 40 randomly selected and 135 females) out of that some of them won't participate in blood glucose test. 35 males and 12 females were found at higher risk of diabetes mellitus. Final data analysis was interpreted using standard ratings. After this survey we conclude that the percentage of undiagnosed diabetes is more in males than the females and parameters which were used for same study in Chennai are also applicable in the coastal region of Maharashtra. The reasons for occurrence of diabetes mellitus maybe hereditary, diet, life style, job profile or some addictions.

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