

## Prevalence and Risk factors for Diabetes mellitus in Urban Population of Karachi (A Short Study)

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### ABSTRACT

A descriptive observational study has been conducted on diabetes among male and female patients in Karachi. Data has been collected from April to June 2011. Total number of patients were (n=1690). 64.7 % (n=1095) were male patients while 35.2% (n=595) were female patients. Statistical analysis has been carried out separately for both male & female patients. 23.9% patients have Target Range for HbA1c, 27.0% patients have Target Range for Fasting Plasma Glycemia and 8.0% patients have Target Range for Random Blood Sugar. It indicates they are pre diabetic patients. 12.5% patients have High values of HbA1c, 12.5% patients have high values of Fasting Plasma glucose, and 4.0% patients have high values of Random Blood Sugar. It indicates that they have diabetes. 13.5% patients have very high value for HbA1c, 10.3% patients have very high value for fasting Glucose, and 2.3% patients have high Value for Random Blood Sugar. They have diabetes mellitus condition. In this observational hospital based study prevalence of diabetes among male is greater than female and those patients at target ranges may at risk of developing Diabetes.

**Keywords:** Diabetes Mellitus, Prevalence, RBS, FBS, HbA1c.

### INTRODUCTION

Pakistan currently ranking at 7th position in the list of countries with major burden of DM and it is expected to move to 4th position (Khuwaja *et al.*, 2003). Glycated hemoglobin (HbA1c) expressed as a percentage of total blood hemoglobin concentration gives a good retrospective assessment of the mean plasma glucose concentration during the preceding 6–8 weeks while the recent glycaemic level has the highest influence and the preceding 30 days contribute only up to 50% (Akinloye *et al.*, 2007; Alam *et al.*, 2006). The higher the percentage of circulating HbA1c in the diabetes, poorer is the mean Diabetic control (Akinloye *et al.*, 2007) Fasting plasma glucose level estimation has its limitations like the person has to fast for a specified period of time (Gillet, 2009). Similarly for random plasma glucose level

the health care provider is not sure about the actual number of hours passed after the meal or any history of recent intake of any hypoglycemic or hyperglycemic drug. Type 1 diabetes (T1DM, IDDM, or, formerly, juvenile diabetes) is a form of diabetes mellitus that results from autoimmune destruction of insulin-producing beta cells of the pancreas.

Diabetes mellitus Type 2—formerly non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes—is a metabolic disorder that is characterized by high blood glucose in the context of insulin resistance and relative insulin deficiency (Kumar *et al.*, 2005).

### MATERIALS AND METHODS

Descriptive observational hospital based study has

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been carried out, separately for both male and female. HbA1c, Random Blood sugar Level, fasting Blood Glucose level values has been calculated. Data has been collected from Ankle Saria Hospital Karachi, from April 2011 to June 2011. Total number of patients were 1690. 595 were females and 1095 were male patients. 96 test request for HbA1c, (66 male patients, 30 female patients), 1346 test request for Random Blood sugar, (851 male Patients, 495 Female Patients), 248 fasting plasma Glucose, (178 Male Patients, 70 Female Patients). Data collected and was subjected to analysis in SPSS v. 19 software.

### RESULTS AND DISCUSSION

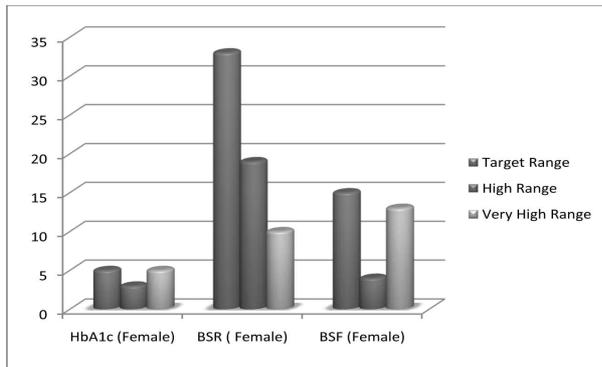
The diagnosis of Diabetes Mellitus is established with fasting plasma glucose = 7.0 mmol/l (126 mg/dl) or random plasma glucose = 11.1 mmol/l (200 mg/dl). In asymptomatic patients two samples are required to confirm diagnosis. This showed that 23.9% patients have Target Range for HbA1c, 27.0% patients have Target Range for Fasting Plasma Glycemia and 8.0% patients have Target Range for Random Blood Sugar. Target Ranges of Blood

Glucose Level are pre diabetic ranges. It indicates that patients were at Risk of developing diabetes. Blood glucose targets should be in a healthy range to prevent diabetes complications. If the range of Blood Glucose level exceeds from target value than hyperglycemia occurs and if it decreases than hypoglycemia condition occur. 12.5% patients have High values of HbA1c, 12.5% patients have high values of Fasting Plasma glucose, and 4.0% patients have high values of Random Blood Sugar. It indicates that these patients have Diabetes. 13.5% Patients have very high value for HbA1c, 10.3% patients have very high value for fasting Glucose, and 2.3% patients have high Value for Random Blood Sugar. It indicates that these patients have Diabetes Mellitus. Our study showed that males have high ratio of having DM as compared to females. Although females are also at high risk. We also concluded from the present study that the proportion of individuals which are found at Target Risk needs further screening for diabetes and health education regarding diabetes mellitus. Diabetes Mellitus can be controlled and prevented by maintaining healthy eating plan, maintaining weight, because obesity can be a cause of

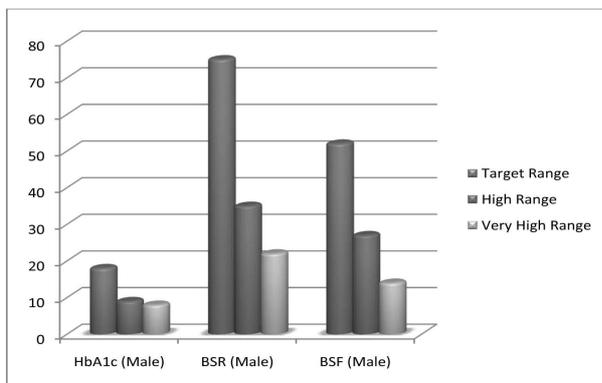
**Table I.** Total count For Male & Female Patients

Ranges	Glycated Hemoglobin (HbA1c)			Fasting Plasma Glucose (FPG)			Random Blood Sugar (RBS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Normal</b>	31	17	48	85	38	123	719	433	1152
<b>Ranges</b>	(46.9%)	(56.6%)	(50%)	(47.7%)	(54.2%)	(49.5%)	(88.2%)	(87.4%)	(85.5%)
<b>Target</b>	18	5	23	52	15	67	75	33	108
<b>Ranges</b>	(27.2%)	(16.6%)	(23.9%)	(29.2%)	(21.4%)	(27.0%)	(8.8%)	(6.6%)	(8.0%)
<b>High</b>	9	3	12	27	4	31	35	19	54
<b>Ranges</b>	(13.6%)	(10%)	(12.5%)	(15.1%)	(5.7%)	(12.5%)	(4.1%)	(3.8%)	(4.0%)
<b>Very High</b>	8	5	13	14	13	27	22	10	32
<b>Ranges</b>	(12.1%)	(16.6%)	(13.5%)	(7.8%)	(18.5%)	(10.8%)	(2.5%)	(2.0%)	(2.3%)
<b>Total</b>	N=66	N=30	N=96	N=178	N=70	N=248	N=851	N=495	N=1346

diabetes, avoiding alcohol and smoking. If a person have pre diabetic range than he should take proper treatment, and control blood sugar level in order to prevent Diabetes Mellitus. Proper medication and awareness about the seriousness of disease can also prevent the epidemic of diabetes among people in Pakistan.



**Figure 1.** Graphical Representation of Target Range, High Range, Very High Ranges Of HbA1c, BSR & BSF of Female Patients



**Figure 2.** Graphical Representation of Target Range, High Range, Very High Ranges Of HbA1c, BSR & BSF of Male Patients

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