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ORIGINAL ARTICLE

Exploration and Attentiveness of Lipid Profiles, Serum Magnesium, HbA1C Level in Urban Pakistan (Karachi): Diabetic Patients (Type 1 and Type 2) *vs*. Healthy Persons

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1 Conception & Study Design, Drafting, Critical Review.
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5 Drafting.

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ABSTRACT

Background: Diabetes Mellitus (DM) is most noticeable and the prevalent diseases in Pakistan. The point of this investigation was the awareness and estimation of glycosylated hemoglobin (HbA1C), serum magnesium and lipid profile in normal healthy persons and diabetic patients.

Methods: A cross-sectional investigation was directed in diverse age groups of Pakistani nationals *i.e*., 300 subjects, 100 diabetics not including complications (Set I), 100 diabetics with complications (Set II) and 100 usual normal healthy (Set III). Data was collected by means of personal interview with the participants using a pre-designed questionnaire which was prepared by the pharmacy students of Jinnah University for Women, for each diabetic and non-diabetic patient.

Results: In this survey glucose, magnesium, HbA1C (%), cholesterol and triglyceride level were conducted in diabetic patients (39-56 of age), and awareness of DM were conducted (15 to above 25 of age). Patients having diabetes were 47.1%, among them 11.8% were type 2 diabetic and 5.1% having type1 DM. HbA1C results were in between 6.6% to 11.2%, awareness about the magnesium serum test were 29.30%, 21.4% patients have complications of proteinuria and albuminuria, 7.1% have nephropathy, neuropathy and retinopathy. 40% have hypertension, 61.40% never checked their blood sugar level and 21.7% don't have knowledge about type 3 diabetes.

Conclusion: The motivation behind this examination was to assemble data about the level of control of diabetes with improving knowledge and awareness of DM to better inform patients, families, and communities about this chronic disease in existing healthcare systems.

Keywords: Awareness, investigations, cholesterol, diabetes, HbA1C.

INTRODUCTION

Diabetes mellitus is a various group of ailments categorized by chronic promotion of glucose in the blood [1, 2]. It arises because the body is incapable to yield sufficient insulin for its own needs, either for the reason that of impaired insulin secretion, impaired insulin feat, or both. Cholesterol is basic to standard

wellbeing, yet when stages are excessively high, LDL cholesterol can be unsafe by method for adding to limited or blocked veins. Lamentably, individuals with diabetes are increasingly inclined to having unfortunate high LDL cholesterol levels, which adds to cardiovascular affliction (CVD) [3, 4]. Diabetes inclines to lower "good" cholesterol levels and raise triglyceride and "awful" cholesterol levels, which rises the hazard for heart ailment and stroke. This communal condition is known as diabetic dyslipidemia. Magnesium also enables the body to control glucose level and helps the body's assurance (resistant) framework. Magnesium and expanded urinary magnesium discharge can occur in individuals with insulin in type 2 diabetes [5]. The usual extend for blood magnesium level is 1.7 to 2.2 mg/dL (0.85 to 1.10 mmol/L). The hemoglobin A1C test states your usual level of blood sugar over the past 2 to 3 months [6]. It's moreover called HbA1C, glycated hemoglobin test, and glycohemoglobin [7, 8]. If your glucose ranks have been rise over current weeks, your hemoglobin A1C test will be greater. For individuals deprived of diabetes, the usual range for the hemoglobin A1C level is between 4% and 5.6%. Hemoglobin A1C runs somewhere in the range of 5.7% and 6.4% infer you have a higher threat of getting diabetes [9]. Dimensions of 6.5% or higher mean you have diabetes. Individuals with diabetes have an A1C check every single 3 months to ensure their glucose is in their objective range [10].

METHODS

A cross-sectional investigation was directed in diverse age groups of Pakistani nationals *i.e*., 300 subjects, 100 diabetics not including complications (Set I), 100 diabetics with complications (Set II) and 300 usual normal healthy (Set III). Data was collected qualitatively and quantitatively by means of personal interviews and survey with the participants using a pre-designed questionnaire which was prepared by the pharmacy students of Jinnah University for Women, for each diabetic and non-diabetic patient.

RESULTS

Tabular and graphical representation of the results are shown below:

Table 1. General questions asked to diabetic and normal healthy persons.

S. No.	Questions	Response %
Q#1	**When you last consult to doctor?**	
a	6 months	17
b	1 year ago	24
c	More than 1 year	59
Q#2	**Have you ever had following disorder?**	
a	Proteinuria and albuminuria	21
b	Nephropathy	7
c	Hypertension	40
d	Neuropathy	7
e	Don't have any other disease	25
Q#3	**Has the patient ever undergoes any of following investigation?**	
a	Resting and exercise electrocardiogram	11.10
b	Blood test for lipid and renal and	55
c	Blood pressure or BMI	22
d	Did not test any of these	22

Table 2. Awareness about DM and its diagnostic test.

S. No.	Questions	Yes	No	May be
Q#4	Check blood sugar level	38.6%	61.4%	0%
Q#5	Awareness about magnesium serum test	29.3%	70.7%	0%
Q#6	Knowledge about diabetes mellitus (DM)	79.8%	20.2%	0%
Q#7	DM can cause heart diseases	56.2%	4.5%	39.3%
Q#8	Information about FBS and PPBS	73.9%	26.1%	0%
Q#9	Awareness about HbA1C test	52.3%	47.7%	0%

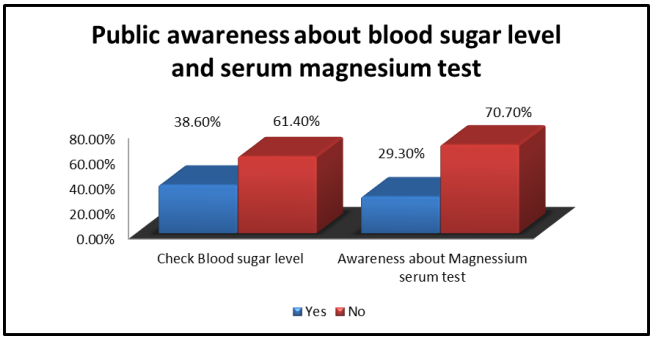

Figure 1. Public awareness chat about blood sugar level and serum magnesium test.

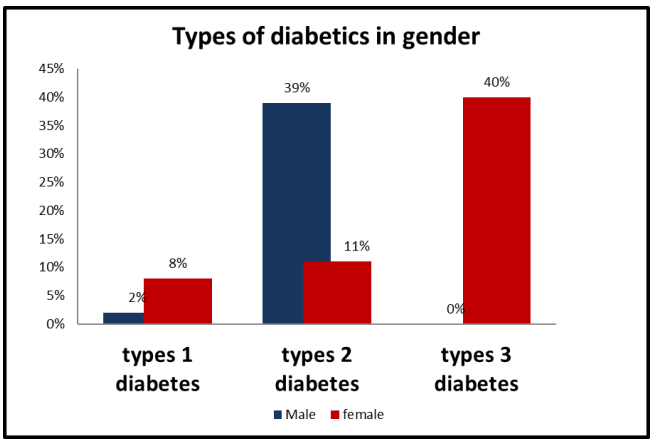

Figure 2. Types of diabetics in gender.

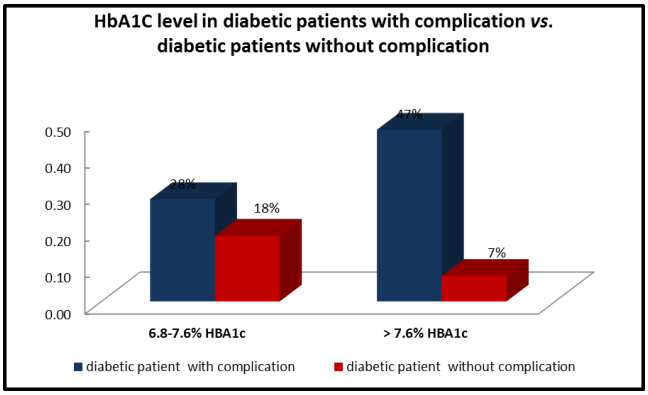

Figure 3. HbA1C level in diabetic patients with complication *vs*. diabetic patients without complication.

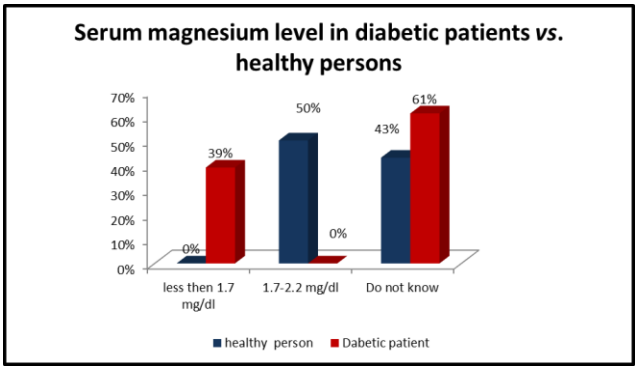

Figure 4. Serum magnesium level in diabetic patients *vs*. healthy persons.

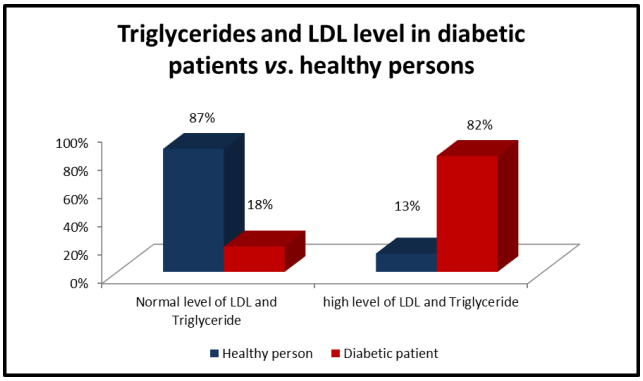

Figure 5. Triglycerides and LDL level in diabetic patients *vs*. healthy persons.

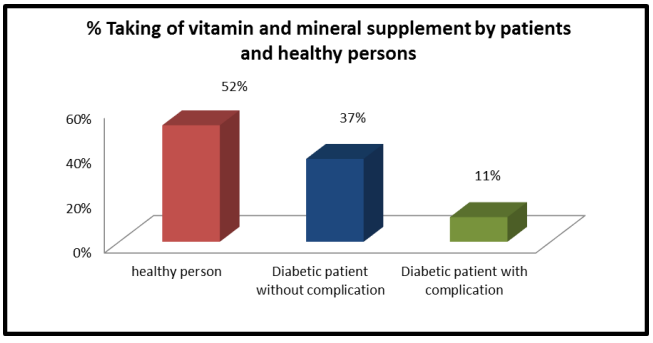

Figure 6. Taking of vitamin and mineral supplement by patients and healthy persons.

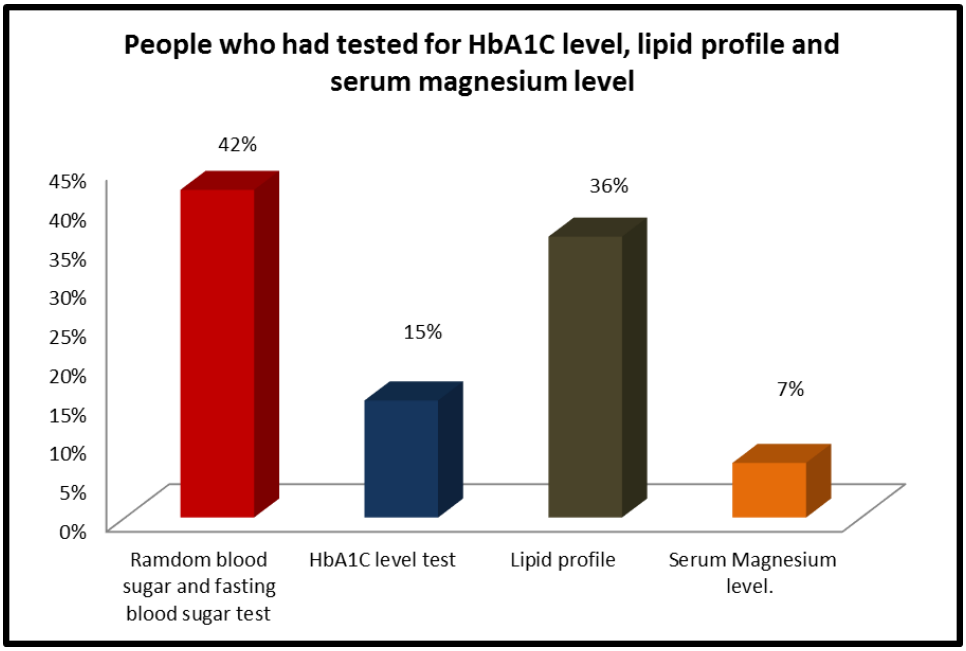

Figure 7. People who had tested for HbA1C level, lipid profile and serum magnesium level.

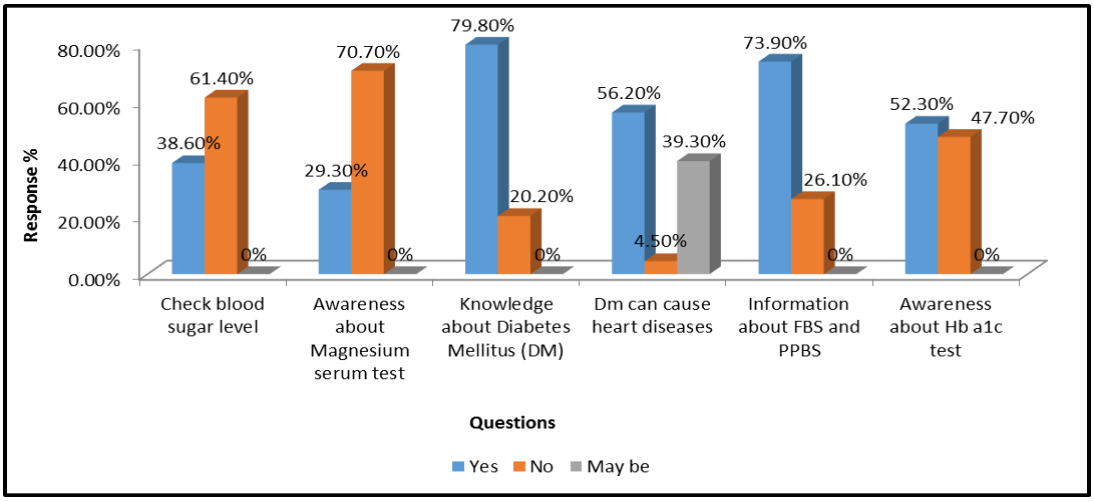

Figure 8. Awareness about DM and its diagnostic test.

DISCUSSION

In this survey glucose, magnesium, HbA1C (%), cholesterol and triglyceride level were conducted in diabetic patients (39-56 of age), and awareness of DM were conducted (15 to above 25 of age) as mentioned in Table **1** and **2**, Figure **1**, **3**, **4**, **5**, **6**). Patients having diabetes were 47.1%, among them 11.8% were type 2 diabetic and 5.1% having type 1 DM (Figure **2**). HbA1C results were in between 6.6% to 11.2%, awareness about the magnesium serum test were 29.30%, 21.4% patients have complications proteinuria and albuminuria, 7.1% have nephropathy, neuropathy and retinopathy, 40% have hypertension, 61.40% never checked their blood sugar level and 21.7% don't have knowledge about type 3 diabetes [11]. From our awareness survey, we concluded that most of people have lack of awareness about diabetics, reasons of diabetics and test parameters, and we observe that type 2 diabetics most common in male while most of the female suffer from type 3 diabetics. People who take supplements are healthy while 37% diabetic patients without complication taking supplements, diabetes may causes by other reasons like genetic, while patient don't taking supplements are suffer from diabetes with

complication [12, 13]. We found that Asian people having lack of knowledge about relationship of HbA1C and magnesium levels, that's why only 7% examine or monitor their serum magnesium level by any clinically or laboratory test (Figure **7**, **8**). Person who has low magnesium level are suffer from diabetes while most of patients didn't having serum magnesium test. The outcomes likewise demonstrate that the 82% patients with diabetic complications have significant rise in serum cholesterol and triglycerides. Likely hypomagnesemia and expanded serum cholesterol with triglyceride levels are responsible for macrovascular complications (coronary artery disease, peripheral arterial disease, and stroke) and microvascular complications (diabetic nephropathy, neuropathy, and retinopathy) in diabetes while 18% of healthy person have high level due to other reasons like obesity and obesity related health risk factors [14].

CONCLUSION

The motivation behind this examination was to assemble data about the level of control of diabetes with improving knowledge and awareness of DM to better inform patients, families, and communities about this chronic disease in existing healthcare systems.

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