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A Study on Assessment of Knowledge of Diabetes In Diabetic Patients And Patient Counseling In A Teaching Hospital

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ABSTRACT

Knowledge of Diabetes is an integral component for attaining optimal disease control, and reduce mortality. Patient counseling by Pharmacist would motivate the patients to attain better understanding of their Disease, its treatment and helps them to adopt healthy life style to avoid future complications. Assessment of Diabetes Knowledge in Diabetic Patients and Patient Counseling. A Cross sectional survey study was carried out over 6 months with 305 Diabetic patients in General Medicine department of Owaisi Hospital and Research centre, Hyderabad, India. A questionnaire consisting Demographic details and 21 questions relating to the patients' knowledge of Diabetes was provided to the participants. The patients were later counseled by using Patient Information Leaflet. The results were expressed as Mean, Standard deviation and in number (%). MS Excel spread sheet have been used to generate graphs, Tables etc. Of the 305 patients 45% were male and 55% were female with a mean age of 55.52±6.9 years (range 20 to 80). About 59.3% of patients had positive family history, 65.9% of participants did not know what diabetes was. 63.5% of people thought mental stress to be the only cause for diabetes and 81.3% of subjects never received patient counseling. Study subjects showed knowledge deficits pertaining to causes, prevention and Medications used in Diabetes and very less number of patients received Counseling. These results highlight the need for educational programmes aimed at improving the knowledge of DM patients.

Keywords: Diabetes Mellitus, Knowledge, Patient Counseling, Pharmacist role.

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INTRODUCTION

Diabetes mellitus is a clinical syndrome characterized by hyperglycemia because of absolute or relative deficiency of insulin action or secretion.

The long standing metabolic derangement of Carbohydrates, Fats & Proteins due to lack of insulin is mainly responsible for the development of well defined clinical entities, the so called 'Complications of Diabetes' which characteristically affect the eye, the kidneys and the nervous system. [1]

At present, India is considered as the diabetic capital of the world. There are approximately 3.5 crore diabetics in India, and this figure is expected to increase up to 5.2 crore by 2025. Every fifth patient visiting a consulting physician is a diabetic and every seventh patient visiting a family physician is a diabetic. Keeping in view the alarming increase in the incidence and prevalence of diabetics in India, the World Health Organization (WHO) has declared India as the 'Diabetic Capital' of the world.[4]

Table 1: Top 10 countries for estimated numbers of adults with diabetes, 2010 and 2030 [3]

Rank	Country/ Territory	2010(millions)	Country /Territory	2030(millions)
1	India	50.8	India	87.0
2	China	43.2	China	62.6
3	U.S.	26.8	U.S.	36.0
4	Russian Federation	9.6	Pakistan	13.8
5	Brazil	7.6	Brazil	12.7
6	Germany	7.5	Indonesia	12.0
7	Pakistan	7.1	Mexico	11.9
8	Japan	7.1	Bangladesh	10.4
9	Indonesia	7.0	Russian Federation	10.3
10	Mexico	6.8	Egypt	8.6

The American Diabetes Association recommends using the fasting glucose as the principal tool for the diagnosis of diabetes mellitus in non-pregnant adults.

Fasting plasma glucose:

A fasting plasma glucose (FPG) test measures blood glucose in a person who has not eaten anything for at least 8 hours.

Table. 2: Fasting Plasma Glucose (FPG)

Fasting plasma glucose (FPG)	Range
Normal FPG	<100 mg/dL (5.6 mmol/L)
Impaired fasting glucose (IFG)	100–125 mg/dL (5.6–6.9 mmol/L)
Diabetes mellitus	≥126 mg/dL (7.0 mmol/L)

Post-prandial blood glucose test:

A 2-hour postprandial blood sugar measures blood glucose exactly 2 hours after eating a meal.

Table 3: Post-prandial blood glucose (oral glucose tolerance test)

2-Hour post-lunch plasma glucose (oral glucose tolerance test)	Range
Normal	<140 mg/dL (7.8 mmol/L)
Impaired glucose tolerance (IGT)	140–199 mg/dL (7.8–11.1 mmol/L)
Diabetes mellitus	≥200 mg/dL (11.1 mmol/L)

An oral glucose tolerance test (OGTT) requires fasting for at least 8 hours before the test. The plasma glucose level is measured immediately before and 2 hours after a person drinks a liquid containing 75 grams of glucose dissolved in water.

Glycosylated Hemoglobin Or Hemoglobin A1c (HBA1C):

This test is a measurement of how high blood sugar levels have been over about the last 120 days (the average life-span of the red blood cells on which the test is based).

A Hemoglobin A1C test is the best measurement of blood sugar control in people known to have diabetes. A hemoglobin A1C result of 7% or less indicates good glucose control. A result of 8%

Management:

Diet is the cornerstone of the management of diabetes,regardless of the severity of the symptoms or the type of diabetes. Exercise is also an important component in managing diabetes, particularly in obese individuals with NIDDM who may have a component of insulin resistance as a consequence of obesity. Treatment regimens that have proved effective include a calorie restricted diet in combination with exogenous insulin or oral hypoglycemic drugs. However, since diet, exercise, and oral hypoglycemic drugs, often because of noncompliance by the patient, will not always achieve the clinical objectives of controlling the symptoms of diabetes, insulin remains universally important in therapeutic management.

- **Insulin:** The administration of insulin is required for the treatment of type I (IDDM) and in cases of type II (NIDDM) that are refractory to management with oral hypoglycemic drugs.

Many diabetics aim to achieve an average blood glucose below 150 (hemoglobin A1c<7%). Unstable or ketoacidosis prone diabetics are difficult to maintain with a single dose of either intermediate or long-acting insulin; they usually require multiple injections of combinations of short, intermediate, and/or long-acting insulin preparations.[10]

Oral hypoglycaemic agents:

The main draw-back of Insulin is that it must be given by injection. Oral hypoglycaemic agents are the drugs which lower blood Glucose levels and are effective orally. There are two principle types of oral hypoglycaemics; the suphonylureas and metformin. The sulphonylureas; of which

gliclazide, glibenclamide, and tolbutamideare commonly used examples, work by stimulating the pancreas to produce more insulin than it otherwise would at a particular blood sugar level. This has the effect of driving the blood sugar level down to normal limits.[11]

Need for counseling in diabetes:

Diabetes is a chronic, incurable condition that has considerable impact on the life of each individual patient. The principal task of the health care team is to give each patient knowledge, self- confidence and support. Studies have confirmed that the complications of diabetes can be reduced by proper control of blood glucose. The proper control is dependent on the patient's adherence to medications, life style modifications, frequent monitoring of blood glucose, etc and can be influenced by proper education and counseling of the patient. Pharmacists, being one of the indispensable members of the health care team, have an immense responsibility for counseling these patients. For example, both the Diabetes Control and Complications Trial (DCCT) and the United Kingdom Prospective Diabetes Study, (UKPDS) required patients to adhere to complex and intensive treatments over long periods of time. The primary goals of DM management are to reduce the risk for microvascular and macrovascular disease complications, to ameliorate symptoms, to reduce mortality, and to improve quality of life. Appropriate care requires goal setting for glycaemia, blood pressure, and lipid levels, regular monitoring for diabetic complications, dietary and exercise modifications, appropriate medications, appropriate self-monitoring of blood glucose (SMBG), and laboratory assessment of the a fore mentioned parameters.

Quality of life is a multidimensional concept referring to a person's total well-being, including his or her psychological, social, and physical health status. It is also well established that pharmacist provided patient counseling improves the quality of life of the diabetic patients.

Role of Pharmacists In Diabetes Management

The pharmacist's role in caring for diabetic patients has expanded because of the rapid expansion of available therapeutic agents to treat diabetes. The pharmacist can educate the patients about the proper use of medication, screening for drug interactions, explain monitoring devices, and make recommendations for ancillary products and services.

The pharmacist, although not the health care professional to diagnose diabetes, is important in helping the patient maintain control of their disease. The pharmacist can monitor the patient's blood glucose levels and keep a track of it. During their contact, the patients can ask the pharmacist any questions they did not ask the physicians and can get further information regarding diabetes. The pharmacist can also counsel the patients regarding insulin administration

regularly so that the onset of complications can be postponed by having tight glycemic control. Another important role of pharmacist is always being available to answer the questions of the patients. Overall, it is the pharmacist's role to help a diabetic patient in the best possible way to cope with their disease.[13]

MATERIALS AND METHOD

This is a hospital based Cross-sectional survey study conducted on total of 305 both inpatients and out-patients to assess the knowledge of Diabetes in Diabetic patients and patient counseling in the Internal medicine department of Owaisi Hospital and Research Centre, Hyderabad from November 2012 to April 2013. It is a 1000-bedded teaching Hospital, providing specialized health care services to all strata of people in and around Hyderabad.

A questionnaire (modified from 8-GATE Knowledge questionnaire, WAVE Questionnaire) was used as a data collection tool. The questionnaires were pilot tested among ten diabetic patients who were not part of the study population before the data collection. All queries from the pilot study were addressed to before the study was carried out. Verbal consent to participate in this study was obtained from all participants.

SELECTION CRITERIA:

Patients were selected based on the below inclusion and exclusion criteria.

Method Used: Cross sectional survey study.

Inclusion Criteria

Patients of either sex aged ≥ 20 years and above.

Patients who were diagnosed to have had Type 1 and Type 2 Diabetes.

Exclusion Criteria

Patients below 20 years.

Patients without Diabetes.

Very ill/ elderly (>80 years) and unconscious patients.

Patients with Gestational Diabetes.

Source of data:

Patients' data relevant to the study was obtained from the patients.

Statistical methods:

The questionnaires were distributed by the investigators to the participants and collected after completion. Illiterate participants were assisted by verbal interviews by investigators. The data was captured and analyzed using the Microsoft Excel.

RESULTS AND DISCUSSION

A total of 305 patients were enrolled into this study. Females were more in number than males and the mean age was 55.52±6.9 years. Most of the subjects were house wives (149) followed by employees (114), Retired (32), Unemployed (10).Among 305 patients 103 were In-patients and 202 were Out-patients. Their Education status is as follows:

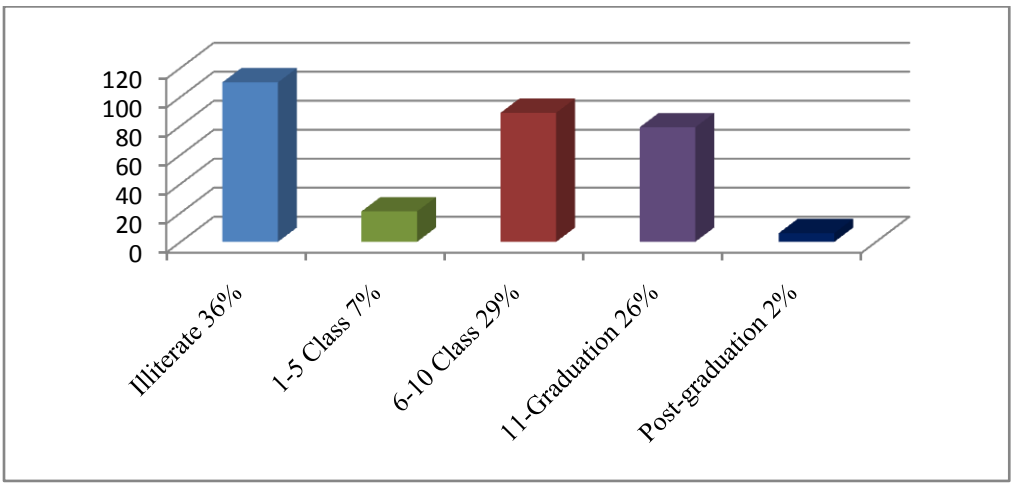


Figure 1: Education distribution of patients studied:

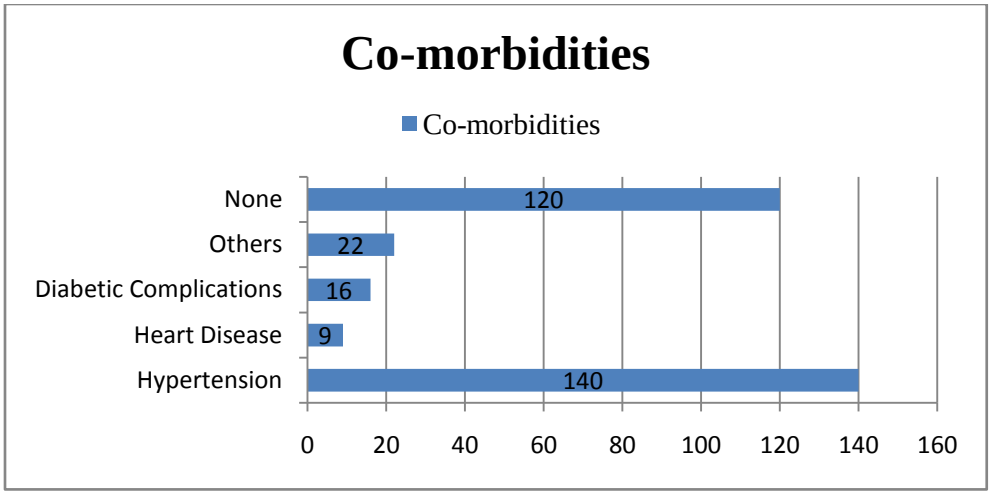


Figure 2: Number of patients studied with Co-morbidities:

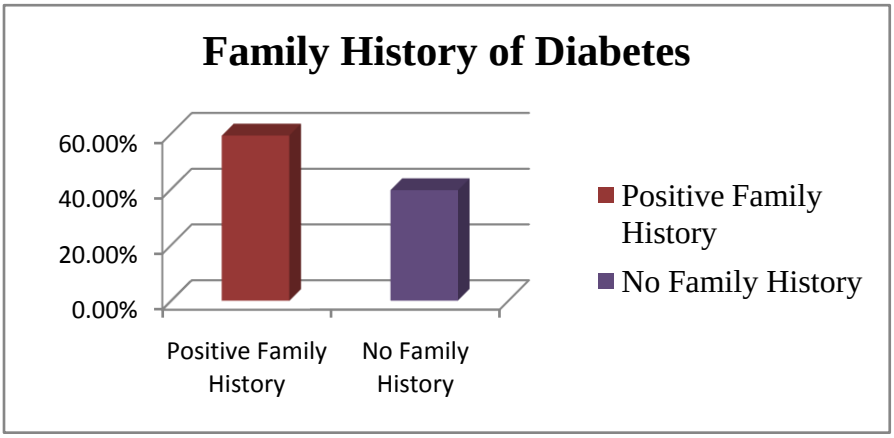


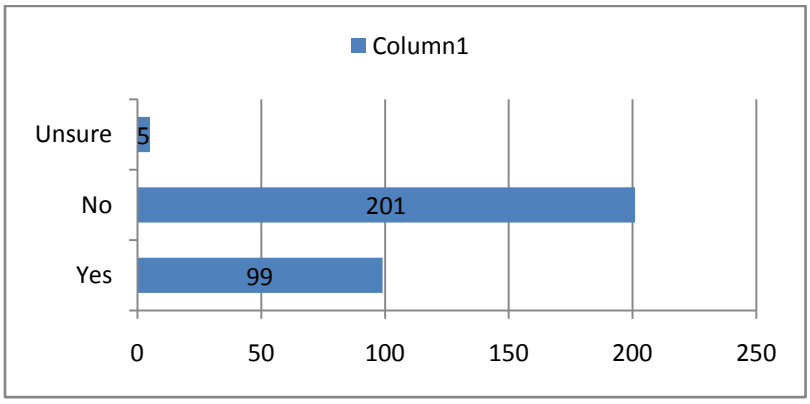
Figure 3: Family history of Diabetes studied in Diabetic patients:

Table 4: Duration of Diabetes (History of Diabetes):

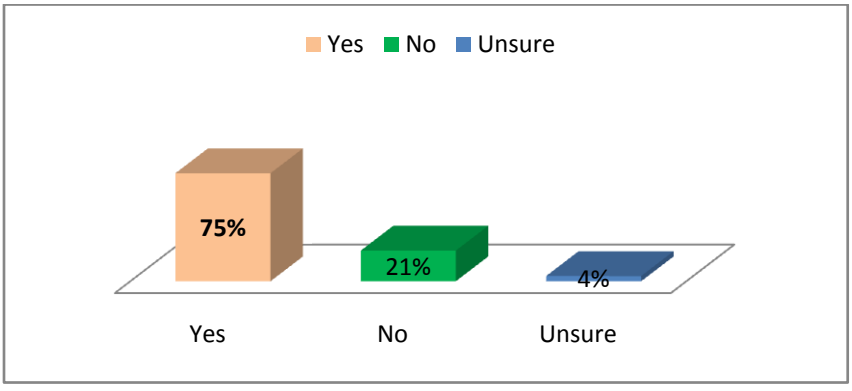
Duration of Disease	No. of people	Percentage
1-11 months	27	8.85%
1-5 years	144	47.2%
6-10 years	80	26.2%
11-20 years	48	15.7%
> 20 years	6	1.96%
Total	305	100%

Questions used for the assessment of knowledge of diabetes:

1. Do you know about Diabetes?



2. Do you know Diabetes is affecting more and more people now a days?



3. Do you think some factors can contribute diabetes?

Response	Numbers	Percentage
YES	156	51.1%
NO	126	41.3%
UNSURE	23	7.5%
TOTAL(n=305)	305	100%

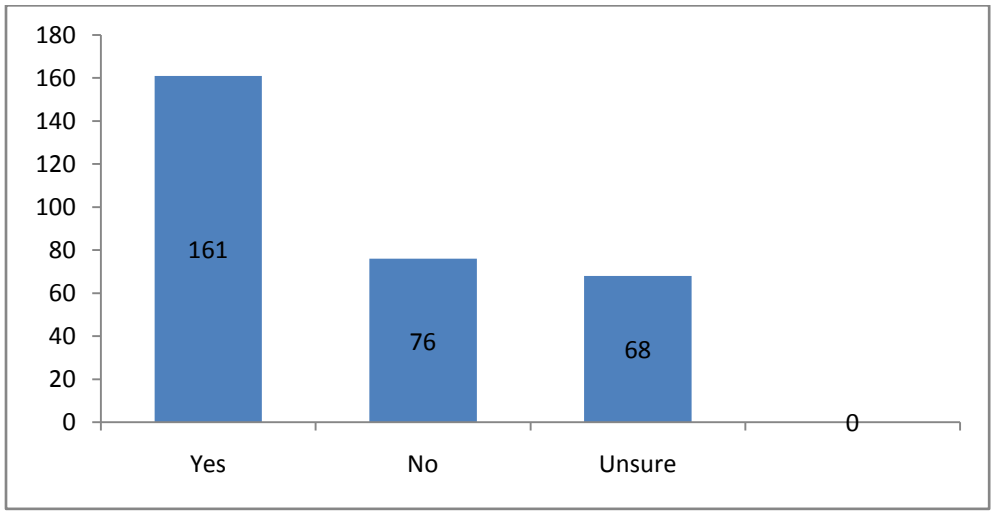
If yes, what factors you think that contribute to Diabetes?

Factors	Numbers	Percentage
Obesity	8	5.1%
Decreased Physical activity	16	10.3%
Mental Stress	99	63.5%
High Blood Pressure	14	8.97%
Family History of Diabetes	14	8.97%
Others	5	3.2%
Total	156	100%

4. Can Diabetes spread from one person to other person or through spouse?

Response	Numbers	Percentage
YES	100	32.7%
NO	162	53.1%
UNSURE	43	14%
TOTAL(n=305)	305	100%

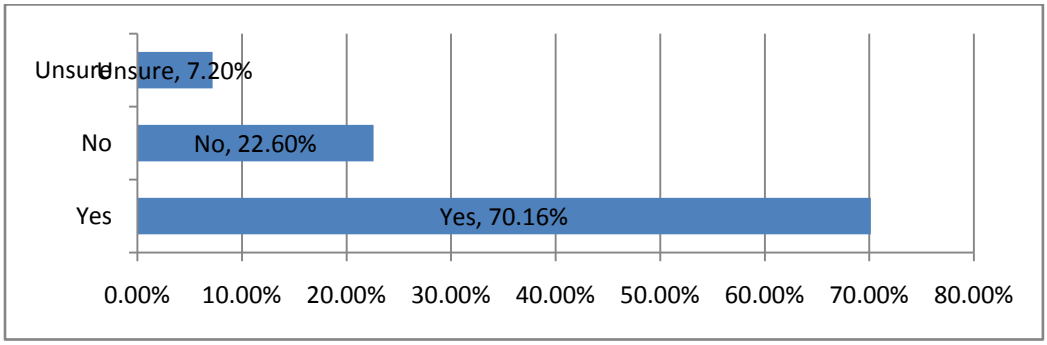
5. Can Diabetes be transmitted through blood?



6. Alcohol and Smoking can worsen the health of Diabetic patient?

Response	Numbers	Percentage
YES	126	41.3%
NO	112	36.7%
UNSURE	67	21.96%
TOTAL (n=305)	305	100%

7. Are frequent urination and thirst, signs of High Blood Sugar?



8. Do you know Diabetes can cause complications?

Response	Numbers	Percentage
YES	164	53.8%
NO	115	37.7%
UNSURE	26	8.5%
TOTAL(n=305)	305	100%

9. Is Diabetes preventable?

Response	Numbers	Percentage
YES	82	26.9%
NO	177	58%
UNSURE	46	15.1%
TOTAL (n=305)	305	100%

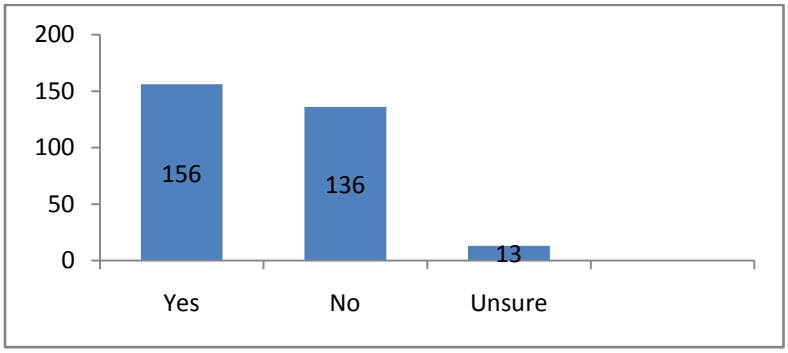
If Yes, how can it be prevented?

Measures to prevent Diabetes	Numbers	Percentage
Diet	17	20.73%
Exercise	20	24.4%
Both diet and exercise	45	54.87%
TOTAL (n=305)	82	100%

10. Is Medication equally important as diet and exercise in controlling Diabetes?

Response	Numbers	Percentage
YES	192	62.95%
NO	79	25.9%
UNSURE	34	11.14%
TOTAL (n=305)	305	100%

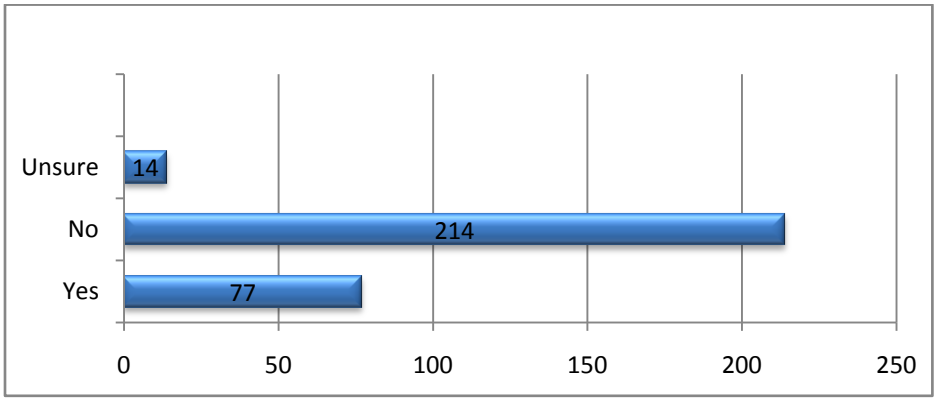
11. Do you know a diabetic patient should check his/her blood glucose level regularly?



12. Do you keep a record of your blood sugar reports?

Response	Numbers	Percentage
YES	155	50.83%
NO	145	47.54%
UNSURE	5	1.63%
TOTAL (n=305)	305	100%

13. Do you know the normal values of blood glucose level?



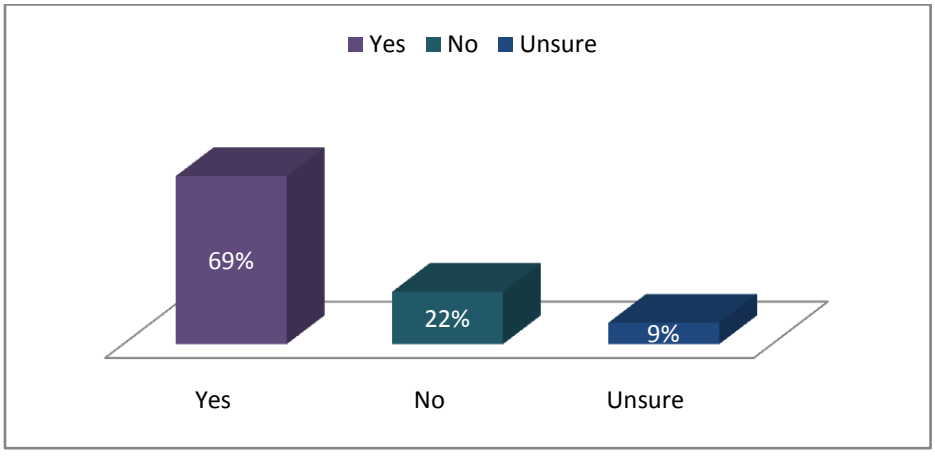
14. If you avoid taking only sugar and sweets your blood glucose levels will be under control?

Response	No. of people	Percentage
YES	135	44.26%
NO	139	45.57%
UNSURE	31	10.17%
TOTAL (n=305)	305	100%

15. Do you know what kind of diet should a diabetic eat?

Response	No. of people	Percentage
YES	144	47.21%
NO	150	49.18%
UNSURE	11	3.61%
TOTAL (n=305)	305	100%

16. Cuts and abrasions in diabetics heal more slowly?



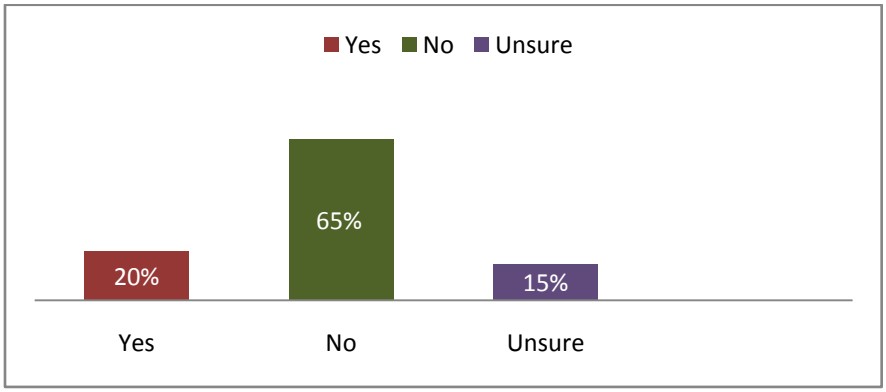
17. Is diabetes treatment only for short period of time?

Response	No. of people	Percentage
YES	69	22.62%
NO	181	59.34%
UNSURE	55	18.03%
TOTAL (n=305)	305	100%

18. Do you know the name of the tablet /injection you take for diabetes?

Response	No. of people	Percentage
YES	75	24.59%
NO	211	69.18%
UNSURE	19	6.2%
TOTAL (n=305)	305	100%

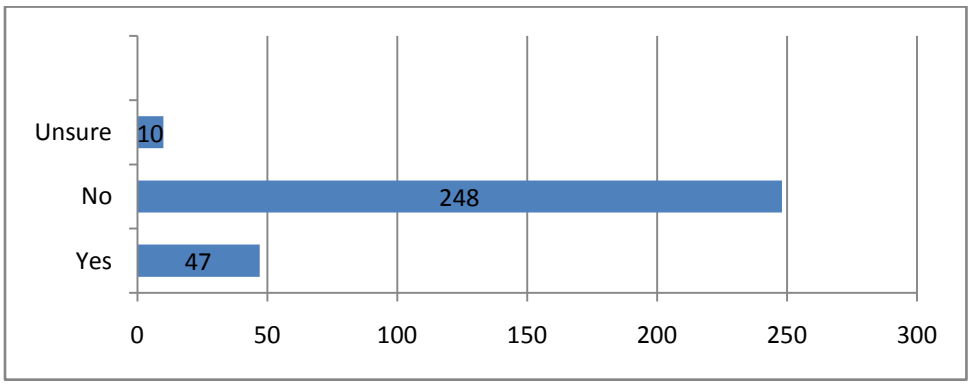
19. Do you think the usual cause of diabetes is lack of insulin in the body?



20. Do you take an extra tablet /insulin when you eat sweets?

Response	**No. of people**	**Percentage**
YES	79	25.9%
NO	215	70.5%
UNSURE	11	3.6%
TOTAL (n=305)	305	100%

21. Have you received patient counseling on diabetes before?



CONCLUSION:

Among the 305 participants 184 subjects had positive family history and 121 had no family history of Diabetes. In the present study majority of the subjects 65.9% (201) did not know what

Diabetes is in terms of knowing that it is a sugar disease. This finding was expected since 36%(110) of them were illiterate and6.9% (21) were educated till primary level. These results highlight the need for educational programmes aimed at improving the knowledge of diabetes, its causes, possible complications and self-received patient management.

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ANNEXURE

QUESTIONS USED FOR ASSESSING THE KNOWLEDGE OF DIABETES IN DIABETIC PATIENTS:

PATIENT PROFILE FORM

A. PATIENT'S DEMOGRAPHIC PROFILE:

Name: .....Age: ..... (> 20yrs) Sex: .....

I. P/O.P:……..... Date:…… Serial.No:…….

Educational status: ..... Occupation: .....

Personal Habits:……..... Family history of diabetes: .....

Past medical history:..... Since when are you suffering from Diabetes.....

S.No	QUESTIONS	YES	NO	UNSURE
1	Do you know about diabetes?			
2	Do you know diabetes is affecting more and more people now a days?			
3	Do you think some factors can contribute to diabetes? If yes, what factors you think that contribute to diabetes? a) Obesity b) Decreased physical activity c) Mental stress d) High blood pressure e) Family history of diabetes f) Others			
4	Can diabetes spread from one person to other person or through spouse?			
5	Can diabetes be transmitted through blood transfusion?			
6	Alcohol and smoking can worsen the health of diabetic patient?			

7	Are frequent urination and thirst, signs of high blood sugar?			
8	Do you know diabetes can cause complications?			
9	Is diabetes preventable? If yes, how can it be prevented? a) Diet control b) Exercise c) Both diet and exercise			
10	Is medication more important than diet and exercise in controlling diabetes?			
11	Do you know a diabetic patient should check his/her blood glucose level regularly?			
12	Do you keep a record of your blood sugar reports?			
13	Do you know the normal values of Blood Glucose levels?			
14	If you avoid taking only sugar and sweets, your blood glucose levels will be under control?			
15	Do you know what kind of diet should a diabetic eat?			
16	Cuts and abrasions in diabetics heal more slowly?			
17	Is Diabetes treatment only for a short period of time?			
18	Do you know the name of the tablet/ injection you take for diabetes?			
19	Do you think the usual cause of diabetes is lack of Insulin in the body?			
20	Do you take an extra tablet/ insulin when you eat sweets?			
21	Have you received patient counseling on Diabetes before?			

PATIENT INFORMATION LEAFLET

DIABETES MELLITUS

DECCAN SCHOOL OF PHARMACY
Darussalam, Aghapura, Hyderabad.

DEPARTMENT OF PHARMACY PRACTICE
OWAISI HOSPITAL AND RESEARCH CENTER
Kanchanbagh, Hyderabad, AP-500058

Guide: Dr. Arshad Hussain Mohd Pharm D

Co-Guide: Dr.Ahrar Ahmed Feroz MBBS, MD

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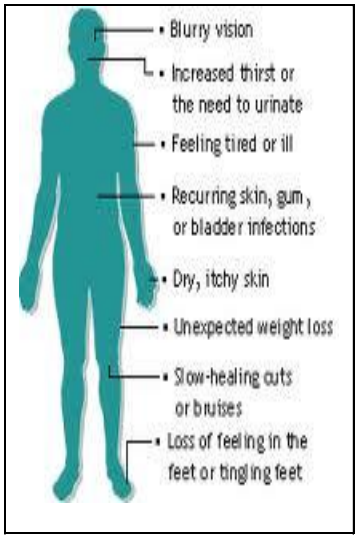
Mehraj Fatima (08461T0013)

1. What is diabetes?

Diabetes means that your blood glucose [often called blood sugar] is too high. Your blood always has some glucose in it because your body needs glucose for energy for its normal function. But too much glucose in the blood is not good for your health.



2. How do I know if I have diabetes?

Symptoms may include extreme thirst, frequent urination, extreme tiredness, significant weight loss, slow healing of wounds, numbness, tingling sensation of the extremities, blurring of vision.

3. What are the different types of diabetes?

Type I diabetes: This type of diabetes is also known as Insulin Dependent Diabetes. This can occur at any age but occur more commonly in children, teenagers or young adults.

Type II diabetes: This type of diabetes is also known as Non-Insulin Dependent Diabetes Mellitus. This occurs usually in adults above 40 years of age.

4. How do I diagnose and monitor diabetes?

The usual blood tests that your doctor may ask for diagnosing your diabetes may be: a) Random Blood Sugar [RBS]-Blood taken at any time of the day

b) Fasting Blood Sugar [FBS]-Blood taken before taking food early in the morning

c) Post Prandial Blood Sugar [PPBS]-Blood taken two hours after lunch

Some of the other tests are Glycated hemoglobin [Hb1Ac] and ketone tests.

E. STOP SMOKING AND ALCOHOL CONSUMPTION:

People with diabetes especially those over age 40 who smoke, and have high blood pressure and cholesterol are at a higher risk for cardiovascular problems. This hardening or blockage can also happen to the small arteries that supply blood to your legs and feet. Smoking can also leads to some serious complications like infections, ulcers, gangrene, and even amputations.

The best advice to a diabetic is to abstain from alcohol. Consuming alcohol can lead to several problems. Some of them are diabetic neuropathy, hypoglycemia, lipid abnormalities etc.

6. What are the complications of diabetes?

If the blood sugar levels are not maintained, diabetic patients may develop some complications such as:

Diabetic neuropathy: Over time, high blood glucose can harm the nerves in your body. Nerve damage can lead to loss of pain or touch sensations to your feet. It can also cause pain in your legs, arms, or hands. Nerve damage can progress slowly. Most of the time you may not even realize that you have nerve problems. Hence have regular checkups for your nerves to rule out diabetic neuropathy.

Tips to prevent neuropathy:

- Keep your blood glucose and blood pressure as close to normal as possible.
- Stop/ limit the alcohol intake
- Check your feet every day
- If you smoke, quit immediately.

Diabetic retinopathy:

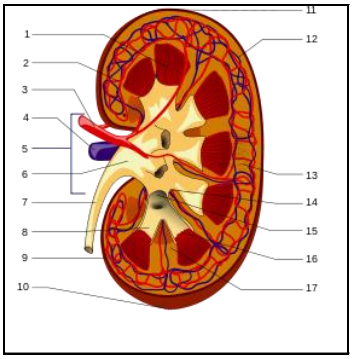
Retinopathy is a disorder of the eye that occurs in majority of the adults with diabetes. The patient suffering from retinopathy may complain of blurring of vision, seeing black spots, flashing lights etc. Once detected proper treatment of diabetes would reduce the progression of your retinopathy.

Tips to prevent retinopathy:

For people with type 2 diabetes:

- Have an eye exam every year.
- Keep your blood glucose and blood pressure levels as close to normal as possible.
- Inform your doctor right away if you have any problems like blurring of vision or seeing dark spots, flashing lights, or rings around lights.

Diabetic nephropathy:



Nephropathy [disorder of the kidney] is one of the potential life threatening complications of diabetes. Poor control of diabetes is associated with enlargement of the kidneys and impairment in their functions. These features are often present with diagnosis and resolve with treatment.

Tips to prevent nephropathy:

•Too much glucose in your blood is very hard on your kidneys.

After a number of years, high blood glucose level can cause the kidneys to stop working. This condition is called kidney failure.

Foot Infections/Diabetic Foot:

Many infections are seen commonly in diabetic patients specially, foot infections because of poor diabetic control. Infections at mild stages if not treated, can lead to life threatening sepsis in these patients.

Tips for your feet:

• Wash your feet daily with lukewarm water and soap, just as you wash your hands.

• Dry your feet well, also between the toes.

• Keep the skin supple with a moisturizing lotion.

• Use soft socks or stockings, which must neither, be too big nor too small.

• Never walk barefoot- neither indoors nor outdoors.

• Examine your shoes every day for cracks, pebbles, nails and other irregularities which may irritate the skin.

• Take good care of your feet and use them. A brisk walk everyday stimulates the circulation and makes you feel much better.

7. What is Hypoglycemia?

If your blood glucose drops too low, you can have hypoglycemia. It is caused by taking too much diabetic medicines, missing a meal, delaying a meal, exercising more than usual or drinking alcohol. Sometimes, medicines you take for other health problems can cause blood glucose to drop.

Symptoms of hypoglycemia: Some of the important symptoms of hypoglycemia are hunger, blurred vision, headache, dizziness, sweating and trembling.

MANAGEMENT OF HYPOGLYCEMIA:

If you have any symptoms of hypoglycemia check your blood glucose. If the level is 70 or lower, have one of the following right away:

• 2 or 3 glucose tablets

• Half cup of any fruit juice

• A piece of fruit or a small box of raisins

• Half cup of a regular soft drink

• 1 or 2 teaspoons of sugar or honey.

After 15 minutes, check your blood glucose again to make sure that it is no longer too low.

"If you take insulin or a diabetes pill that can cause hypoglycemia, always carry some sweets for emergencies".

FOR ANY FURTHER QUERIES CALL "DRUG INFORMATION CENTER":
Ph. No: 040-24343103