A Cross-Sectional Study of Knowledge Assessment of Diabetes In Diabetic Patients In Princess Esra Hospital

Mohammed Altaf*[1], Syed Sadath Kabir[1], Qadri Mohd Rizwan Masood[1],
Mohammed Nomaan Ilyas[1], Taj Zia Ahmed[1], Arshad Hussain Mohd[2],
Anas Rasheed[3]

[1]*PharmD, Department of Clinical Pharmacy Practice, Deccan School of Pharmacy,*
Hyderabad-500 001, Telangana, INDIA.
[2]*Assistant Professor, Department of Clinical Pharmacy Practice, Deccan School of Pharmacy,*
Hyderabad-500 001, Telangana, INDIA.
[3]*M.Pharm, Department of Pharmaceutical Analysis.*

Corresponding Address: Dr. Mohammed Altaf, Pharm.D, Deccan School of Pharmacy, Jawaharlal Nehru Technological University, Owaisi Group of Hospitals-Princess Esra Hospital, Hyderabad-500 058, Andhra Pradesh, INDIA. Email: altaf199201@gmail.com

ABSTRACT

Background: Knowledge of Diabetes is an integral component for attaining optimal disease control and prevents the impending chronic co-morbidities of diabetes mellitus, which impact significantly on the quality of life of the diabetic patient. Pharmacist being one of the indispensable members of the health care team, have an immense responsibility for counseling of the patients to attain better understanding of their illness and the role of medication in its treatment which would motivate the patients to adopt healthy life style and avoid future complications. The purpose of this study was to establish and assess the level of knowledge about DM in Diabetic patients. Materials and Methods: A Cross sectional survey study was carried out over a period of 6 months with 150 Diabetic patients in Medicine department of Princess Esra Hospital, Hyderabad, India. A questionnaire was provided, out of them 64 (42.7%) were males and 86 (57.3%) were females aged between 25 to 85 years. The questionnaire consisted Demographic details and 21 questions relating to the patient's knowledge of the disease, its complications and its management. Results: We studied a total of 150 patients of which 64(42.7%) were males and 86 (57.3%) were females with a mean age of 45.5±6.7 years. About 65% of patient has positive family history; majority of participants (62%) does not know what diabetes is? About 80% of people believed that now a day's more and more people are affected by diabetes. 35.3% of people thought mental stress to be the causative factor for diabetes. 54.87% of patients knew that diabetes can be prevented by both diet and exercise. About 62.95% of patient believed that medication is more important than diet. 70% of subjects did not received patient counseling from any health care professionals. Conclusion: This study concludes that the Diabetic patients showed knowledge deficits pertaining to causes, prevention and Medications used in the management of Diabetes and very less number of patients received Patient counselling. Patient counselling regarding Disease, Medication and Life style modification for Diabetic patients, can be effectively implemented and that important health indicators significantly improve.
Key words: Diabetes, Patient counselling, Quality of life, Questionnaire.

I. INTRODUCTION

Diabetes mellitus is a clinical syndrome characterized by hyperglycemia and disturbance of carbohydrates, fat and protein metabolism that are associated with absolute or relative deficiency of insulin action or secretion. Lack of insulin affects the metabolism of carbohydrate, protein and fat, and causes a significant disturbance of water and electrolyte homeostasis. Death may result from acute metabolic decompensation. The long standing metabolic derangement 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]

The hyperglycemia of diabetes develops because of an absolute (Type I Diabetes) or a relative (Type II Diabetes) deficiency of insulin, resulting in decreased anabolic and increased catabolic effect. In both Type I and Type II Diabetes, the action of insulin are also impaired by insensitivity of target tissues while this is a fundamental defect in Type II Diabetes, hyperglycemia can also reduce insulin secretion by the effect of glucose toxicity on beta-cell function. In both types of diabetes, signs and symptoms are more likely to be similar as the blood sugar is high, either due to less or no production of insulin, or insulin resistance. Those associated with type I diabetes are more severe and faster in onset. The most common symptoms are: Polyuria, Polydipsia, Polyphagia.[2,3]

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.[4,5]

Patient counselling is an important means for achieving pharmaceutical care. It is defined as providing medication related information orally or in written form to the patients or their representatives, on topics like direction of use, advice on side effects, precautions, and storage, diet and life style modifications.[6]

Diabetes is a chronic, incurable condition that has considerable impact on the life of each individual patient. Patient involvement is paramount for the successful care of diabetes. The principal task of the health care team is to give each patient knowledge, self- confidence and support.[7,8] The role of self-management behavior is clear even in studies that address relationships between pharmacologic treatment and outcomes at the physiologic level. 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.[9] 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 blood glucose parameters.[10,11]

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.[12]

Diabetes, if untreated, can lead to various complications such as neuropathy, nephropathy, retinopathy, hyperlipidemia, diabetic foot ulcers, infections, etc. These complications adversely affect the quality of life of the patient. 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.[13,14]

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.[15]

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.[16]

II. MATERIALS AND METHODS

This was a cross-sectional, observational, questionnaire based study, conducted at Princess Esra Hospital, a 1000 - bedded tertiary care teaching hospital, with an out-patient turnover of 0.7 million and in-patient turnover of 50,000 annually. As this was a non-interventional study, prior approval to conduct the study was obtained from the Medical Superintendent of the Hospital. The questionnaire was administered to 150 patients both in patients and out-patients to assess the knowledge of Diabetes in Diabetic patients and patient counselling in the Internal medicine department of Princess Esra Hospital, Hyderabad from December 2012 to June 2013.

Patients of either sex aged ≥ 20 years and above, patients who were diagnosed to have had Type 1 and Type 2 Diabetes are included in the study after obtaining an informed consent. Patients below 20 years, patients without Diabetes, very ill/ elderly (>80 years), unconscious patients and patients with Gestational Diabetes were excluded from the study.

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.

Women who developed DM during the course of their pregnancy were excluded from the study because in this group of DM patient's the diabetic condition usually subsides after delivery of their babies.

Statistical Analysis:

The questionnaires were distributed by the researchers to the participants and collected after completion. Illiterate participants were assisted by verbal interviews based on the questions in the questionnaire and the appropriate responses were recorded. The information was recorded and analyzed using the Microsoft Excel worksheet (Microsoft Office 2007).

III. RESULTS

A total of 150 patients of which were 64(42.7%) were males and 86 (57.3%) females (Fig. 1). The demographic data like sex, age, education, disease duration and habits of smoking and alcohol were recorded. The mean age of the study population was 45.5±6.7 (range between 25 years-85 years). Among 150 patients, 44 were In-patients and 106 were Out-patients.
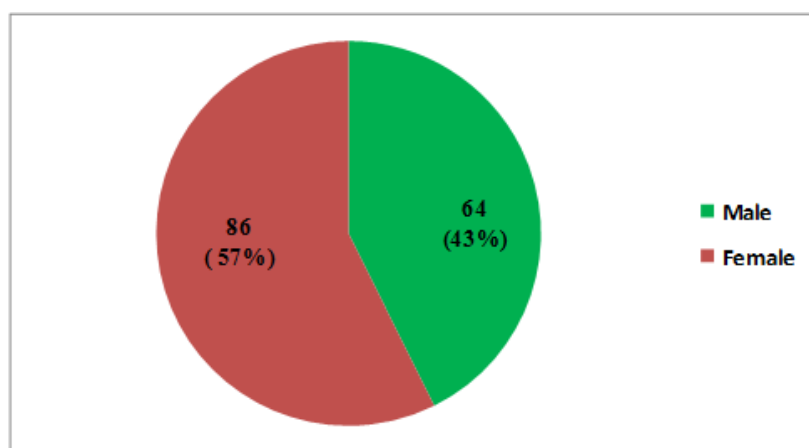

Figure 1: Gender distribution of Patients

Table 1: Personal habits studied in Diabetic Patients

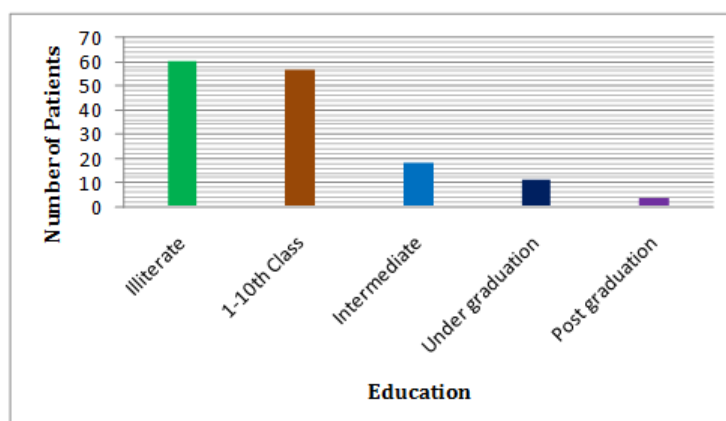| Personal habits	Number	Percentage
Alcohol	43	28.7%
Smoking/Tobacco	26	17.3%
Tea	11	7.3%
None	70	46.7%
Total (N=150)	**150**	**100%**

Figure 2: Education distribution of patients studied

Table 2: Number of patients studied with Co-morbidities

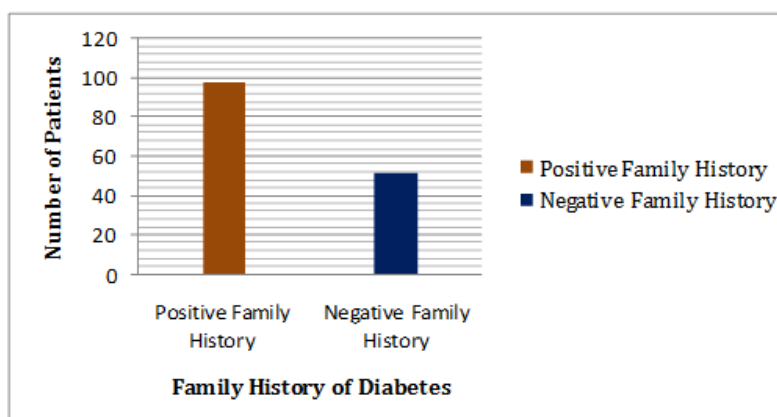| Co-morbidities	Number	Percentage
Hypertension	69	46%
Diabetic Complications	06	4%
Heart Disease	11	7%
None	64	43%
Total (N=150)	**150**	**100%**

Figure 3: Family history of Diabetes studied in Diabetic patients

Table 3: Duration of Diabetes

Duration of Disease	No. of people	Percentage
1-11 months	27	18%
1-5 years	80	53.3%
6-10 years	25	16.7%
11-20 years	10	6.7%
> 20 years	08	5.3%
Total (N=150)	**150**	**100%**

QUESTIONS USED FOR THE ASSESSMENT OF KNOWLEDGE OF DIABETES:
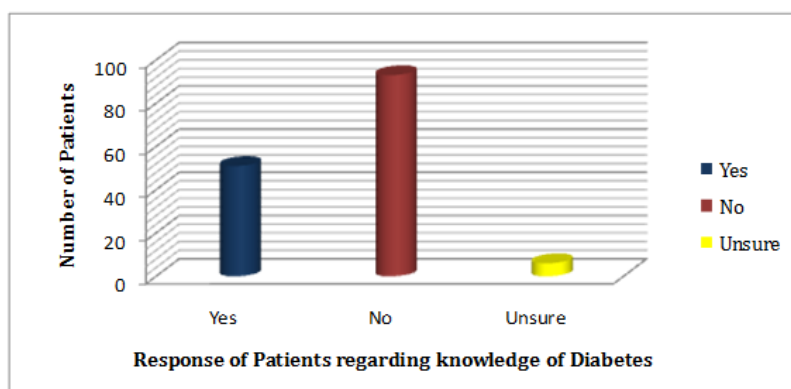
1. Do you know about Diabetes?

Figure 4: Knowledge of Diabetes studied in Diabetic patients

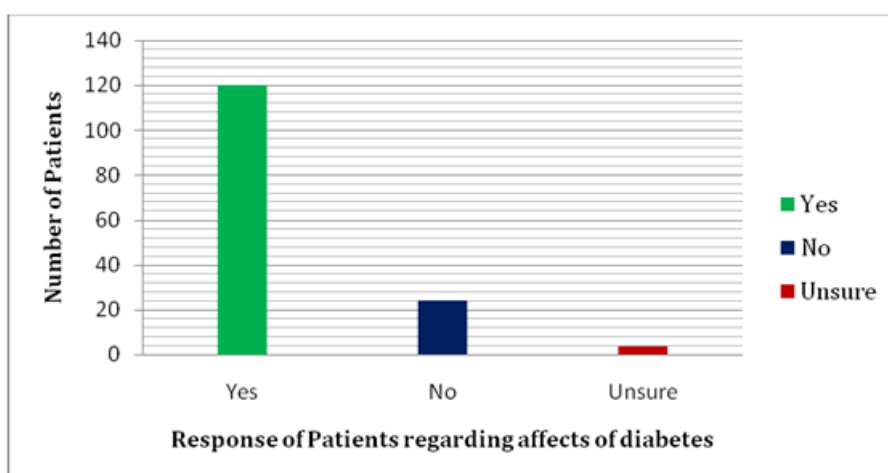**2. Do you know Diabetes is affecting more and more people now a days?**

Figure 5: Knowledge of how Diabetes is affecting more people was studied in Diabetic patients

3. Do you think some factors can contribute diabetes?

Response	Numbers	Percentage
YES	85	57%
NO	50	33%
UNSURE	15	10%
TOTAL (N=150)	**150**	**100%**

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

Factors	Numbers	Percentage
Obesity	05	5.9%
Decreased Physical activity	10	11.8%
Mental Stress	30	35.3%
High Blood Pressure	15	17.6%
Family History of Diabetes	20	23.5%
Others	05	5.9%
Total(N=85)	**85**	**100%**

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

Response	Numbers	Percentage
YES	55	36.7%
NO	75	50%
UNSURE	20	13.3%
TOTAL (N=150)	**150**	**100%**

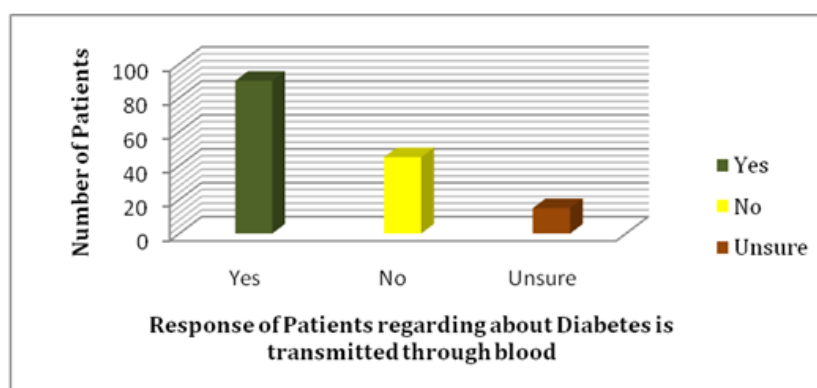**5. Can Diabetes be transmitted through blood?**

Figure 6: Knowledge of Patients about diabetes is transmitted through blood was studied

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

Response	Numbers	Percentage
YES	62	41.3%
NO	55	36.7%
UNSURE	33	21.96%
TOTAL (N=150)	**150**	**100%**

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

Response	Numbers	Percentage
YES	105	70%
NO	35	23%
UNSURE	10	7%
TOTAL (N=150)	**150**	**100%**

8. Do you know Diabetes can cause complications?

Response	Numbers	Percentage
YES	81	53.8%
NO	57	37.7%
UNSURE	12	8.5%
TOTAL (N=150)	**150**	**100%**

9. Is Diabetes preventable?

Response	Numbers	Percentage
YES	45	26.9%
NO	87	58%
UNSURE	18	15.1%
TOTAL (N=150)	**150**	**100%**

If yes, how can it be prevented?

Measures to prevent Diabetes	Numbers	Percentage
Diet	09	20.73%
Exercise	11	24.4%
Both diet and exercise	25	54.87%
TOTAL (N=45)	45	100%

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

Response	Numbers	Percentage
YES	95	62.95%
NO	39	25.9%
UNSURE	16	11.14%
TOTAL (N=150)	150	100%

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

Response	Numbers	Percentage
YES	77	51%
NO	67	45%
UNSURE	06	4%
TOTAL (N=150)	150	100%

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

Response	Numbers	Percentage
YES	90	60%
NO	49	33%
UNSURE	11	7%
TOTAL (N=150)	150	100%

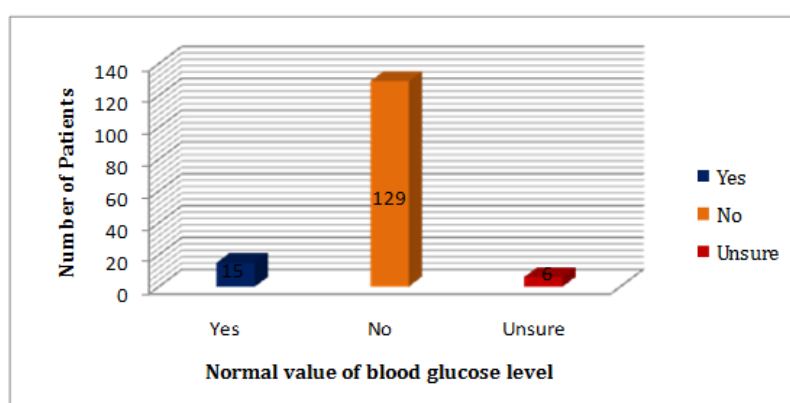**13. Do you know the normal values of blood glucose level?**

Figure 7: Knowledge Assessment of Patients about Normal value 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	75	50%
NO	53	35.3%
UNSURE	22	14.7%
TOTAL (N=150)	150	100%

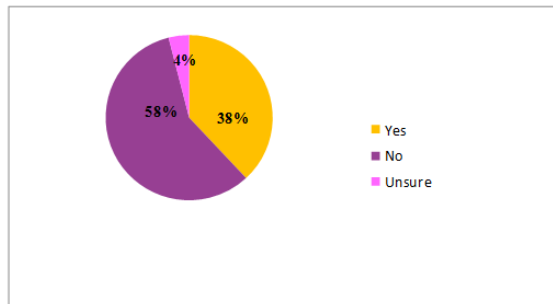**15. Do you know what kind of diet should a diabetic eat?**

Figure 8: Knowledge Assessment regarding Diet in Diabetic Patients

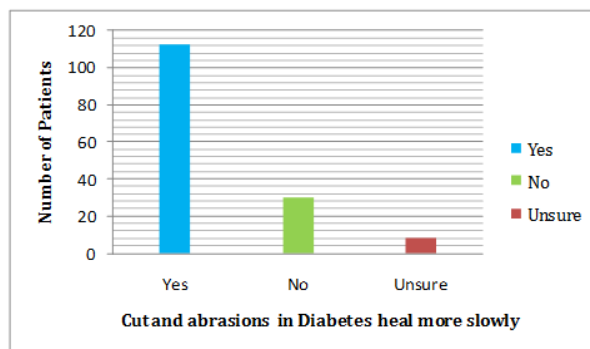**16. Cuts and abrasions in diabetics heal more slowly?**

Figure 9: Knowledge Assessment regarding Cuts and abrasions in Diabetic Patients

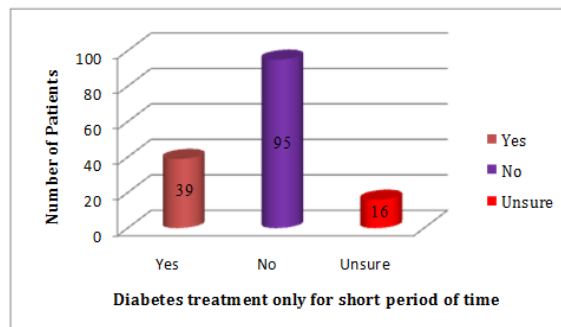**17. Is diabetes treatment only for short period of time?**

Figure 10: Knowledge Assessment regarding diabetes treatment in Diabetic Patients

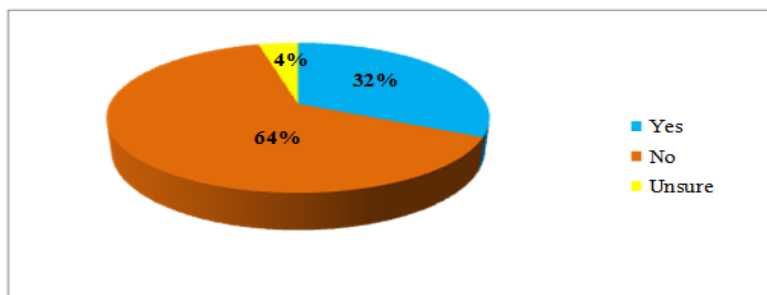**18. Do you know the name of the tablet /injection you take for diabetes?**

Figure 11: Knowledge Assessment regarding name of the tablet /injection in Diabetic Patients

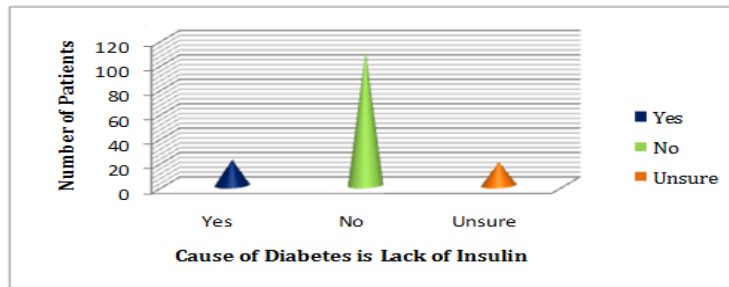**19. Do you think the usual cause of diabetes is lack of insulin in the body?**

Figure 12: Knowledge Assessment regarding cause of diabetes in Diabetic Patients

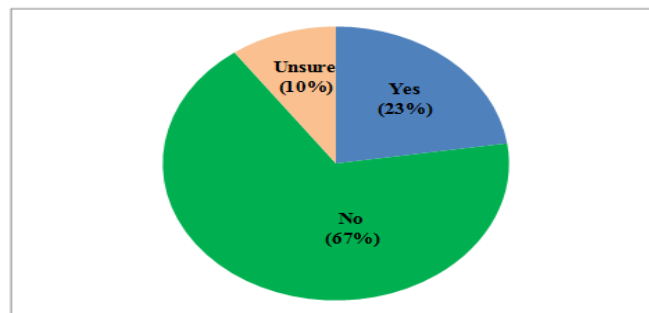**20. Do you take an extra tablet/insulin when you eat sweets?**

Figure 13: Knowledge Assessment regarding extra tablet/insulin in Diabetic Patients

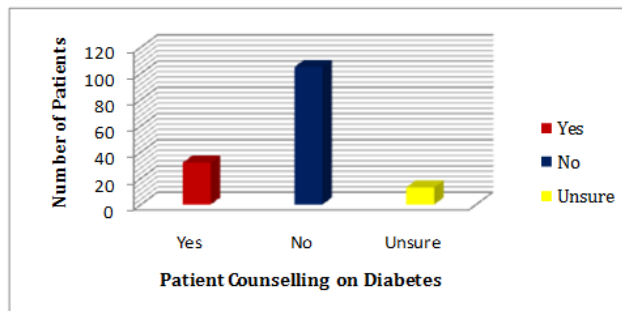**21. Have you received patient counselling on diabetes before?**

Figure 14: Knowledge Assessment regarding patient counselling in Diabetic Patients

IV. DISCUSSION

A total of 150 patients were enrolled into this study. Females were more in number than males and the mean age was 45.5±6.7 years. Among the 150 participants 98 subjects had positive family history and 52 had no family history of Diabetes [Figure 3]. In the present study majority of the subjects 62% (93) did not know what Diabetes is in terms of knowing that it is a sugar disease [Figure 4]. This finding was expected since 40% (60) of them were illiterate and 39% (58) were educated till secondary level [Figure 2]. The knowledge of the subjects pertaining to the prevalence of Diabetes revealed that significant number of 80% (120) patients believed that more and more people were affected by Diabetes now a day's [Figure 5]. 57% (85) subjects thought that Diabetes is caused due to some factors. Among the factors provided, mental stress was the most frequently chosen factor (30) followed by decreased physical activity (10), Hypertension (15), Family history of Diabetes (20) and Obesity (5). 55 patients thought that Diabetes is a communicable disease i.e. it spreads from one person to other person. 90 patients thought that diabetes can be caused through Blood transfusion [Figure 6]. 62 patients answered that alcohol and smoking cannot worsen the health of Diabetic patients and 33 patients were unsure whether alcohol and smoking could have an impact on their health. Lack of knowledge of this magnitude will likely place Diabetics at risk of doing those things which might predispose them to complications.

Results show that significant number of participants (105) answered that frequent urination and thirst are signs of High Blood Sugar. Although it is well known that patients passively learn to recognize the symptoms once they suffer from it. Regarding the knowledge about the complications 81 participants answered that Diabetes can cause complications. 8 participants among the 150 subjects presented to the hospital with Diabetic complications. 87 of the respondents said that

Diabetes is not preventable and only 45 believed that Diabetes is preventable by Diet control (9), Exercise (11) or Both Diet and exercise (25). This indicates a significant lack of knowledge of primary prevention of Diabetes in population.

The fact that 95 respondents believed that medication is more important in controlling diabetes than Diet and Exercise, reflects great extent of Medication adherence. Although 77 said that it is necessary to check blood glucose regularly and 90 of them maintain a record of their reports, it was surprising to know that only 15 of the subjects were aware of the target values of blood glucose [Figure 7].

112 of the respondents knew that cuts and abrasions in Diabetics heal more slowly [Figure 9]. 57 patients knew what kind of diet they must take [Figure 8]. This proportion was slightly lower than the patients who did not know about the Diabetic diet. 59 answered that Diabetic patients must avoid starchy foods like potato, rice along with sweets. 95 were aware that treatment for Diabetes continues throughout the life [Figure 10]. 96 participants did not know the name of the Tablet/ Insulin brand, they are taking for Diabetes [Figure 11]. 110 participants were unaware that the usual cause of Diabetes is lack of Insulin in the body [Figure 12]. 23% of respondents agreed that they take an extra dose, when they eat sweets or eat heavily [Figure 13]. 32 (21.3%) received patient counseling and 9% were unsure that they might or may not have received patient counseling [Figure 14].

V. CONCLUSION
This study concludes that the Diabetic patients showed knowledge deficits pertaining to causes, prevention and Medications used in the management of Diabetes and very less number of patients received Patient counselling. Patient counselling regarding Disease, Medication and Life style modification for Diabetic patients, caeffectively implemented and that important health indicators significantly improve. These results highlight the need for educational programmes aimed at improving the knowledge of diabetes, its causes, possible complications and self-received patient management.

ACKNOWLEDGEMENTS:

SOURCE OF SUPPORT: Nil
CONFLICT OF INTEREST: None declared

REFERENCES:
[1]. John A Hunter. 2006: Davidson's Principles and Practice of Medicine 20th edition. Churchill Livingstone. Elsevier publications. 808.

[2]. Curtis L. Triplitt, Charles A. Reasner; Diabetes Mellitus, Endocrinologic disorders; Pharmacotherapy – A Pathophysiologic approach, 8th Edition, pg no:1276-77.

[3]. Naheed Gul, Knowledge, Attitudes and practices of type 2 Diabetic patients in Department of Medicine, Shifa College of Medicine Islamabad, Pakistan. J Ayub Med Coll Abbottabad 2010; 22(3)

[4]. Okolie, V. Uchenna, Ehiemere, O. Ijeoma1, Iheanacho, N. Peace and Kalu-Igwe I. Ngozi Knowledge of diabetes management and control by diabetic patients at Federal Medical Center UmuahiaAbia State, Nigeria. International Journal of Medicine and Medical Sciences. Vol. 1(9), pp. 353-358, September, 2009.

[5]. KY Tham, JJY Ong, DKL Tan, KY How , How much do Diabetic Patients know about Diabetes Mellitus and its Complications, Tan Tock Seng Hospital, Singapore . July 2004, Vol.33 No.4

[6]. Martha WanjiruMwangi, Gerald GikonyoGithinji, Felicity WanjiruGithinji, Knowledge and Awareness of Diabetic Retinopathy amongst Diabetic Patients in Kenyatta National Hospital, Kenya. International Journal of Humanities and Social Science Vol.1 No.21 [Special Issue – December 2011].

[7]. George Cust and Charles Hodes, A survey of knowledge of diabetes mellitus in the patients of a general practice, J. Coll. Gen. Practice, 1967, 13, 313.

[8]. MichellGulabani, Mary John, Rajesh Isaac, Knowledge of Diabetes, its complications amongst diabetic patients in a Tertiary Care Hospital. Indian Journal of Community Medicine, Vol.33, Issue 3, July 2008.

[9]. KP Mashige, A Notshweleka, S Moodley, FH Rahmtoola, SB Sayed, S Singh and Z Sardiwalla, Assessment of the level of diabetic patients, knowledge of diabetes mellitus, its complications and management in Durban, South Africa. S.AfrOptom 2008 67(3) 95-105.

[10]. Souravghosh, Ajeet Kumar Rajvanshi and ShriKishun, Assessment the influence of patient counseling on quality of life in type-IIDiabetes mellitus patients in S.D medical Hospital, Uttar Pradesh, India. ISSN 0975-6299 Vol.1/Issue-3/Jul-Sep.2010.

[11]. Latif Ahmed Khan, MD, MRCP; Sarosh Ahmed Khan, MD, Level of Knowledge and Self-Care In Diabetics In A Community Hospital In Najran Saudi Arabia, Annals of Saudi Medicine, Vol 20,Nos 3-4, 2000.

[12]. A Ramachandran, AK Das, SR Joshi, CS Yajnik, S Shah, KM PrasannaKumar,Current Status of Current Status of Diabetes in India and Need for Novel Therapeutic Agents, JUNE 2010, VOL. 5: 37-52

[13]. Valentine U Odili, Paul D Isiboge and AihanuwaEregie, Patients' Knowledge of Diabetes Mellitus in a Nigerian City, University of Benin Teaching Hospital, Tropical Journal of Pharmaceutical Research October 2011; 10 (5): 637-642.

[14]. Moodley LM, BPharm, MMed.Sci, MPS,Rambiritch V, PhD(UKZN),An assessment of the level of knowledge about diabetes mellitus among diabetic patients in a primary healthcare setting, SA FamPract 2007:49(10).

[15]. Ambady RAMACHANDRAN and Chamukuttan SNEHALATHA, Current scenario of diabetes in India, a 2009 Ruijin Hospital and Blackwell Publishing Asia Pty Ltd, Journal of Diabetes 1 (2009), 18–28.

[16]. S.S.Karikatti, Spurti U Chate, RadhikaMarathe, MrsSunanda B Halki M.sc, A.B Hallappanavar,Assessment of risk of diabetes among medical students using IDRS (indian diabetes risk score): a non laboratory tool IJPD,Vol. 7 Issue 1, pg no:1076-77.