Original Research Article

Clinco-investigative profile of newly diagnosed type ii diabetes mellitus patients: A cross sectional study

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Abstract

Background: Rapid epidemiological transition in India with increased urbanization and westernization has contributed substantial rise in diabetes. Diabetes mellitus (DM) is a heterogeneous group of disease, characterized by a state of chronic hyperglycemia resulting from a diversity of etiologies, environment and genetic action jointly. These diversities of DM, mandate us to study its clinical and investigative profile. **Objective.** To study clinic-investigative profiles of newly diagnosed type II diabetes patients. **Material and Methods:** Newly diagnosed 100 type II diabetes patients were studied in present cross sectional study. Simple random sampling method used to select the participants. **Results:** Out of 100 majority of patients were in the age group of 51-60 years and gender distribution found to be somewhat similar. Most common symptoms were found to be polyuria (24%) followed by tingling and numbness (18%). Fasting and post prandial sugar and HBA1C level found to be statistical significant among diabetic microvascular and non microvascular complication groups. C**onclusion**: Adults should be screen earliest to diagnose diabetes and to prevent its complications.
Keywords: Diabetes mellitus, type II, Polyuria, Tingling, Numbness.

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Received Date: 27/11/2019 Revised Date: 13/12/2019 Accepted Date: 10/01/2020
DOI: https://doi.org/10.26611/10211424

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 12 May 2020

INTRODUCTION

Diabetes mellitus is heterogeneous metabolic disorder that arises due to a decrease in insulin secretion or when the body is unable to use insulin effectively. Insulin is a hormone required to regulate blood sugar or glucose[1] and absence of this function leads to a chronic hyperglycemic state. The estimated global prevalence of diabetes is 387 million (8.3%) and is projected to increase to 592 million by 2035 (IDF).[2] India is the diabetes capital of the world with 41 million Indians having diabetes; every fifth diabetic in the world is an Indian.[3] Rapid epidemiological transition in India with increased urbanization and westernization has contributed substantial rise in diabetes.[4] In India urban and rural prevalence of diabetes ranges from 5.6% to 12.4% and 2.4% to 2.7% respectively.[5] Undiagnosed and inadequate treatment of diabetes may result into multiple complication which may lead to irreversible disabilities and deaths. Age, positive family history, obesity, hypertension, sedentary lifestyle, socioeconomic class etc. are known risk factors for diabetes mellitus. So far a lot of research has been done on diabetes mellitus but still not much is known about it; it is complex etiopathogenesis, generating eagerness among researchers to study it continuously.

MATERIAL AND METHODS

Institutional ethical committee's permission (IEC) was obtained before commencement of study. This was cross sectional study conducted on out patients (OPD) of

How to cite this article: Anil S Mane, Chiragkumar K Patel, Vaibhav A Padole. Clinco-investigative profile of newly diagnosed type ii diabetes mellitus patients: A cross sectional study. *MedPulse International Journal of Medicine.* May 2020; 14(2): 42-46. https://www.medpulse.in/Medicine/

medicine department. Present study was conducted for the period of two years. All the newly diagnosed diabetes mellitus patients of either gender, who are willing to give informed consent were included in this study. Patients who are either less than 30 years or more than 70 years, having history of chronic diseases like cancer, kidney diseases etc. were excluded. Total 100 patients were recruited by using simple random sampling method. Structured and pilot test questionnaire was used for data collection. Questionnaire consisted of three parts. Part I included information on socio-demographic status, symptoms suggestive of diabetes mellitus and its complication. In part II family history of diabetes mellitus, history of hypertension, ischemic heart disease, stroke, addiction, physical activity were documented. In part III information on general and clinical examination were recorded. In general examination pulse, blood pressure, temperature, respiratory rate along information on anthropometric variable viz. height, weight, body mass index, waist circumference were recorded as per standard protocol. In clinical examination signs of skin infection, gangrene, ulcer, sensory neuropathy, motor neuropathy, and autonomic dysfunction were recorded. To detect proliferative and non-proliferative retinopathy dilated fundoscopy were carried out in all patients with the help of ophthalmologist. Data was entered into Microsoft Excel and analyzed with SPSS v.16. Descriptive statistics like mean, standard deviation, frequency and proportion were calculated. Inferential statistics like 't' test, Pearson's correlation were used to check association. 'P' value <0.05 was taken as statistically significant.

RESULTS

In present study total 100 newly diagnosed patients of diabetes mellitus were studied. Out of that 54% were males and heart 46% were females. The mean age of the patients was 51.64 ± 9.51 years. Majority of diabetes patients were of 51-60 years (33%) of age. other common involved age groups were 41 to 50 years and 61 to 70 years. In present study most frequent symptoms were polyuria (24%), tingling numbness (18%) and polydipsia (14%) etc. (graph no 01). In present study 19% and 18% patients had diabetic neuropathy and diabetic retinopathy respectively. Other complication were ischaemic disease (13%), diabetic nephropathy (8%), cerebrovascular stroke (5%) and peripheral vascular disease (2%). (Graph no 02) Out of total patients 52% had normal BMI, 44% and 04 % patients were overweight and underweight respectively. The mean BMI of the patients was 25.02 ± 3.33. Out of 56 males 21.42%% males had high waist hip ratio (WHR>01) while out of 44 females 54.54% had high waist hip ratio (WHR>0.85). The average waist hip ratio of all participants was 0.89 ±0.09. Positive family history of diabetes mellitus was seen in 20% male and 15% female patients. Clinico-investigative profile of all patients shown in table no 01. Mean fasting blood sugar (FBS) levels among patients having diabetic retinopathy and not having retinopathy were 358.44±43.07 and 239.09±85.64 respectively. Among diabetic nephropathy and non-nephropathy patients mean fasting blood sugar level was 352.75±47.44 and 252.55±90.55 respectively. Patients of having diabetic neuropathy also has higher mean fasting blood sugar level (343.85±75.0) than non-diabetic neuropathy patients. In all there group's statistical significant difference was seen in fasting sugar level. (Table no 02) Among diabetic nephropathy and non-nephropathy patients mean post prandial blood sugar (PPBS) level was 475.13±45.30 and 278.63±61.79 respectively. Mean post prandial blood sugar level was higher in patients having diabetic retinopathy (365.11±63.02) than non-retinopathy (278.81±76.06) patients. In diabetic neuropathy patients mean post prandial blood sugar level was 337.30±60.34 while in non-diabetic neuropathy patients it was 283.61±81.96. PPBS levels were found to be statistical significant among patients having diabetic complication and not having complication. (Table no 03) Mean HbA1C level among patients having and not having diabetic retinopathy was 10.52 ± 1.77 and 8.67 ± 1.53 respectively. Among diabetic nephropathy patients mean HbA1C level found to be higher (10.84±1.79) than not having nephropathy (08.84±1.63). In diabetic neuropathy patients mean HbA1C level was 10.41±2.04 and not having neuropathy it was 08.65±1.45. The difference of mean HbA1C level found to be statistical significant. (Table no 04) Among patients having tingling numbness and not having numbness; difference among FBS level, PPBS level and HbA1C level found to be non-significant (Table no 05). Patients having blurring of vision and not having blurring of vision; difference of FBS level and PPBS level found to be statistically significant while difference of HbA1C level found to be not significant. (Table no 06). Pearson's correlation test between HbA1C level and lipid profile found to be not significant. (Table no 07)

DISCUSSION

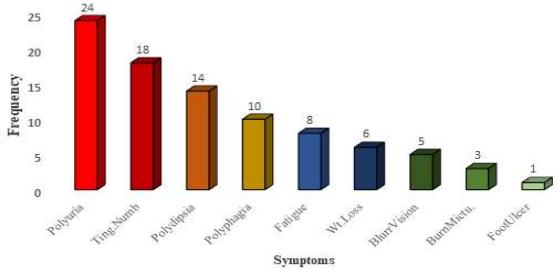
Present cross sectional study conducted on hundred newly diagnosed diabetes mellitus patients attending out patients department of medicine. Out of all 54% were males and 46% were females, ratio of male to female was 1.17: 1 and majority of diabetes patients were of 51-60 years (33%) of age. Study conducted by Cassamo PA *et al.*[6] also reported 50 to 60 years as common age group. In his study male to female ratio was 0.78:1. In our study according to BMI, 52% patients were having normal weight while 44% were overweight and 4% were underweight. According to WHR

criteria, 36% of all study subjects were obese (Male 12 and Female 24). Mean BMI of the patients was 25.02 ± 3.33. Study done by Cassamo PA *et al* on type 2 diabetes mellitus patients reported mean BMI level of 31.9 and 90% were obese. These findings are significantly higher than current study findings. In present study, mean levels of FBS, PPBS and HbA1C were 266.77, 294.34 and 9.00, respectively. Study done in Cassamo PA *et al*[6] reported increased blood sugar in 22.34% and increased HbA1C in 36.67% of study participants. In our study positive family history of diabetes mellitus was seen in 20% male and 15% female patients. Kumar R *et al.*[7] reported positive family history in 36.2l% of female and 47.86% of males. In present study, most common symptom was Polyuria (24%) followed by tingling and numbness (18%), polydip0sia (14%) and polyphagia (10%). Other symptoms were fatigue, weight loss, blurring of vision, burning micturition and foot ulcer. Kumar R et.al[7] reported polyuria as most common symptoms (30%) followed by tingling numbness (26%), blurred vision (26%), polyphagia (24%), altered sleep (24%), weakness (22%) and other symptoms like decreased appetite, burning micturition, skin manifestation and chest pain. Similar findings were noted in present studyIn present study 19% and 18% patients had diabetic neuropathy and diabetic retinopathy respectively McDowell D *et al.*[8] reported 28.5% prevalence of neuropathy. They also found that there was no difference in the prevalence of neuropathy between males and females. In a study conducted by Kumar R *et al.*[7] retinopathy was present in 28% of the patients being significantly higher in males (32.5%) than in females (20.3%). In same study coronary artery disease and peripheral vascular disease (PVD) were present in 14 % and 17 % of subjects respectively being -more common in males. In present study, no significant correlations were found between various lipid profile parameters and HbA1C levels. Study done by Chowdhury TA *et al*[9] revealed that serum total cholesterol, LDL cholesterol and triglycerides were significantly raised whereas the level of HDL cholesterol was significantly lower in diabetic subjects

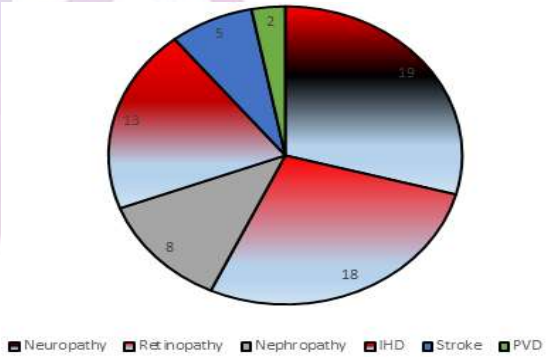
CONCLUSION

Present study concluded that male and female have somewhat similar predisposition for diabetes mellitus. Commonest symptoms among diabetes are polyuria, polydipsia and polyphagia etc. Diabetic neuropathy and nephropathy are commonest complication among study participants and adults should be screen earliest to diagnose diabetes and to prevent its complications.

TABLES AND GRAPHS



Graph 1: Distribution of symptoms



Graph 2: Distribution of complication

Table 1: Clico-investigative profile of diabetes mellitus patients (n=100)

Sr. No	Variable	Mean ±SD	Minimum	Median	Maximum
1.	Systolic Blood pressure	132.78±17.4	100	130	198
2.	Diastolic Blood pressure	83.3 ±7.25	70	82	100
3.	Fasting blood sugar(FBS)	266.77±100.2	120	246	486
4.	Post prandial blood sugar(PPBS)	294.34±80.7	112	280	540
5.	HbA1C	9.00±1.72	6.7	8.6	14.3
6.	Urea	32.42±13.27	15.6	30	102
7.	Creatinine	0.89±0.29	0.5	0.8	2.3
8.	Sr. Cholesterol	212.55±41.04	125	212	338
9.	Sr. LDL	123.37±33.8	12	115	258
10.	Sr. HDL	42.53± 7.20	26.1	42	62
11.	Sr. Triglyceride	192.21±71.71	80	188	403

Table 2: Mean FBS# among diabetic retinopathy, nephropathy and neuropathy

	Present (mean ± sd.)	Absent (mean ± sd.)	T test	P value
Retinopathy	358.44±43.07	239.09±85.64	8.60	<0.0001*
Nephropathy	352.72±47.44	252.55±90.55	5.20	0.0002*
Neuropathy	343.85±75.00	239.75±83.86	5.41	<0.0001*

#:FBS: Fasting blood sugar level, *:Significant

Table 3: Mean PPBS# among diabetic retinopathy, nephropathy and neuropathy

	Present (mean ± sd.)	Absent (mean ± sd.)	T test	P value
Retinopathy	365.11±63.02	278.81±76.06	5.05	<0.0001*
Nephropathy	475.13 ± 45.30	278.63 ± 61.79	11.38	<0.0001
Neuropathy	337.30±60.34	283.61±81.96	3.29	<0.0021*

#PPBS: Post prandial blood sugar level. *: Significant

Table 4: Mean HbA1C among diabetic retinopathy, nephropathy and neuropathy

	Present (mean ± sd.)	Absent (mean ± sd.)	T test	P value
Retinopathy	10.52 ± 1.77	8.67 ± 1.53	4.12	0.0004*
Nephropathy	10.84 ± 1.79	8.84 ± 1.63	3.04	0.014*
Neuropathy	10.41 ± 2.04	8.65 ± 1.45	3.62	0.0014*

*: Significant

Table 5: FBS, PPBS and HbA1C among tingling numbness and not having tingling numbness

Investigations	Tingling and Numbness	N	Mean	Std. Deviation	p' value
FBS level	Absent	78	269.27	100.443	0.641*
	Present	22	257.91	101.534	
PPBS level	Absent	78	292.42	86.249	0.656*
	Present	22	301.18	58.477	
HbA1C level	Absent	78	8.96	1.754	0.456*
	Present	22	9.27	1.609	

p' value >=0.05: Non-significant.

Table 6: FBS, PPBS and HbA1C among tingling numbness and not having tingling numbness

Investigations	Blurring of vision	N	Mean	Std. Deviation	p' value
FBS level	Absent	91	259.04	98.022	0.014*
	Present	09	344.89	93.836	
PPBS level	Absent	91	286.98	78.034	0.003*
	Present	09	368.89	73.257	
HbA1C level	Absent	91	8.97	1.636	0.246#
	Present	09	9.67	2.449	

*: Significant, #: Non-significant

Table 7: Pearson's Correlation in between HbA1C and Lipid Profile

	Lipid markers	r	Strength of correlation	P	Significant
HbA1C	Sr. Cholesterol	-0.012	Weak Negative	0.90	Non-significant
	Sr. Triglyceride	0.11	Weak Positive	0.26	Non-significant
	Sr. LDL	0.01	Weak Positive	0.88	Non-significant
	Sr. HDL	-0.17	Weak Negative	0.07	Non-Significant

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Source of Support: None Declared
Conflict of Interest: None Declared