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TO STUDY THE SOCIO DEMOGRAPHIC AND CLINICAL PROFILE OF SCHIZOPHRENIA PATIENTS AND THEIR ASSOCIATION WITH ORAL GLUCOSE TOLERANCE TEST.

Medicine

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ABSTRACT

Background- About 1% of worldwide disability-adjusted life years is caused by Schizophrenia.1 About 18% to 30% of type II diabetes mellitus is seen in family of schizophrenic patients.2 Major diabetes risk factors like BMI and family history of diabetes were rarely previously determined in studies. So we studied the sociodemographic and clinical profile in the drug-naive, schizophrenia patients and the healthy controls.

Material & Method: Two group 'drug naïve schizophrenia patients' and 'healthy controls 'were recruited for study from OPD of psychiatry, M.Y hospital and mental hospital, Indore. Assessment was done using oral glucose tolerance test and PANSS.

Results: cigarette smoking was higher in cases compared to control and also found that smoking impaires glucose levels in schizophrenics.

Conclusion: None of the sociodemographic factors except cigarette smoking was found to be significantly associated with impaired glucose tolerance

KEYWORDS

Schizophrenia, oral glucose tolerance test.

INTRODUCTION

About 1% of worldwide disability-adjusted life years is caused by Schizophrenia.[1] Peak age at onset of schizophrenia is in the early- to mid-20s for males and in the late-20s for females. Male female ratio is 1.4:1.[1] Atypical antipsychotics are first line treatment of schizophrenia. About 18% to 30% of type II diabetes mellitus is seen in family members of schizophrenic patients.[2] which is quite higher to rate in the population (1.2%–6.3%).[3] None of studies included major diabetes risk factors like BMI and family history of diabetes so they were rarely previously determined. So we are intended to study the role of socio demographic and clinical profile of cases with schizophrenia and normal healthy controls on Oral Glucose Tolerance Test.

MATERIAL AND METHODS

Study Place- Study was conducted in department of psychiatry, MGM Medical College and Mental hospital indore, after obtaining clearance from institutional ethical committee of MGMMC, Indore.

Study design- It is case control cross sectional study.

Sampling Method- -purposive sampling with 60 cases(drug naïve schizophrenic patients) and 60 controls (normal healthy subjects) done after satisfying inclusion criteria and taking informed consent.

Tools used:-

1. Semi structured data entry Performa
2. Oral glucose tolerance test done at clinical site by glucometer.
3. PANSS (Positive and negative syndrome scale)

1. Semi structured data entry Performa

It includes socio-demographic details of the patient, age, sex, marital status, religion, education, occupation, income,locality, family type, age of onset of illness, total duration of illness, family history of psychiatric illness, cigarette smoking, and body mass index and test like oral glucose tolerance test (Ogtt).

2. Oral Glucose Tolerance Test-

- overnight fast prior to the tests is instructed to the patient.
- In our study we have used capillary blood via finger prick and measurement of blood glucose is done with glucometer. Sensitivity and specificity is about 100% with capillary blood and glucometer[4].
- Glucometer used in our study was Bayer Contour TS which has shown good comparative results with the laboratory[5].
- 75 gm of Glucose dissolved in 300 ml of water is given to be Drunk in 5 minutes. In results we have done evaluation of oral glucose tolerance only with 2hrs glucose sample since 2hrs is the most common performed version .[4] And has been approved by government of india[6]. The fasting plasma Glucose level is about 100 mg/dl in normal people. Fasting levels between (110 and 125 mg/dL) are borderline [7],
- 2 hour Glucose Tolerance Test level below 140 mg/dL is normal. Between 140 to 199 mg/dL indicates "impaired glucose tolerance"[7]

3. PANSS (Positive and negative syndrome scale)

The PANSS have 30 items on three subscales: seven items covering positive symptoms,seven negative symptoms and 16 covering general psychopathology

Inclusion criteria

1. Patient or legally accepted relative giving written informed consent.
2. Patients fulfilling criteria of schizophrenia (As per ICD-10).
3. Patient aged between 18-40 yrs

Exclusion criteria

1. Pregnant female
2. History of endocrinopathy like Diabetes Mellitus.
3. Patient has taken treatment for schizophrenia.
4. Patient taking following drugs:-
   Corticosteroids, Beta blocker, OCP, Thiazide diuretics, Epinephrine etc.

Statistical Method

Data analysis done with spss software. We applied the Chi square test and Fischer exact test .P value less than 0.05 was considered as statistically significant.

Results

A. Age

Table No. 1 Age wise Distribution Status of Studied Sample

Age Group (years)	Group			
	Case		Control	
	No.	%	No.	%
18-22	9	15	10	17
23-27	6	10	18	30
28-32	6	10	19	32
33-37	12	20	11	18
>37	27	45	2	3

Total	60	100	60	100
Mean	33.007.37	28.28±4.77		

Table 2 Socio-demographic Data Results of Cases And Controls.

Parameter	Cases (N)	Cases (%)	Control (N)	Control (%)
Sex				
Male	34	56.7	30	50
Female	26	43.3	30	50
Marital status				
Married	41	68	20	33
Others	19	32	40	63
Religion				
Hindu	55	92	60	100
Others	5	8	0	0
Family type				
Joint	16	27	2	3
Nuclear	44	73	58	97
Locality				
Rural	31	52	15	25
Urban	29	48	45	75
Family history				
Absent	42	70	59	98
Present	18	30	1	2

B. Education

Table 3: Education wise distribution of studied sample (Years)

Educational Status	Group				Total	
	Case		Control			
	No.	%	No.	%	No.	%
Illiterate	20	33	0	0	20	33
Upto Primary (5th)	14	23	2	3	14	23
Upto Middle School (8th)	9	15	5	8	9	15
Upto High School	13	22	2	3	13	22
Higher Secondary/Inter/ Diploma	3	5	13	22	3	5
Graduate /P.G.	1	2	38	63	1	2
Professional	0	0	0	0	0	0
Total	60	100	60	100	60	100

C. Occupation

Table 4 :Occupation wise distribution of studied sample

Occupation	Group			
	Case		Control	
	No.	%	No.	%
Unemployed	14	23	12	20
Unskilled	8	13	1	2
Skilled	8	13	10	17
Semiskilled	20	33	12	20
Clerkal/Shopekeeper/Farmer	10	17	1	2
Semiprofessional	0	0	2	3
Professional	0	0	22	37
Total	60	100	60	100

D. Income

Table 5 : Income wise distribution of studied sample

Income	Group			
	Case		Control	
	No.	%	No.	%
No Income	31	52	22	37
< or = 1802	1	2	0	0
1803-5380	16	27	8	13
5381-8988	9	15	2	3
8989-13494	1	2	7	12
13495-17999	2	3	0	0
18000-36016	0	0	2	3
> 36016.	0	0	19	32
Total	60	100	60	100

2. Clinical description of cases.

E. PANSS

Table 6 PANSS Score wise distribution of cases

Score	Case
	Mean
Positive score	11.27
Negative score	14.68
General psychpathology score	22.11

F.Age of Onset of illness wise distribution of cases

Among the age groups <18-40 years the mean age was found to be 30.16 ±7.88 in the cases.

G. Total duration of illness

Among the duration of illness from <1-20 yrs the mean Duration of illness in cases was 2.42±4.15.

H. Cigarette smoking

Table 7 Cigarette smoking wise distribution of studied sample:

	Group			
	Case		Control	
	No.	%	No.	%
Absent	20	33	52	87
Present	40	67	8	13
Total	60	100	60	100

I. Body Mass Index.

Among 60 cases maximum i.e 83% were normal . Among 60 controls maximum 87% were normal.Mean in cases were 21.72±2.58 and in control 21.56±2.61. Result was insignificant .

Table 8 shows Association of cigarette smoking in Impaired Glucose Tolerance and non Impaired Glucose Tolerance schizophrenia patients

Cigarette smoking	Impaired ogtt patients	Normal ogtt patients
Absent	0	20
Present	9	31

Fischer exact is applied. P value=0.029 .Result is significant .p value is <0.05.

Suggests that there is a significant association between impaired ogtt and cigarette smoking.

DISSCUSION

we conducted a study with 120 sample ,among them 60 were cases and 60 were controls. Among the cases maximum 45% belonged to >37years age group, among control maximum 32% belonged to 28-32 age group. Among cases 56.7% were male and 43.3% were female whereas in control group 50% were male and 50% were female.Among cases maximum 68% were married whereas in control maximum 65% were single. In cases on religion wise distribution 92% were Hindus and in control 100% were Hindu. Among cases 73% belonged to nuclear families and in control, 97% lived in nuclear family. In cases maximum 52% belonged to rural locality, Among control maximum 75% belonged to urban locality. Among cases 70% and among control 98% had no family history of psychiatric Illness. It was also justified by study of **Chen et al 2016** who in their study of impaired glucose tolerance in first episode drug naïve schizophrenia patients assessed family history for any mental disorder, and got no family history of psychiatric disorder[8]. In controls 63% studied upto graduation,Among cases maximum 33% were illiterate.This results is also supported by study of **Dixon et al**, **2000** who states that lower educational attainment in schizophrenia increases the risk of obesity and other adverse medical sequelae.[9] In occupation, among cases maximum 33% were semiskilled, among control maximum 37% were professional. In cases maximum 52% belonged to no income group, in control group maximum 37% belonged to no income group. **Dixon et al 2000** also favours this fact that unstable living conditions, poverty etc are linked with schizophrenia and increases risk for metabolic conditions[8]. In clinical description of cases the PANSS Score shows mean positive, mean negative , mean general psychopathology score as 11.27, 14.68 and 22.11respectively . In our study among the cases mean age of onset of illness was 30.16±7.88 and mean duration of illness was 2.42±4.15 yrs.

In cases 67% & in control 13% were smokers. P value is 0.021, so this

difference between two group is highly significant. This indicated that cigarette smoking were more common in schizophrenics as compared to controls. studies who support the result are of **Kelly & McCreadie, 2000** who noted that the prevalence of smoking in schizophrenia is more to the general population[10]. Also as per **Connolly & Kelly 2005** found that that morbidity in schizophrenia is due to increased likelihood to smoke cigarettes [11]. Also **Goff et al 2005** in their study stated that schizophrenic patients have high risk of heart diseases due to higher rate of cigarette smoking [12].

In BMI among cases mean was 21.72±2.58 and in control 21.56±2.61. Result was insignificant (p value= 0.261). Studies supporting the results are:-

Benjamin et al 2016 conducted systematic review and meta-analysis in 1137 participants and studied the association between first-episode psychosis and abnormal glycaemic control in them. They analysed body-mass index, triglycerides, etc in them **.**These analyses showed no significant difference between cases and controls in BMI and other indices[13].

Ryan et al 2003 in their study with 26 schizophrenic cases and 26 normal control conducted a cross-sectional study, and examined the prevalence of impaired fasting glucose tolerance in first-episode, drug-naive patients with schizophrenia. Patient's were assessed for independent risk factors for type II diabetes mellitus via body mass index, and etc. They found the result of mean BMI among cases and control was insignificant.[14]

In order to compared the difference in BMI, and metabolism parameters **Wu et al 2013** conducted tests including BMI, in both 70 drug-naïve, first-episode schizophrenia patients, and 44 normal healthy controls at baseline. BMI in cases was 20.34, in control was 19.63. No significant differences of baseline weight characteristics were found between groups[15].

We also did Comparison of clinical and metabolic characteristics between IGT and non-IGT schizophrenia patients(Table 8). Fischer Exact test was applied. P value was 0.0229 and result was significant. It was found that cigarette smoking has got significant association with impaired glucose metabolism. **Alberto C Frati et al 1996** in their study found that smoking impaires glucose tolerance[16].Many other studies like **Persson PG et al 2000**, **Nakanishi N et al 2000**,C **Meisinger et al 2006** supported our results[17]

CONCLUSION

On studying oral glucose tolerance test in 60 cases and 60 controls we found that maximum cases were of >37 age group, were male, married, hindu, illiterate, semiskilled by occupation, had no income, lived in nuclear family and rural locality, had negative family history of psychiatric illness had normal BMI. whereas maximum controls were of 28-32 age group, were male ,single, hindu ,graduate by education, professionals by occupation, had no income, lived in nuclear family in urban locality, had negative family history of psychiatric illness had normal BMI . PANSS scale was applied Mean positive, negative and general psychopathology score were 11.27,14.68,22.11 respectively. Cases with cigarette smoking were comparatively higher to contols, Statistical significant result was found. None of the sociodemographic factors except cigarette smoking was found to be significantly associated with impaired glucose tolerance test and through it we can say that cigarette smoking per se is a risk factor for abnormal glucose metabolism.

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