

METABOLIC PROFILE OF PSYCHIATRIC OPD PATIENTS AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Metabolic syndrome, identified as a global health crisis by WHO, affects 20-25% of the population, doubling the risk of death and tripling heart attack risk. Its prevalence is notably higher in those with psychiatric disorders, complicating treatment. Patients often exhibit metabolic abnormalities beyond central obesity, including hyperglycemia and dyslipidemia. Metabolic profiling, measuring metabolites' response to stimuli, offers insights into these conditions.

Aim of the study: The study aims to examine the metabolic profile of psychiatric patients at a tertiary care hospital in Chitradurga.

Methods: The study, conducted at Basaveshwara Medical College and Hospital in Chitradurga, Karnataka, involved 320 patients with psychiatric conditions. A semi-structured questionnaire gathered socio-demographic data after obtaining consent. Inclusion criteria for the control group included individuals of any age with a minimum six-month history of psychiatric illness. In contrast, exclusion criteria for the case group included chronic medical illness and pregnancy. Statistical analysis focused on patients completing a six-month follow-up utilizing SPSS software.

Result: The study examined 320 psychiatric patients, predominantly aged 11-21 years, with males comprising 52.5% and females 45.31%. Most patients were students or self-employed, with 40% having below primary education. Predominant psychiatric disorders were depressive disorder (37.81%), OCD (38.13%), and anxiety disorders (34.06%). Random Blood Sugar levels varied, with 58.44% normal and 40% elevated, averaging 7.01 mmol/L. Lipid profiles showed mean total cholesterol at 201.24 mg/dl, triglycerides at 195.57 mg/dl, HDL at 37.82 mg/dl, and LDL at 124.19 mg/dl. Metabolic syndrome prevalence was 37.19%.

Conclusion: This study highlights the prevalence of metabolic issues in psychiatric patients, posing a significant public health concern. Results show high metabolic disturbances, particularly in lipid profiles, varying by age and gender. Comprehensive metabolic assessments and interventions targeting modifiable risk factors are crucial in mental health care.

Keywords: Metabolic Profile, Psychiatric, OPD Patients

Introduction

Metabolic syndrome has been defined and acknowledged by the World Health Organization (WHO) as a well-established public health problem and an epidemic in the contemporary world ^[1]. Metabolic syndrome has been established to be a major public health issue in the developed as well as in the developing world due to the rising trends of urbanization, the aging population, and sedentary life especially due to the level of physical activity and diet changes ^[2]. It can be estimated that it influences 20 to 25% of the global population; this condition means that the risk of death increases two times, and the risk of a heart attack three times ^[3, 4]. Alarmingly, the prevalence of MetS is reported to be 2-3 times higher in people with psychiatric disorders ^[5]. The intricate relationship between MetS and psychiatric disorders adds another layer of complexity to this health challenge ^[6]. MetS was reported in 19-63% of schizophrenic patients, 42.4% of patients with schizoaffective disorder, 24.6-50% of bipolar patients, and 12-36% of patients with recurrent depression ^[7]. Psychiatric patients exhibit an elevated prevalence of not only MetS like central obesity but also other types of MetS such as hyperglycemia, dyslipidemia, and hypertension ^[8]. The interconnectedness of these factors highlights the need for a comprehensive investigation into the metabolic status of psychiatric patients through metabolic profiling. The measurement of the complement of low-molecular-weight metabolites and their intermediates in unicellular to multicellular biological systems is known as metabolic profiling. This measurement shows the dynamic response to pathophysiological (e.g., disease morbidity) stimuli. Many opportunities have arisen to investigate changes or to improve our understanding of intrinsic biological variation within subpopulations (the metabolic phenotype). These opportunities are made possible by the measurement and interpretation of the endogenous metabolite profile from a biological sample (usually urine, serum, or biological tissue extract) ^[9]. The metabolic profile of psychiatric patients encompasses various parameters, including but not limited to glucose

metabolism, lipid profile, and body composition ^[10]. Imbalances in these parameters not only predispose individuals to chronic conditions such as diabetes and cardiovascular disease but can also influence the pathophysiology and severity of psychiatric disorders ^[11].

Methodology and Materials

This study was a cross-sectional design being implemented at the Department of Psychiatry in Basaveshwara Medical College and Hospital located in Chitradurga, Karnataka. A total of 320 patients were actively recruited and investigated in the study. The socio-demographic data were to be collected comprehensively; A semi-structured questionnaire was designed meticulously for this purpose. After introducing the study and its objectives, consent forms were provided to the participants and completed by each of them prior to data collection.

Inclusion criteria

Inclusion criteria for the control group encompassed individuals of any age, both males and females, who had experienced a psychiatric condition for a minimum duration of six months.

Exclusion criteria

Patients with diabetes mellitus (DM) or cardiovascular disorders and the effect of psychotropic medications were excluded.

Statistical analysis

Based on the six-month follow-up survey, statistical analysis was conducted exclusively on the data of respondents who were categorized as patients. All the data were well summarized either in tables or graphs depending on its properties and basic significance with an adequate description. Data handling and analysis were done using the Statistical Package for the Social Sciences (SPSS) application on the Windows Operating system. Continuous parameters were used with Mean \pm SD, on the other hand, categorical parameters were expressed by frequency and percentage.

Result

In this retrospective study, most of the 113(35.31%) psychiatric patients were aged 21-30 years, and the second most, 112(35%) participants were from the age range less than 20 years, respectively (Table 1). Figure 1 illustrates the gender distribution, with males

comprising the majority (52.5%), followed by females (45.31%), and a small percentage identifying as other genders (2.19%). Thirty percent of the psychiatric patients were students, 94(29.38%) were unemployed, and 53(16.56%) patients were housewives, respectively. Based on educational status, 40.00% of patients were below primary education (Table 2). Among all the study subjects, the most prevalent rates of psychiatric disorders include depressive disorder at 37.81%, OCD at 38.13%, and anxiety disorders at 34.06%, respectively. Table 3 displays the patients' RBS (Random Blood Sugar) status, showing that the majority had normal RBS levels (58.44%), while over 40% had elevated levels. The mean RBS was 7.01 mmol/L with a standard deviation of 6.28 mmol/L, ranging from 4 to 60 mmol/L. Regarding lipid profiles, the mean total cholesterol level was 201.24 mg/dl, with a standard deviation of 34.63 mg/dl, ranging from 4 to 290 mg/dl. The average triglyceride level was 195.57 mg/dl, with a standard deviation of 87.65 mg/dl, varying from 50 to 350 mg/dl. High-density lipoprotein (HDL) averaged 37.82 mg/dl, with a standard deviation of 12.56 mg/dl, ranging from 25 to 150 mg/dl. Low-density lipoprotein (LDL) averaged 124.19 mg/dl, with a standard deviation of 18.51 mg/dl, ranging from 35 to 190 mg/dl (Table 4). These findings provide valuable insights into the lipid profile distribution within the psychiatric patient population, serving as essential indicators for their overall health status. Figure 2 indicates that subjects with the metabolic syndrome were 37.19%.

Table 1: Age distribution of the study population (N=320).

Age group (in years)	Frequency (n)	Percentage (%)
<20	112	35.00
21-30	113	35.31
31-40	57	17.81
41-50	26	8.13
>50	12	3.75
Total	320	100.00
Mean± SD	26.85±11.98	

Fig 1: Gender distribution of the study population (N=320).

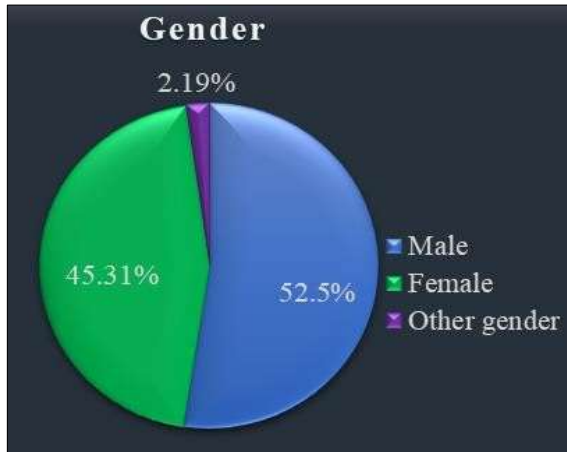


Table 2: Socio-demographical status of the study population (N=320).

Variables	Frequency (n)	Percentage (%)
Occupation		
Self-employed	94	29.38
Student	96	30.00
Housewife	53	16.56
Job holder	45	14.06
Farmer	8	2.50
Others	24	7.50
Educational status		
Below primary	128	40.00
Under S.S.C	45	14.06
SSC	55	17.19
HSC	33	10.31
Graduate	56	17.50
Others	3	0.94

Table 3: RBS status of the study population.

Variables	Frequency (n)	Percentage (%)
Low	2	0.63
Normal	187	58.44
High	131	40.94
Mean±SD	7.01±6.28	
Min-Max (mmol/L)	4-60	

Table 4: Level of lipid profile of the psychiatric patients.

Variables	Mean ± SD	Min- Max
Lipid Profile Level (mg/dl)	201.24±34. 63	4-290
TG (mg/dl)	195.57±87. 65	50-350
HDL (mg/dl)	37.82±12.5 6	25-150
LDL (mg/dl)	124.19±18. 51	35-190

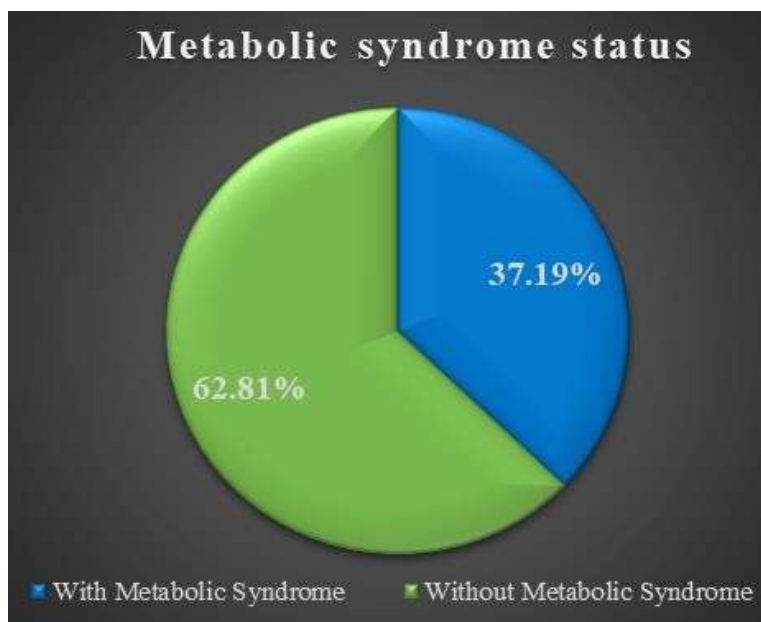


Fig 2: Metabolic syndrome status of the study population (N=320).

Discussion

This study revealed high levels of metabolic syndrome among subjects who had been diagnosed of psychiatric disorders. This was in line with other studies in other countries showing that patients with psychiatric conditions experience a higher level of metabolic syndrome than the non- psychiatric control patients ^[12]. Possible reasons that might explain the high prevalence of metabolic syndrome among patients with a psychiatric disorder include; most psychiatric patients having limited physical activity due to their functional disability, psychological stress, alcohol consumption, smoking, and poor access to medical care ^[12- 14]. Participants aged 21 to 30 were found to be at higher risk of MetS as most of the psychiatric patients were seen at that age level. A cross-sectional study performed in Ghana found that age greater than 53 years was not a significant factor influencing MS ^[15]. In contrast, a finding of the previous study reported in Kashmir and Jimma, Ethiopia concluded that metabolic syndrome is prevalent in aged people ^[16, 17]. Muscle, fat, and other tissues, including blood vessels, can lose their insulin sensitivity as a person ages, leading to dysglycemia and dyslipidemia ^[18]. When age rises, arteries become more rigid, and blood pressure rises because of which large arteries lose elastin fibers but gain stiffer collagen fibers in the media ^[19]. Thus, disparities between the two study groups might be attributed to differences in socioeconomic status and utilization of healthcare services. Furthermore, the

current study established that human participants who were female in specific count to 45. These observations further confirm that the highest percentage of male participants (52.5%) affirm other studies conducted in Ethiopia^[12]. However, they said that the participants of the female sex had a greater propensity to metabolic syndrome than those in the male sex. As to the reasons for this gender gap are differences in anatomical structures, activity levels, and psychological state of the male and female sexes. In terms of occupation, the majority of individuals were either students (30.00%) or unemployed (29.38%). Regarding educational status, the distribution revealed a notable percentage of participants with educational attainment below the primary level (40.00%). A study has seen a similar case of the increased number of patients with illiteracy^[20]. The three most common psychological conditions among all subjects of our study were anxiety disorders (34.06%), OCD (38.13%), and depressive disorders (37.81%) (Figure 2). Woldekidan *et al.* found major depression in 33.3% of participants and generalized anxiety in 4.3% of patients^[21]. A study conducted in Iran found a significant number of OCD patients with metabolic syndrome which is comparable with our study^[22]. According to our study, the blood sugar level was higher for 40.94% of patients. This finding is similar to another finding where they found a high fasting blood sugar level in 40.6% of patients^[12]. The magnitude of lipid profile level was higher among patients with psychiatric disorders with a mean standard value of 201.24 ± 34.63 mg/dl and for TG the mean standard value was 195.57 ± 87.65 mg/dl. The mean standard value of high-density lipoprotein dyslipidemia was 37.82 ± 12.56 mg/dl among psychiatric patients, where the LDL level was 124.19 ± 18.51 mg/dl which was higher than the HDL level. This was similar to several other studies as all the parts of metabolic syndrome were highly prevalent in psychiatric patients compared to non-psychiatric subjects^[20, 22-24]. For instance, Ratliff *et al.* observed that the TG level was 133.6 ± 60.6 mg/dl, the HDL level was 47.9 ± 16.7 mg/dl, while the LDL level was 106.8 ± 37.0 mg/dl for psychiatric patients^[24]. This can be due to their different lifestyle as well as socio-economic status which may affect metabolic function and result in impaired lipid profile. The prevalence rate of metabolic syndrome in this study is 37.19% among all participants which is comparable with the findings of Rahman *et al.*^[25].

Limitation of the study: The study has several limitations that should be acknowledged. Firstly, the retrospective study design limits the establishment of causal relationships between metabolic parameters and psychiatric disorders.

Additionally, we were unable to accurately measure the BMI of patients due to their

psychiatric condition. Additionally, the exclusion criteria, such as chronic medical illness, may have led to the underrepresentation of specific patient groups, potentially impacting the generalizability of the findings.

Conclusion and Recommendations

In conclusion, this study sheds light on the metabolic status among psychiatric patients, indicating a significant public health challenge. Our findings reveal a high burden of metabolic disturbances, including lipid profile among psychiatric patients, with notable variations across age groups and gender. The metabolic profile of psychiatric patients underscores the necessity for comprehensive metabolic assessments within mental health care settings. Future interventions should target modifiable risk factors and integrate metabolic screening into routine psychiatric care to mitigate the adverse health consequences associated with metabolic syndrome.

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