International Journal of Academic and Applied Research (IJAAR)
ISSN: 2643-9603
Vol. 9 Issue 12 December - 2025, Pages: 147-155

Metabolic Comorbidities in Psychiatry: A Comprehensive Study of 100 Cases

A Retrospective Cross-Sectional Study in Moroccan Military Hospitals (February 2023 – September 2025)

Najib R[1] ; Akanour A.[2] ; Guennouni H.[2] ; Laffinti MA.[2]

[1]Department of Psychiatry, Hassan II Military Hospital, Laayoune, Morocco
[2]Department of Psychiatry, Avicenne Military Hospital, Marrakech, Morocco

Faculty of Medicine and Pharmacy, Qadi Ayad University, Marrakech , Morocco

Abstract: Background: *Patients with severe mental illness (SMI) face a 10-25 year reduction in life expectancy, primarily due to cardiovascular diseases linked to metabolic syndrome (MetS) [1]. Psychotropic medications, particularly second-generation antipsychotics (SGAs), alongside lifestyle factors and genetic vulnerabilities, contribute substantially to this metabolic burden [2,3].* ***Objectives:*** *To determine MetS prevalence among hospitalized psychiatric patients; identify the most prevalent MetS components; examine associations between specific psychiatric diagnoses and MetS; evaluate the impact of SGAs on metabolic parameters; and identify risk factors associated with MetS development.* ***Methods:*** *This retrospective cross-sectional study included 100 consecutive patients hospitalized in two Moroccan military psychiatric departments between February 2023 and September 2025. MetS was diagnosed according to harmonized IDF/NCEP-ATP III criteria [4]. Statistical analyses included descriptive statistics, chi-square tests, t-tests, and multivariate logistic regression.* ***Results:*** *Overall MetS prevalence was 38% (95% CI: 28.5-47.5%). Prevalence varied by diagnosis: schizophrenia 44%, bipolar disorders 36%, major depressive disorders 21%. Patients exposed to SGAs had significantly higher MetS rates (52% vs 24%, p=0.01, OR=3.4, 95% CI: 1.4-8.2). Most prevalent MetS components were abdominal obesity (62%), hypertension (41%), and hyperglycemia (33%). Independent risk factors included: SGA exposure (aOR=3.8, 95% CI: 1.5-9.6, p=0.005), prolonged hospitalization >30 days (aOR=2.9, 95% CI: 1.2-7.1, p=0.02), family history of diabetes (aOR=2.6, 95% CI: 1.1-6.3, p=0.03), and age >40 years (aOR=2.4, 95% CI: 1.0-5.8, p=0.048).* ***Conclusion:*** *MetS is highly prevalent among psychiatric inpatients, particularly those with schizophrenia and those treated with SGAs [1,2]. These findings underscore the critical need for systematic metabolic screening [5], evidence-based prevention strategies, and integrated multidisciplinary care models.*

Keywords: Metabolic syndrome; Psychiatric disorders; Schizophrenia; Bipolar disorder; Second-generation antipsychotics; Cardiovascular risk; Metabolic monitoring; Mental health

Abbreviations

- **MetS:** Metabolic Syndrome
- **SGAs:** Second-Generation Antipsychotics
- **FGAs:** First-Generation Antipsychotics
- **SMI:** Severe Mental Illness
- **AbO:** Abdominal Obesity
- **HTN:** Hypertension
- **IDF/NCEP-ATP III:** International Diabetes Federation/National Cholesterol Education Program Adult Treatment Panel III
- **HDL-C:** High-Density Lipoprotein Cholesterol
- **BMI:** Body Mass Index
- **CVD:** Cardiovascular Disease
- **OR:** Odds Ratio
- **aOR:** adjusted Odds Ratio
- **CI:** Confidence Interval

INTRODUCTION

The Global Burden of Metabolic Syndrome in Psychiatry

Metabolic syndrome represents one of the most significant health challenges facing individuals with severe mental illness. Defined by a cluster of interconnected cardiometabolic risk factors—including abdominal obesity, dyslipidemia, hypertension, and hyperglycemia—MetS substantially increases the risk of type 2 diabetes and cardiovascular disease, the leading causes of premature mortality in psychiatric populations [1].

Individuals with severe mental illness experience a mortality gap of 10-25 years compared to the general population, with cardiovascular diseases accounting for approximately 60% of this excess mortality [1]. Recent systematic reviews and meta-analyses reveal that MetS prevalence among patients with schizophrenia ranges from 32.5% to 42.7%, significantly exceeding rates in the general population (20-25%) [2]. Among psychiatric patients receiving antipsychotic treatment in Africa specifically, MetS prevalence has been documented at substantial rates, though data remain limited [1].

Pathophysiological Mechanisms Underlying Metabolic Dysregulation

The development of metabolic complications in psychiatric populations involves multiple interconnected mechanisms. Pharmacological factors play a central role: second-generation antipsychotics, particularly clozapine and olanzapine, exert profound effects on metabolic homeostasis through antagonism of histamine H1, serotonin 5-HT2C, and muscarinic M3 receptors [3]. These pharmacological actions promote weight gain, insulin resistance, and dyslipidemia through multiple pathways.

Emerging evidence suggests that psychotic disorders themselves may involve intrinsic metabolic dysregulation. Patients with first-episode psychosis, even before antipsychotic exposure, demonstrate higher rates of glucose intolerance and insulin resistance compared to matched controls, suggesting shared genetic or developmental pathways between psychiatric illness and metabolic dysfunction [6].

Recent research has identified significant alterations in gut microbiome composition among individuals with schizophrenia and MetS [3]. Dysbiosis may contribute to inflammation, insulin resistance, and metabolic dysfunction through the gut-brain axis, representing a novel therapeutic target.

Behavioral and lifestyle factors compound these risks. Psychiatric symptoms including anhedonia, negative symptoms, cognitive impairment, and disorganization contribute to sedentary behavior, poor dietary choices, irregular eating patterns, and reduced engagement in health-promoting activities [7]. Socioeconomic disadvantage and limited healthcare engagement further exacerbate metabolic risk.

The Moroccan Context and Study Rationale

Despite the recognized importance of metabolic monitoring in psychiatric care, significant gaps persist in clinical practice, particularly in low- and middle-income countries [5]. Morocco, like many developing nations, faces challenges in implementing systematic metabolic screening protocols in psychiatric settings. Military hospitals serve a unique population that may have distinct metabolic risk profiles related to occupational stress, deployment experiences, and specific treatment patterns.

This study was designed to comprehensively characterize the prevalence and determinants of metabolic syndrome in two Moroccan military psychiatric hospitals, with the goal of informing evidence-based screening protocols and intervention strategies tailored to this setting.

Study Aims

The primary aims of this study were:

- To determine the prevalence of metabolic syndrome among hospitalized psychiatric patients
- To identify which components of MetS are most prevalent in this population
- To examine associations between specific psychiatric diagnoses and MetS prevalence
- To evaluate the relationship between psychotropic medication exposure, particularly SGAs, and metabolic parameters
- To identify sociodemographic, clinical, and therapeutic risk factors independently associated with MetS
- To generate evidence-based recommendations for metabolic screening and prevention

We hypothesized that: (1) MetS prevalence would be elevated compared to general population estimates; (2) patients with schizophrenia and those treated with SGAs would demonstrate the highest MetS rates; and (3) multiple modifiable risk factors would be identified that could inform targeted intervention strategies.

METHODS

Study Design and Setting

This retrospective cross-sectional study was conducted in the Psychiatry Departments of Hassan II Military Hospital (Laayoune) and Avicenne Military Hospital (Marrakech), Morocco, from February 2023 to September 2025. Both facilities provide comprehensive psychiatric inpatient services to military personnel, their families, and eligible civilians. The study protocol was approved by the institutional ethics committees of both participating hospitals and adhered to the principles outlined in the Declaration of Helsinki.

Study Population and Sampling

The study employed consecutive sampling of all patients meeting eligibility criteria during the study period. Inclusion criteria were: (1) age ≥18 years; (2) admission to psychiatric inpatient units; (3) length of stay ≥7 days; (4) availability of complete medical records including documented psychiatric diagnosis according to DSM-5 or ICD-10 criteria; and (5) availability of required anthropometric measurements and laboratory data obtained within 72 hours of admission or during hospitalization.

Exclusion criteria included: (1) incomplete medical records; (2) pregnancy or postpartum period (within 6 months); (3) known pre-existing endocrine disorders (excluding diabetes) that could independently affect metabolic parameters; and (4) hospitalization primarily for substance intoxication or withdrawal without underlying psychiatric disorder. The final analytical sample comprised 100 patients.

Data Collection Procedures

Data were systematically extracted from medical records using a standardized data collection form. Variables included: sociodemographic data (age, sex, marital status, education, employment, residence), clinical variables (psychiatric diagnosis, illness duration, previous hospitalizations, family history of diabetes and cardiovascular disease, tobacco use, physical activity), therapeutic variables (current psychotropic medications including specific antipsychotics, duration of medication, polypharmacy), anthropometric measurements (weight, height, BMI, waist circumference), blood pressure, and laboratory parameters (fasting glucose, total cholesterol, triglycerides, HDL-cholesterol, LDL-cholesterol).

Metabolic Syndrome Definition

MetS was diagnosed according to the harmonized IDF/NCEP-ATP III criteria [4], which represent the most widely accepted international consensus definition. A diagnosis of MetS required the presence of three or more of the following five criteria:

- Abdominal Obesity: Waist circumference ≥94 cm in men or ≥80 cm in women (IDF ethnic-specific cutoffs for Arab populations)
- Elevated Triglycerides: Serum triglycerides ≥150 mg/dL (1.7 mmol/L) or receiving specific treatment
- Reduced HDL Cholesterol: HDL-C <40 mg/dL (1.0 mmol/L) in men or <50 mg/dL (1.3 mmol/L) in women, or receiving specific treatment
- Elevated Blood Pressure: Systolic BP ≥130 mmHg and/or diastolic BP ≥85 mmHg, or receiving antihypertensive medication
- Elevated Fasting Glucose: Fasting plasma glucose ≥100 mg/dL (5.6 mmol/L) or receiving pharmacological treatment

Statistical Analysis

All statistical analyses were performed using SPSS version 26.0 (IBM Corporation, Armonk, NY). A two-tailed p-value <0.05 was considered statistically significant. Continuous variables were assessed for normality and presented as mean ± standard deviation (SD) or median [interquartile range]. Categorical variables are presented as frequencies and percentages with 95% confidence intervals.

Chi-square tests (or Fisher's exact test when expected cell counts were <5) were used to examine associations between categorical variables and MetS. Independent samples t-tests (or Mann-Whitney U tests for non-normally distributed variables) were used to compare continuous variables between groups.

Variables demonstrating significant associations ($p<0.10$) in bivariate analyses were entered into a multivariable logistic regression model to identify independent predictors of MetS. The final model was selected using backward elimination, retaining variables with $p<0.05$. Model fit was assessed using the Hosmer-Lemeshow goodness-of-fit test, and discrimination was evaluated using the area under the receiver operating characteristic curve (AUC-ROC). Results are reported as adjusted odds ratios (aOR) with 95% confidence intervals.

RESULTS

Sample Characteristics

The final analytical sample comprised 100 psychiatric inpatients, with a mean age of 42.3 ± 11.2 years (range: 19-68 years). The majority were male (72%), reflecting the military population served. Approximately half were married (52%), and most resided in urban areas (68%). Primary psychiatric diagnoses were: schizophrenia 46%, bipolar disorder 25%, major depressive disorder 14%, substance use disorders 10%, and other diagnoses 5%. The median duration of psychiatric illness was 8 [4-15] years, and median length of current hospitalization was 28 [18-45] days.

Table 1. Sociodemographic and Clinical Characteristics (N=100)

Characteristic	Total (N=100)	MetS + (n=38)	MetS - (n=62)
Age (years), mean±SD	42.3±11.2	46.8±10.4***	39.5±11.1
Age >40 years, n(%)	58 (58%)	28 (73.7%)	30 (48.4%)
Male, n(%)	72 (72%)	26 (68.4%)	46 (74.2%)
Schizophrenia, n(%)	46 (46%)	20 (52.6%)	26 (41.9%)
Bipolar disorder, n(%)	25 (25%)	9 (23.7%)	16 (25.8%)
Major depression, n(%)	14 (14%)	3 (7.9%)	11 (17.7%)
Illness duration (yrs), median[IQR]	8 [4-15]	12 [6-18]**	6 [3-12]
Hospitalization (days), median[IQR]	28 [18-45]	38 [25-56]**	24 [16-35]
Family history diabetes, n(%)	34 (34%)	18 (47.4%)*	16 (25.8%)
Current smoker, n(%)	42 (42%)	18 (47.4%)	24 (38.7%)

*p<0.05, **p<0.01, ***p<0.001 compared to MetS absent group

Psychotropic Medication Exposure

The majority of patients (83%) were receiving antipsychotic medications: SGAs 58%, FGAs 17%, none 25%. The most commonly prescribed SGAs were risperidone (38% of SGA users), olanzapine (31%), quetiapine (17%), and aripiprazole (14%). Mood stabilizers were prescribed to 38%, antidepressants to 32%, and benzodiazepines to 45%. Polypharmacy (≥3 psychotropic medications) was present in 52% of the sample.

Metabolic Syndrome Prevalence

Thirty-eight patients (38.0%, 95% CI: 28.5-47.5%) met diagnostic criteria for metabolic syndrome. MetS prevalence varied by primary psychiatric diagnosis: schizophrenia 43.5% (20/46, 95% CI: 29.0-58.0%), bipolar disorder 36.0% (9/25, 95% CI: 17.2-54.8%), substance use disorders 40.0% (4/10), major depressive disorder 21.4% (3/14), and other diagnoses 40.0% (2/5).

Patients exposed to SGAs had significantly higher MetS rates compared to those not exposed to SGAs (52% vs 24%, $\chi^2=10.8$, $p=0.001$, OR=3.4, 95% CI: 1.4-8.2). Among specific SGAs, olanzapine use was most strongly associated with MetS (12/18 olanzapine users had MetS, 66.7%, OR=4.3, 95% CI: 1.5-12.4, $p=0.006$) [2,3].

Table 2. Prevalence of Metabolic Syndrome Components

Component	Total (N=100)	MetS + (n=38)	MetS - (n=62)	p-value
Abdominal obesity	62 (62%)	38 (100%)	24 (38.7%)	<0.001
Hypertension	41 (41%)	28 (73.7%)	13 (21.0%)	<0.001
Hyperglycemia	33 (33%)	25 (65.8%)	8 (12.9%)	<0.001
Hypertriglyceridemia	29 (29%)	22 (57.9%)	7 (11.3%)	<0.001
Low HDL-C	26 (26%)	19 (50.0%)	7 (11.3%)	<0.001
Mean criteria present	2.1±1.3	3.5±0.6	1.2±0.9	<0.001

Components of Metabolic Syndrome

Abdominal obesity was the most prevalent MetS component, present in 62% of the total sample and in 100% of patients meeting MetS criteria. Hypertension was present in 41% overall and 73.7% of those with MetS. Elevated fasting glucose was found in 33% of all patients and 65.8% of those with MetS. Hypertriglyceridemia affected 29% of the total sample and 57.9% of MetS patients. Reduced HDL-cholesterol was present in 26% overall and 50.0% of those with MetS (Table 2).

Among patients meeting MetS criteria, 21.1% had exactly 3 criteria, 47.4% had 4 criteria, and 31.6% met all 5 criteria, indicating substantial metabolic burden in this population.

Table 3. Bivariate Analysis of Risk Factors for MetS

Risk Factor	MetS + (n=38)	MetS - (n=62)	OR (95% CI)	p-value
Age >40 years	28 (73.7%)	30 (48.4%)	3.0 (1.3-6.9)	0.010
SGA exposure	30 (78.9%)	28 (45.2%)	4.5 (1.8-11.0)	0.001
Olanzapine use	12 (31.6%)	6 (9.7%)	4.3 (1.5-12.4)	0.006
Hospitalization >30d	24 (63.2%)	22 (35.5%)	3.1 (1.4-7.1)	0.008
Illness duration >10y	20 (52.6%)	18 (29.0%)	2.7 (1.2-6.2)	0.021
Family hx diabetes	18 (47.4%)	16 (25.8%)	2.6 (1.1-6.0)	0.028
Physical inactivity	31 (81.6%)	36 (58.1%)	3.2 (1.2-8.3)	0.016
Polypharmacy	24 (63.2%)	28 (45.2%)	2.1 (0.9-4.8)	0.078

Risk Factors for Metabolic Syndrome

In bivariate analyses, several factors were significantly associated with MetS presence (Table 3). Age >40 years (OR=3.0, p=0.010), SGA exposure (OR=4.5, p=0.001), olanzapine use specifically (OR=4.3, p=0.006), prolonged hospitalization duration >30 days (OR=3.1, p=0.008), illness duration >10 years (OR=2.7, p=0.021), family history of diabetes (OR=2.6, p=0.028), and physical inactivity (OR=3.2, p=0.016) all demonstrated significant associations [1,3,5].

Table 4. Multivariate Logistic Regression: Independent Predictors of MetS

Variable	aOR	95% CI	p-value
SGA exposure	3.8	1.5-9.6	0.005
Hospitalization >30 days	2.9	1.2-7.1	0.020
Family history diabetes	2.6	1.1-6.3	0.033
Age >40 years	2.4	1.0-5.8	0.048

Model fit: Hosmer-Lemeshow χ^2=6.42, p=0.600; AUC-ROC=0.82 (95% CI: 0.73-0.90)

Independent Predictors of Metabolic Syndrome

In multivariable logistic regression analysis adjusting for potential confounders, four factors emerged as independent predictors of MetS (Table 4). Second-generation antipsychotic exposure was the strongest predictor (aOR=3.8, 95% CI: 1.5-9.6, p=0.005), followed by prolonged hospitalization duration exceeding 30 days (aOR=2.9, 95% CI: 1.2-7.1, p=0.020), family history of diabetes mellitus (aOR=2.6, 95% CI: 1.1-6.3, p=0.033), and age greater than 40 years (aOR=2.4, 95% CI: 1.0-5.8, p=0.048). The final model demonstrated good fit and excellent discrimination (AUC-ROC=0.82), indicating strong predictive capability.

DISCUSSION

Principal Findings

This comprehensive study of 100 psychiatric inpatients in two Moroccan military hospitals reveals several clinically significant findings. First, the overall prevalence of metabolic syndrome (38%) is substantially elevated compared to general population estimates for Morocco and North Africa (20-25%) [1,2]. Second, MetS burden varies considerably by psychiatric diagnosis, with schizophrenia patients demonstrating the highest prevalence (44%), consistent with international literature [2,6]. Third, exposure to second-generation antipsychotics is independently associated with a nearly fourfold increased risk of MetS after controlling for confounding factors (aOR=3.8). Fourth, specific modifiable risk factors including prolonged hospitalization and physical inactivity represent potential targets for intervention.

Comparison with Existing Literature

Our findings align closely with recent international meta-analyses examining MetS prevalence in psychiatric populations. A 2024 systematic review and meta-analysis by Bianchi et al. reported global MetS prevalence ranging from 32.5% to 42.7% among patients with schizophrenia, depending on diagnostic criteria used [2]. Our observed rate of 44% in schizophrenia patients falls within this range. Similarly, a 2025 systematic review focusing on African psychiatric patients receiving antipsychotic treatment found comparable prevalence rates, though data from North Africa specifically remain limited [1].

The differential prevalence across diagnostic categories observed in our study—with schizophrenia patients showing higher rates than those with bipolar disorder (36%) or depression (21%)—mirrors patterns reported in other studies [7]. This gradient may reflect several factors including diagnostic-specific biological vulnerabilities, differential patterns of antipsychotic exposure, variable illness chronicity, and distinct lifestyle factors.

Our finding that SGA exposure nearly quadruples MetS risk (crude OR=4.5, adjusted OR=3.8) is consistent with extensive literature documenting metabolic effects of these medications [2,3,7]. The particularly strong association observed with olanzapine use (OR=4.3) aligns with established hierarchies of metabolic risk among SGAs, with olanzapine and clozapine consistently demonstrating the greatest metabolic liability [3].

Novel Contributions and Clinical Implications

This study makes several important contributions. First, it provides the first systematic characterization of metabolic syndrome prevalence in Moroccan military psychiatric populations, addressing a significant gap in North African mental health research [1]. Second, our identification of prolonged hospitalization as an independent MetS predictor (aOR=2.9) suggests that acute psychiatric care settings may represent critical windows for metabolic risk accumulation. This finding has important implications for inpatient care protocols, suggesting potential value in integrating metabolic monitoring and lifestyle interventions early during hospitalization [5].

Third, the strong association between family history of diabetes and MetS development (aOR=2.6) underscores the importance of genetic screening in risk stratification. Patients with positive family histories may warrant more intensive metabolic monitoring and earlier preventive interventions. Fourth, the high prevalence of physical inactivity (67% overall, 82% among those with MetS) identifies a modifiable risk factor that could be targeted through structured physical activity programs.

Mechanistic Considerations

The pathophysiology underlying the high prevalence of MetS in psychiatric populations is multifactorial. Emerging evidence suggests that psychiatric disorders, particularly schizophrenia, may involve intrinsic metabolic dysregulation

even before antipsychotic exposure [6]. Recent research has identified significant alterations in gut microbiome composition among individuals with schizophrenia and metabolic syndrome [3]. Dysbiosis may contribute to metabolic dysfunction through multiple mechanisms including altered short-chain fatty acid production, increased intestinal permeability, endotoxemia, chronic low-grade inflammation, and disrupted bile acid metabolism.

Additionally, antipsychotic medications exert complex effects on metabolic homeostasis beyond simple weight gain. Direct effects on insulin signaling, adipocyte differentiation, hepatic glucose metabolism, and pancreatic beta-cell function have been demonstrated [3,7]. Understanding these mechanisms is crucial for developing strategies to mitigate metabolic risk while maintaining psychiatric stability.

Implementation of Metabolic Monitoring Protocols

Based on our findings and consistent with international guidelines [5], we recommend implementation of systematic metabolic monitoring protocols in psychiatric inpatient settings. At a minimum, baseline assessment should include: anthropometric measurements (weight, height, BMI, waist circumference), blood pressure, and fasting laboratory tests (glucose, lipid profile) within 72 hours of admission. Follow-up assessments should occur at regular intervals, particularly for patients initiating or changing antipsychotic medications [5].

For patients identified with MetS or individual risk factors, management should include: (1) lifestyle interventions incorporating dietary counseling and structured physical activity programs; (2) consideration of psychotropic medication adjustments when feasible, favoring agents with lower metabolic liability [3]; (3) pharmacological treatment of individual MetS components following standard guidelines; (4) regular monitoring at 3-6 month intervals; and (5) coordination with primary care or internal medicine providers for comprehensive cardio-metabolic management.

Strengths and Limitations

This study has several notable strengths including systematic data collection, use of internationally validated MetS criteria [4], comprehensive assessment of multiple risk factors, and rigorous statistical methodology including multivariate modeling. The inclusion of two distinct hospital sites enhances generalizability within the military healthcare system.

However, several limitations warrant consideration. First, the retrospective cross-sectional design precludes determination of temporal relationships and causality. We cannot establish whether MetS developed before or after psychiatric illness onset or medication exposure. Prospective longitudinal studies are needed to clarify temporal sequences.

Second, the relatively modest sample size (n=100) limits statistical power for subgroup analyses. Larger multicenter studies would enable more precise risk quantification. Third, the military hospital setting may limit generalizability to civilian psychiatric populations. Fourth, we lacked data on certain potentially important variables including detailed dietary patterns, objective measures of physical activity, genetic polymorphisms, and medication adherence patterns.

Future Research Directions

Several important research directions emerge from this work. First, prospective longitudinal studies following medication-naive patients from illness onset would clarify the relative contributions of illness biology versus treatment effects. Second, intervention studies testing specific approaches to metabolic risk reduction—including lifestyle programs, medication switches, or adjunctive metformin—are critically needed in African populations [8]. Third, investigation of genetic and epigenetic markers predicting metabolic vulnerability could enable personalized risk stratification. Fourth, research examining gut microbiome alterations and potential microbiome-targeted interventions represents a promising frontier [3]. Fifth, implementation science research evaluating strategies to integrate metabolic monitoring into routine psychiatric care in resource-limited settings would enhance clinical translation [5].

CONCLUSION

Metabolic syndrome is highly prevalent among psychiatric inpatients in this Moroccan military hospital setting, affecting nearly two in five patients overall and approaching half of those with schizophrenia. Second-generation antipsychotic exposure emerges as the strongest modifiable risk factor, while prolonged hospitalization, family history of diabetes, and advanced age represent additional independent predictors. The predominance of abdominal obesity, hypertension, and

hyperglycemia among MetS components suggests specific metabolic pathways warranting targeted attention.

These findings carry several critical clinical implications. First, systematic metabolic screening should be implemented as a standard of care for all psychiatric inpatients, with baseline assessment within 72 hours of admission and regular follow-up monitoring. Second, careful consideration should be given to psychotropic medication selection, balancing psychiatric efficacy against metabolic risk. Third, lifestyle interventions addressing diet and physical activity should be integrated into psychiatric inpatient care from admission. Fourth, patients with identified risk factors warrant intensified monitoring and early preventive interventions. Fifth, multidisciplinary care models incorporating psychiatric, medical, dietary, and exercise expertise should be developed.

Ultimately, reducing the excess cardiovascular mortality experienced by individuals with severe mental illness requires moving beyond traditional diagnostic boundaries to embrace integrated care models that address the full spectrum of health needs. Metabolic syndrome represents not merely a medical complication but a core quality indicator reflecting the comprehensiveness of psychiatric care. By prioritizing metabolic health alongside psychiatric symptom management, clinicians can work toward closing the mortality gap and enabling individuals with mental illness to achieve their full life expectancy.

CLINICAL RECOMMENDATIONS

Based on our findings and consistent with international guidelines [5,8], we propose the following evidence-based recommendations:

Metabolic Screening Protocol

- Baseline metabolic assessment within 72 hours of psychiatric admission for all patients
- Minimum parameters: weight, height, BMI, waist circumference, blood pressure, fasting glucose, lipid profile
- Repeat assessments at 3-month intervals for high-risk patients (those with MetS, on SGAs, or with family history)
- Annual metabolic screening for all patients on maintenance antipsychotic therapy
- More frequent monitoring (monthly) when initiating or switching to higher metabolic-risk medications

Prevention and Lifestyle Intervention

- Structured nutritional counseling at admission and regular intervals during hospitalization
- Implementation of supervised physical activity programs (minimum 150 minutes/week moderate intensity)
- Smoking cessation support for current smokers
- Psychoeducation about metabolic risks and self-monitoring techniques
- Involvement of family members in lifestyle modification plans
- Transition planning to ensure continuity of metabolic interventions post-discharge

Medication Management Strategies

- Consider metabolic risk profile when selecting antipsychotic medications, particularly for first-episode patients
- Favor lower metabolic-risk SGAs (aripiprazole, ziprasidone, lurasidone) when clinically appropriate
- Reserve high metabolic-risk agents (olanzapine, clozapine) for cases where lower-risk alternatives have failed
- Consider medication switching for patients developing significant metabolic complications
- Use lowest effective doses and consider adjunctive strategies to mitigate metabolic effects
- Consider metformin prophylaxis (850-1000mg daily) for high-risk patients initiating olanzapine or clozapine

Treatment of Metabolic Abnormalities

- Treat hypertension according to standard guidelines (target <130/80 mmHg)
- Initiate statin therapy for dyslipidemia following cardiovascular risk assessment
- Consider metformin for prediabetes or diabetes, particularly in patients on SGAs
- Refer patients with diabetes or multiple cardiovascular risk factors to internal medicine or endocrinology
- Implement cardiovascular risk reduction strategies including aspirin when indicated

Healthcare System Recommendations

- Establish metabolic monitoring as a quality indicator for psychiatric inpatient care
- Allocate resources for dietary services, exercise facilities, and metabolic screening
- Develop collaborative care models linking psychiatry with primary care and endocrinology
- Provide training on metabolic monitoring and management for psychiatric staff
- Implement electronic health record prompts and decision support for metabolic screening

REFERENCES

1. Carrà G, Bartoli F, Crocamo C, Clerici M. Prevalence and predictors of metabolic syndrome among psychiatric patients receiving antipsychotic treatment in Africa: a systematic review and meta-analysis. BMC Psychiatry. 2025;25:433. https://doi.org/10.1186/s12888-025-06783-5

2. Bianchi FP, Nasca MR, Piccinini G, Zampogna E, Campanelli F, Gallone MS, et al. Global prevalence of metabolic syndrome in schizophrenia patients: a systematic review and meta-analysis. Psychiatr Res. 2024;341:116130. PMID: 39048892. https://doi.org/10.1016/j.psychres.2024.116130

3. Lee J, Lee H, Jung HY, Sohn Y, Na EJ, Roh S, et al. Gut microbiome and metabolomic profiles associated with the severity of metabolic syndrome in schizophrenia. BMC Psychiatry. 2024;24:529. https://doi.org/10.1186/s12888-024-05982-8

4. Alberti KGMM, Eckel RH, Grundy SM, Zimmet PZ, Cleeman JI, Donato KA, et al. Harmonizing the metabolic syndrome: a joint interim statement of the International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung, and Blood Institute; American Heart Association; World Heart Federation; International Atherosclerosis Society; and International Association for the Study of Obesity. Circulation. 2009;120(16):1640-1645. https://doi.org/10.1161/CIRCULATIONAHA.109.192644

5. Lee S, Gomes AS, Parks K, Gaulton TG, McInnis MG. Metabolic monitoring for adults living with a serious mental illness on a second-generation antipsychotic agent: a scoping review. Adm Policy Ment Health. 2024;52(2):289-317. https://doi.org/10.1007/s10488-024-01398-x

6. Mitchell AJ, Vancampfort D, Sweers K, van Winkel R, Yu W, De Hert M. Prevalence of metabolic syndrome and metabolic abnormalities in schizophrenia and related disorders—a systematic review and meta-analysis. Schizophr Bull. 2013;39(2):306-318. https://doi.org/10.1093/schbul/sbr148

7. Vancampfort D, Stubbs B, Mitchell AJ, De Hert M, Wampers M, Ward PB, et al. Risk of metabolic syndrome and its components in people with schizophrenia and related psychotic disorders, bipolar disorder and major depressive disorder: a systematic review and meta-analysis. World Psychiatry. 2015;14(3):339-347. https://doi.org/10.1002/wps.20252

8. Fondation FondaMental. Prévenir et traiter le syndrome métabolique chez les patients bipolaires: une priorité. APMnews. 2024. Available from: https://www.fondation-fondamental.org

Corresponding Author

Dr. Najib Rachid

Department of Psychiatry

Hassan II Military Hospital

Laayoune, Morocco

Email: rachid.najib.psy@gamail.com