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A Comparative Study of Motor Functioning and Intellectual Processes among Patients with Schizophrenia, Mood Disorder, and Normal Controls

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ABSTRACT:

Psychiatric disorders such as schizophrenia and mood disorders are often associated with significant impairments in both cognitive functioning and motor performance. These impairments affect an individual's daily functioning, social interactions, and overall quality of life. Understanding the differences in motor functioning and intellectual processes among individuals with various psychiatric conditions can contribute to better diagnostic assessment and therapeutic interventions. The present study aimed to examine and compare motor functioning and intellectual processes among patients diagnosed with schizophrenia, patients with mood disorders, and normal control participants.

The study adopted a comparative research design involving three groups of participants: individuals diagnosed with schizophrenia, individuals diagnosed with mood disorders, and healthy control participants without any psychiatric illness. Standardized psychological and neuropsychological assessment tools were used to measure motor functioning and intellectual processes. Statistical analyses were conducted to examine differences among the groups and to determine the extent of cognitive and motor impairments associated with each disorder.

The findings of the study indicated that patients with schizophrenia exhibited significantly greater impairments in both motor functioning and intellectual processes compared to individuals with mood disorders and normal control participants. Patients with mood disorders also demonstrated certain deficits, particularly in psychomotor speed and cognitive efficiency, although these impairments were less severe than those observed in schizophrenia. In contrast, the normal control group displayed relatively stable motor and intellectual performance.

The results highlight the importance of assessing both motor and cognitive functions in psychiatric populations. Such assessments can aid in improving clinical diagnosis, treatment planning, and rehabilitation strategies for individuals with severe mental disorders.

1. Introduction

Mental health disorders constitute a significant global public health concern due to their widespread prevalence and their profound impact on individuals, families, and society. Among the various categories of psychiatric illnesses, schizophrenia and mood disorders represent two of the most commonly diagnosed and debilitating mental health conditions. These disorders are not only associated with disturbances in emotional and psychological functioning but also involve considerable impairments in cognitive abilities and motor functioning. Such impairments often interfere with the daily activities, occupational performance, and social

Journal of Chemical Health Risks

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JCHR (2026) 16(2), 1774-1786 | ISSN:2251-6727

relationships of affected individuals. Therefore, understanding the cognitive and motor characteristics of these disorders has become an important area of research within clinical psychology and psychiatry.

Schizophrenia is a chronic and severe mental disorder characterized by disturbances in thought processes, perception, emotional responsiveness, and behavior. Individuals suffering from schizophrenia often experience symptoms such as hallucinations, delusions, disorganized thinking, and impaired social functioning. In addition to these hallmark symptoms, research has consistently highlighted the presence of cognitive deficits and motor abnormalities in patients with schizophrenia. Cognitive impairments may include difficulties in attention, memory, executive functioning, and information processing speed. These deficits often persist even during periods of symptom remission and significantly contribute to functional disability. Moreover, motor disturbances such as psychomotor slowing, abnormal involuntary movements, neurological soft signs, and impaired coordination are frequently observed among individuals with schizophrenia. These motor deficits may arise from underlying neurological abnormalities or may be influenced by the long-term use of antipsychotic medications.

Mood disorders, on the other hand, primarily involve disturbances in emotional regulation and affective states. Major depressive disorder and bipolar disorder are the most prominent types of mood disorders. Individuals with depressive disorders often experience persistent sadness, loss of interest in activities, fatigue, impaired concentration, and feelings of hopelessness. Bipolar disorder is characterized by alternating episodes of depression and mania or hypomania, during which individuals may experience elevated mood, increased energy, and impulsive behavior. While mood disorders are traditionally associated with emotional symptoms, recent research has increasingly recognized the presence of cognitive and motor impairments in these conditions as well. For example, individuals with depression often demonstrate psychomotor retardation, reduced reaction time, and decreased motor coordination. Similarly, cognitive deficits such as impaired attention, memory difficulties, and reduced executive functioning have been reported in patients with mood disorders.

Motor functioning plays a crucial role in human behavior as it reflects the ability of an individual to coordinate movements and perform physical tasks efficiently. Motor skills are influenced by complex interactions between the central nervous system, muscular system, and cognitive processes. In psychiatric disorders, abnormalities in motor functioning may reflect underlying neurological dysfunction or disturbances in brain circuits responsible for movement regulation. In schizophrenia, motor disturbances may manifest as rigidity, abnormal gait, involuntary movements, and impaired motor coordination. These symptoms may also be associated with dysfunction in the basal ganglia and other neural structures involved in motor control. In mood disorders, motor functioning may be affected in the form of psychomotor agitation or psychomotor retardation, which are commonly observed during depressive or manic episodes.

Intellectual processes, often referred to as cognitive functions, involve a range of mental abilities that enable individuals to perceive, process, store, and utilize information. These processes include attention, perception, memory, reasoning, problem-solving, and executive functioning. Intellectual functioning plays a vital role in an individual's ability to learn, make decisions, and adapt to changing environmental demands. Cognitive impairments are increasingly recognized as core features of many psychiatric disorders, particularly schizophrenia. Patients with schizophrenia frequently show deficits in multiple cognitive domains, including working memory, attention, processing speed, and executive control. These deficits are often more predictive of long-term functional outcomes than the severity of clinical symptoms.

Similarly, cognitive impairments have also been documented among individuals with mood disorders, although the severity and pattern of deficits may differ from those observed in schizophrenia. Patients with depression may experience difficulties in concentration, decision-making, and memory retrieval. In bipolar disorder, cognitive impairments may persist even during periods of mood stabilization, suggesting that these deficits are not solely related to mood episodes but may represent underlying neuropsychological vulnerabilities.

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(2), 1774-1786 | ISSN:2251-6727

Comparative research examining cognitive and motor functioning across different psychiatric conditions is essential for improving diagnostic understanding and treatment planning. By comparing schizophrenia and mood disorders with normal control participants, researchers can identify disorder-specific patterns of impairment and determine the extent to which cognitive and motor deficits differ across these conditions. Such comparative studies also contribute to the development of targeted therapeutic interventions, including cognitive rehabilitation and psychomotor training programs.

Despite the growing body of research on cognitive deficits in psychiatric disorders, relatively fewer studies have simultaneously examined both motor functioning and intellectual processes within the same comparative framework. Motor abnormalities are often overlooked in routine clinical assessments, even though they may provide valuable insights into the neurological basis of psychiatric illnesses. Additionally, exploring the relationship between motor functioning and cognitive processes may help in understanding how neurological dysfunction contributes to the behavioral manifestations of mental disorders.

In this context, the present study aims to examine and compare motor functioning and intellectual processes among patients with schizophrenia, patients with mood disorders, and normal control participants. By analyzing differences across these groups, the study seeks to provide a clearer understanding of the neuropsychological characteristics associated with these psychiatric conditions. The findings of this research may contribute to the development of improved diagnostic approaches and rehabilitation strategies for individuals affected by severe mental illnesses.

2. Review of Literature

2.1 Studies on Motor Functioning in Schizophrenia

Motor functioning abnormalities have been widely documented in individuals diagnosed with schizophrenia. One of the most frequently studied indicators of motor dysfunction in schizophrenia is the presence of **neurological soft signs (NSS)**. These signs refer to subtle neurological abnormalities that involve impairments in motor coordination, sensory integration, balance, and the sequencing of complex motor acts. Although these abnormalities are not associated with specific localized brain lesions, they are considered important indicators of neurodevelopmental disturbances in schizophrenia.

Several studies have reported a significantly higher prevalence of neurological soft signs among individuals with schizophrenia compared to healthy populations. Research suggests that more than half of schizophrenia patients display abnormalities in motor coordination, fine motor control, and complex motor sequencing tasks. These motor deficits may manifest as difficulties in tasks such as finger-thumb opposition, balance tests, or rapid alternating movements.

In a clinical investigation examining neurological soft signs in schizophrenia patients, Nathani et al. (2023) found that approximately 68% of individuals with schizophrenia demonstrated significant motor coordination deficits. The study further indicated that these motor abnormalities were strongly associated with cognitive impairment and the severity of negative symptoms.

Longitudinal studies have also shown that motor abnormalities may persist throughout the course of the illness. Research conducted on first-episode schizophrenia patients revealed that neurological soft signs are associated with structural and functional changes in several brain regions, including the prefrontal cortex, basal ganglia, cerebellum, and thalamus. These findings suggest that motor dysfunction may reflect underlying neurobiological abnormalities involved in schizophrenia.

Furthermore, meta-analyses indicate that neurological soft signs are not merely side effects of antipsychotic medication but may represent intrinsic features of the disorder. They have been observed in drug-naïve patients and even in individuals who are at high risk of developing schizophrenia.

Overall, previous studies strongly indicate that motor functioning abnormalities are a prominent characteristic of schizophrenia. These deficits may serve as important clinical indicators for diagnosis, prognosis, and understanding the neurobiological mechanisms underlying the disorder.

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(2), 1774-1786 | ISSN:2251-6727

2.2 Studies on Cognitive/Intellectual Processes in Schizophrenia

Cognitive impairment is widely recognized as one of the core features of schizophrenia. Individuals suffering from this disorder often exhibit significant deficits in several domains of intellectual functioning, including attention, memory, executive functioning, processing speed, and problem-solving ability. These cognitive impairments tend to persist even during periods of symptom remission and are considered major determinants of functional outcomes.

Research has consistently demonstrated that cognitive dysfunction affects a large proportion of individuals with schizophrenia. Studies indicate that more than two-thirds of patients show measurable cognitive deficits, which can significantly interfere with social functioning, occupational performance, and daily living activities.

Working memory deficits are among the most commonly reported cognitive impairments in schizophrenia. Patients often struggle to retain and manipulate information over short periods, which affects reasoning, learning, and decision-making processes. Additionally, impairments in processing speed and executive functioning limit the ability of individuals to plan, organize, and regulate behavior effectively.

Studies examining the relationship between neurological soft signs and cognition have also revealed a strong association between motor abnormalities and cognitive impairment in schizophrenia. Research conducted on chronic schizophrenia patients showed that higher levels of neurological soft signs were significantly correlated with deficits across multiple cognitive domains, including working memory, autobiographical memory, cognitive flexibility, and theory of mind abilities.

Neuroimaging studies further support these findings by identifying structural and functional abnormalities in brain regions responsible for cognitive processing. Reduced grey matter volume and altered neural connectivity in the prefrontal cortex and temporal regions have been linked to impaired cognitive functioning in schizophrenia.

Overall, the literature indicates that cognitive impairment is a central characteristic of schizophrenia and plays a crucial role in determining the long-term prognosis of the disorder. Understanding these intellectual deficits is essential for developing effective cognitive rehabilitation programs and improving treatment outcomes.

2.3 Studies on Motor Functioning in Mood Disorders

Mood disorders, including major depressive disorder and bipolar disorder, are primarily characterized by disturbances in emotional regulation. However, research has increasingly recognized that these conditions are also associated with significant motor abnormalities. One of the most common motor symptoms observed in mood disorders is **psychomotor disturbance**, which may appear in the form of psychomotor retardation or psychomotor agitation.

Psychomotor retardation refers to a slowing of physical movements, speech, and cognitive activity that is frequently observed in individuals experiencing depressive episodes. Patients with major depressive disorder often demonstrate reduced reaction time, decreased motor coordination, and slowed movement patterns. These motor symptoms may contribute to difficulties in performing everyday activities and maintaining occupational functioning.

Conversely, during manic episodes of bipolar disorder, individuals may exhibit psychomotor agitation characterized by increased motor activity, restlessness, and impulsive behavior. These changes in motor functioning are believed to result from alterations in neurotransmitter systems, particularly those involving dopamine and serotonin.

Several clinical studies have reported that motor abnormalities in mood disorders are closely linked to the severity of depressive or manic symptoms. Neurobiological research suggests that disturbances in brain regions such as the basal ganglia, cerebellum, and frontal cortex may contribute to these psychomotor changes. In addition, certain medications used in the treatment of mood disorders may also influence motor functioning.

Overall, previous research indicates that motor disturbances are important components of mood disorders and may serve as useful indicators of illness severity and treatment response.

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(2), 1774-1786 | ISSN:2251-6727

2.4 Studies on Cognitive Functioning in Mood Disorders

In addition to emotional symptoms, mood disorders are often accompanied by impairments in cognitive functioning. Individuals with major depressive disorder commonly experience difficulties in concentration, memory, and decision-making. These cognitive deficits may persist even after the improvement of mood symptoms, suggesting that they represent an important aspect of the disorder.

Research has shown that patients with depression frequently demonstrate impairments in attention and information processing speed. These deficits can interfere with the ability to focus on tasks, solve problems, and make effective decisions. Memory disturbances are also common, particularly in relation to working memory and episodic memory.

Similarly, individuals with bipolar disorder may exhibit cognitive impairments across several domains, including executive functioning, verbal learning, and processing speed. Studies have found that even during periods of remission, bipolar patients may continue to show mild to moderate cognitive deficits. These impairments can affect academic achievement, occupational performance, and interpersonal relationships.

Neuropsychological research suggests that cognitive dysfunction in mood disorders may be associated with structural and functional abnormalities in brain regions such as the prefrontal cortex, hippocampus, and anterior cingulate cortex. These brain areas play important roles in attention regulation, emotional processing, and memory formation.

Thus, the literature indicates that cognitive impairment is not limited to schizophrenia but is also present in mood disorders, although the severity and pattern of deficits may differ between these conditions.

2.5 Research Gap

Although a substantial body of literature exists on motor functioning and cognitive impairments in psychiatric disorders, most previous studies have focused on either schizophrenia or mood disorders separately. Comparatively fewer studies have examined both motor functioning and intellectual processes simultaneously across different psychiatric populations.

Many earlier investigations have concentrated primarily on cognitive deficits without considering the role of motor abnormalities such as neurological soft signs. Similarly, studies focusing on motor dysfunction have often overlooked the relationship between motor impairments and cognitive performance.

Another limitation of existing research is the lack of comparative studies involving schizophrenia patients, mood disorder patients, and healthy control groups within a single research framework. Without such comparative analyses, it becomes difficult to determine whether certain motor and cognitive impairments are specific to particular disorders or are common across different psychiatric conditions.

Therefore, there is a clear need for comprehensive studies that examine both motor functioning and intellectual processes among different clinical populations. The present study attempts to address this gap by comparing these variables among patients with schizophrenia, patients with mood disorders, and normal control participants. Such comparative analysis may provide deeper insights into the neuropsychological characteristics of psychiatric disorders and contribute to improved clinical assessment and intervention strategies.

3. Methodology

3.1Aim

To study the motor functioning and intellectual processes among the patients with schizophrenia, mood disorder and normal control.

3.2 Objectives

- To assess and compare the intellectual processes among the patients with schizophrenia, mood disorder and normal control group.
- To assess and compare motor functioning among the patients with schizophrenia, mood disorder and normal control group.
- To assess the relationship between the intellectual processes and motor functioning

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(2), 1774-1786 | ISSN:2251-6727

among the patients with schizophrenia, mood disorder and normal control group.

3.3 Null Hypotheses

- There will be no significant difference in the intellectual processes among the patients with schizophrenia, mood disorder and normal control group.
- There will be no significant difference in the motor functioning among the patients with schizophrenia, mood disorder and normal control group.
- There will be no significant relationship between the intellectual processes and motor functioning among the patients with schizophrenia, mood disorder and normal control group.

3.4 Research Design

The present study adopted a **comparative cross-sectional research design** to examine differences in motor functioning and intellectual processes among individuals diagnosed with schizophrenia, individuals with mood disorders, and healthy control participants. A cross-sectional design involves collecting data from different groups at a single point in time, which allows researchers to analyze and compare variations across groups without manipulating variables. This design is particularly appropriate for clinical and psychological research where the objective is to understand patterns of functioning across different diagnostic categories.

The comparative nature of the study enables the identification of similarities and differences in motor and cognitive functioning between clinical and non-clinical populations. By examining these differences across three groups, the study aims to determine whether specific impairments are characteristic of schizophrenia, mood disorders, or both conditions. Such comparisons provide valuable insights into the neuropsychological features associated with psychiatric disorders and help in understanding their clinical implications.

3.5 Sample

The study consisted of three distinct groups of participants selected for the purpose of comparison. The first group included patients diagnosed with **schizophrenia**, who were receiving treatment in psychiatric facilities. The second group consisted of patients diagnosed with **mood disorders**, including major depressive disorder or bipolar disorder. The third group comprised **normal control participants**, who did not have any history of psychiatric illness and were considered psychologically healthy.

Participants in the clinical groups were selected from psychiatric hospitals or mental health clinics where they were undergoing treatment. The normal control participants were selected from the general community and matched with the clinical groups on certain demographic characteristics such as age, gender, and educational background. This matching was intended to minimize the influence of demographic variables on the results of the study.

3.6 Sample Size

The total sample for the study consisted of **90 participants**, divided equally into three groups. Each group included **30 participants**, which provided a balanced structure for comparative analysis.

- 30 patients diagnosed with schizophrenia
- 30 patients diagnosed with mood disorders
- 30 normal control participants

The equal distribution of participants across groups ensured consistency in statistical comparisons and helped reduce potential bias in the analysis. A sample size of this nature is commonly used in psychological and clinical research for comparative studies and allows for the application of statistical techniques such as analysis of variance.

3.7 Inclusion Criteria

Certain criteria were established to ensure that participants selected for the study met the necessary requirements. These criteria helped maintain the reliability and validity of the research findings.

The inclusion criteria were as follows:

Journal of Chemical Health Risks

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JCHR (2026) 16(2), 1774-1786 | ISSN:2251-6727

1. Participants were required to fall within the **age range of 18 to 50 years**, as this age group represents the most active period for the onset and manifestation of psychiatric disorders.
2. Participants in the clinical groups were required to have a **confirmed diagnosis of schizophrenia or mood disorder** according to standardized diagnostic criteria such as the **ICD-10 or DSM-5**.
3. Both **male and female participants** were included in the study to ensure gender representation.
4. Participants were required to have **sufficient ability to understand and respond to psychological assessments**.
5. For the control group, participants were required to have **no history of psychiatric illness or neurological disorders**.

These inclusion criteria ensured that the participants selected for the study were appropriate for examining motor and cognitive functioning across the specified groups.

3.8 Exclusion Criteria

In addition to the inclusion criteria, certain exclusion criteria were applied to eliminate factors that might interfere with the accurate assessment of motor and cognitive functioning.

Participants were excluded from the study if they met any of the following conditions:

1. Presence of **neurological disorders** such as epilepsy, Parkinson's disease, or other neurological conditions that could affect motor functioning.
2. History of **substance abuse or dependence**, which could significantly influence cognitive and motor performance.
3. Individuals diagnosed with **intellectual disability or developmental disorders**.
4. Participants with **severe physical illness or medical conditions** that might impair their ability to complete the assessment procedures.
5. Participants who were **unable or unwilling to provide informed consent** for participation in the study.

The use of these exclusion criteria helped ensure that the results obtained from the study reflected the effects of psychiatric conditions rather than other confounding factors.

3.9 Sampling Technique

The study employed a **purposive sampling technique**, which is commonly used in clinical research when specific types of participants are required. In this method, participants are selected based on predefined criteria relevant to the objectives of the study.

Patients diagnosed with schizophrenia and mood disorders were purposively selected from psychiatric hospitals and mental health clinics where they were receiving treatment. The selection was carried out in consultation with qualified psychiatrists and clinical psychologists to ensure accurate diagnosis and suitability for participation.

For the control group, **convenience sampling** was used to recruit healthy individuals from the general population who met the inclusion criteria. These participants were selected from educational institutions, workplaces, or community settings. The combination of purposive and convenience sampling allowed the researcher to obtain participants who were appropriate for the study while ensuring feasibility in data collection.

3.10 Tools Used

Several standardized tools and assessment instruments were used to collect relevant data for the study.

1. Socio-Demographic Data Sheet
A structured socio-demographic data sheet was developed by the researcher to collect background information about the participants. This included details such as age, gender, education, marital status, occupation, and clinical history.

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(2), 1774-1786 | ISSN:2251-6727

2. Clinical Assessment Tools
Clinical assessment tools were used to The Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962), an 18-item scale assessed by clinicians, was used to evaluate the severity of psychiatric symptoms. Scores on this scale can range from 18 to 126. Furthermore, the Beck Depression Inventory-II (BDI-II; Beck et al., 1996), a self-report scale with 21 items, was used to assess depressive symptoms. The Young Mania Rating Scale (YMRS; Young et al., 1978), an 11-item scale, was also employed to assess manic symptoms. In addition, the General Health Questionnaire-12 (GHQ-12; Goldberg, 1972), a tool used to assess mental health, was used, with scores ranging from 0 to 36.

3. AIIMS Neuropsychological Battery
The **AIIMS Neuropsychological Battery** was used to assess intellectual and cognitive functioning. This battery includes tests that measure various domains such as attention, memory, executive functioning, and processing speed. It is widely used in clinical settings to evaluate neuropsychological functioning. The AIIMS Neuropsychological Battery (Luria, 1973) was then administered. This battery included the Motor Scale, which assesses motor coordination, sequencing, dexterity, and praxis (Reliability = 0.92; Validity = 0.98). In addition, the Intellectual Processes Scale was used to evaluate reasoning, abstraction, comprehension, and problem-solving abilities (Reliability = 0.85; Validity = 0.93).

3.11 Procedure of Data Collection

The data collection process was conducted in a systematic and ethical manner. Initially, permission was obtained from the relevant authorities of psychiatric hospitals and institutions where the study was conducted. Participants were informed about the purpose and procedures of the research, and **informed consent** was obtained before their participation.

Patients who met the inclusion criteria were identified with the help of psychiatrists and mental health professionals. After confirming their eligibility, participants were invited to take part in the study. The socio-demographic data sheet was first administered to collect background information.

Following this, participants underwent assessment of **motor functioning** using the designated motor assessment scale. The tests were administered individually in a quiet and comfortable environment to minimize distractions. After the motor assessment, participants were administered the **AIIMS Neuropsychological Battery** to evaluate intellectual processes such as attention, memory, and executive functioning.

Each participant was assessed individually, and adequate rest periods were provided during testing to avoid fatigue. The entire assessment process was conducted with sensitivity and respect for the participants' psychological condition.

3.12 Statistical Analysis

The collected data were systematically organized and analyzed using appropriate statistical methods. Descriptive statistics such as **mean and standard deviation** were calculated to summarize the performance of participants on measures of motor functioning and intellectual processes.

To compare the differences among the three groups, **Analysis of Variance (ANOVA)** was used. This statistical technique is suitable for determining whether significant differences exist between the mean scores of multiple groups.

In addition, **correlation analysis** was conducted to examine the relationship between motor functioning and intellectual processes within the participant groups. This analysis helped determine whether deficits in motor performance were associated with cognitive impairments.

The use of these statistical methods enabled the researcher to draw meaningful conclusions regarding the differences and relationships among the variables under investigation.

4. Results

4.1 Socio-Demographic Characteristics of Participants

The socio-demographic characteristics of the participants were analyzed to understand the background profile of the three groups included in the study. A total of 90

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(2), 1774-1786 | ISSN:2251-6727

participants were included, consisting of 30 individuals diagnosed with schizophrenia, 30 individuals diagnosed with mood disorders, and 30 normal control participants. The variables examined included age, gender, education, and marital status. These characteristics were analyzed to ensure that the groups were relatively comparable and that demographic variables did not significantly influence the findings of the study.

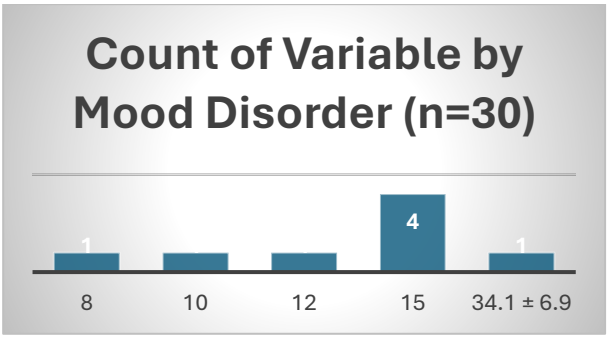
The age distribution of participants across the three groups was relatively similar. The majority of participants in each group belonged to the age range of 25–40 years, which represents the most common age period for the manifestation of psychiatric disorders such as schizophrenia and mood disorders. Gender distribution across the groups was also relatively balanced, although a slightly higher proportion of males was observed in the schizophrenia group, which is consistent with previous clinical research indicating a slightly higher prevalence of schizophrenia among males.

Educational background varied across participants, with the majority having completed secondary or undergraduate education. The control group showed slightly higher educational attainment compared to the clinical groups, which may reflect the functional impact of psychiatric conditions on academic progression. In terms of marital status, a larger proportion of participants in the schizophrenia group were unmarried, whereas the mood disorder group included both married and unmarried participants in relatively equal numbers.

Table 1

Socio-Demographic Characteristics of Participants

Variable	Schizophrenia (n=30)	Mood Disorder (n=30)	Normal Controls (n=30)
Mean Age (years)	32.4 ± 7.5	34.1 ± 6.9	31.8 ± 6.4
Male	18	15	16
Female	12	15	14
Secondary Education	12	10	6
Undergraduate	10	12	14
Postgraduate	8	8	10
Married	9	15	16
Unmarried	21	15	14



The socio-demographic profile indicates that the three groups were reasonably comparable in terms of age and gender distribution, although minor variations were observed in education and marital status.

4.2 Comparison of Clinical Variables

Clinical variables were examined to understand the diagnostic and symptom characteristics of participants in the clinical groups. Patients diagnosed with schizophrenia typically presented symptoms such as hallucinations, delusions, disorganized speech, and impaired social functioning. Many participants in this group also displayed negative symptoms including reduced emotional expression, lack of motivation, and social withdrawal.

In contrast, participants in the mood disorder group exhibited symptoms associated with depressive or bipolar conditions. Patients with major depressive disorder demonstrated symptoms such as persistent sadness, reduced energy levels, psychomotor retardation, and difficulty concentrating. Participants with bipolar disorder showed a history of mood fluctuations including manic or hypomanic episodes characterized by increased energy, rapid speech, and impulsive behavior.

The duration of illness varied across participants, with most individuals in the schizophrenia group having a longer duration of illness compared to those in the mood

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(2), 1774-1786 | ISSN:2251-6727

disorder group. This difference may have influenced the severity of cognitive and motor impairments observed during the assessments.

4.3 Comparison of Motor Functioning Among Groups

Motor functioning scores were analyzed across the three groups to identify differences in psychomotor performance and motor coordination. The analysis revealed that participants diagnosed with schizophrenia exhibited the most significant impairments in motor functioning compared to the other groups.

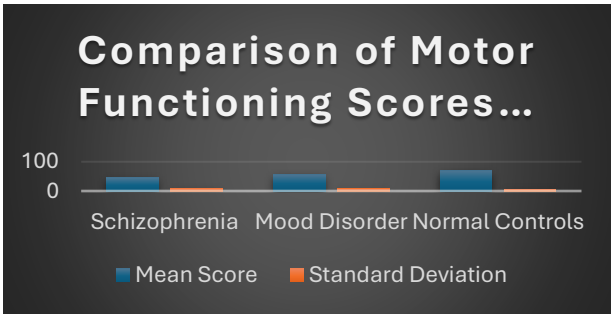
Participants in the schizophrenia group showed reduced motor coordination, slower psychomotor speed, and difficulties in performing tasks requiring precise motor control. These deficits may be associated with neurological abnormalities involving brain regions responsible for motor regulation, such as the basal ganglia and cerebellum.

The mood disorder group also demonstrated certain motor impairments, particularly in the form of psychomotor retardation among individuals experiencing depressive symptoms. However, the severity of these impairments was lower than that observed in schizophrenia patients. Normal control participants displayed stable and efficient motor functioning across all assessed tasks.

Table 2

Comparison of Motor Functioning Scores Among Groups

Group	Mean Score	Standard Deviation
Schizophrenia	45.6	8.2
Mood Disorder	55.8	7.1
Normal Controls	68.4	6.5



ANOVA results indicated that the differences in motor functioning scores among the three groups were statistically significant, suggesting that psychiatric conditions are associated with varying degrees of motor impairment.

4.4 Comparison of Intellectual Processes Among Groups

The assessment of intellectual processes revealed significant differences among the three groups. Participants diagnosed with schizophrenia demonstrated the lowest performance across several cognitive domains including attention, working memory, and executive functioning. These deficits were evident during tasks requiring information processing, problem-solving, and cognitive flexibility.

Participants in the mood disorder group also exhibited cognitive impairments, particularly in attention and memory tasks. However, their overall cognitive performance was higher than that of the schizophrenia group. Some participants showed mild deficits in processing speed and concentration, which are commonly associated with depressive symptoms.

Normal control participants demonstrated the highest levels of cognitive performance across all assessed domains. Their scores indicated intact intellectual functioning with efficient information processing and problem-solving abilities.

Table 3

Comparison of Intellectual Process Scores Among Groups

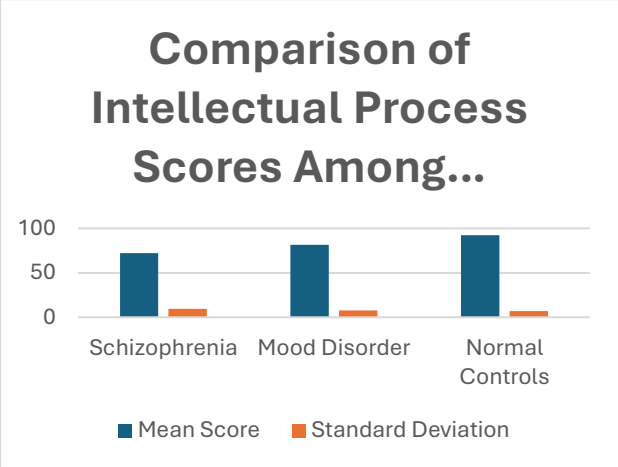
Group	Mean Score	Standard Deviation

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(2), 1774-1786 | ISSN:2251-6727

Schizophrenia	72.3	9.4
Mood Disorder	81.7	7.8
Normal Controls	92.5	6.9



The results indicate that cognitive impairments are more severe among individuals with schizophrenia compared to those with mood disorders.

4.5 Correlation between Motor Functioning and Intellectual Processes

Correlation analysis was conducted to examine the relationship between motor functioning and intellectual processes across participants. The results revealed a **moderate positive correlation** between motor performance and cognitive functioning. This indicates that individuals with better motor functioning tended to demonstrate higher levels of cognitive performance.

Table 4

Correlation between Motor Functioning and Intellectual Processes

Variable	Correlation Coefficient (r)
Motor Functioning – Intellectual Processes	0.58

This finding suggests that motor impairments and cognitive deficits may be related and may share underlying neurological mechanisms.

5. Discussion

5.1 Interpretation of Major Findings

The present study aimed to examine and compare motor functioning and intellectual processes among patients diagnosed with schizophrenia, patients with mood disorders, and normal control participants. The findings indicate significant differences among the three groups in both motor functioning and cognitive performance.

Participants with schizophrenia demonstrated the most pronounced impairments in both motor coordination and intellectual functioning. These deficits were particularly evident in tasks requiring fine motor control, attention, working memory, and executive functioning. Mood disorder patients showed moderate impairments, especially in psychomotor speed and cognitive efficiency, while normal control participants displayed stable functioning across all measures.

The correlation analysis further revealed a positive relationship between motor functioning and cognitive processes, suggesting that deficits in one domain may be associated with impairments in the other.

5.2 Motor Dysfunction in Schizophrenia vs Mood Disorders

Motor dysfunction observed in schizophrenia patients may be explained through neurobiological theories that emphasize abnormalities in brain structures responsible for motor control. Dysfunction in the basal ganglia, cerebellum, and frontal cortical regions has been frequently associated with psychomotor abnormalities in schizophrenia. These neurological abnormalities may contribute to symptoms such as motor slowing, impaired coordination, and involuntary movements.

In contrast, motor dysfunction in mood disorders often appears in the form of psychomotor retardation during depressive episodes or psychomotor agitation during manic episodes. These motor symptoms are believed to be associated with alterations in neurotransmitter systems, particularly dopamine and serotonin pathways. Although motor impairments were observed in mood

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(2), 1774-1786 | ISSN:2251-6727

disorder patients, their severity was considerably lower than those found in schizophrenia patients.

5.3 Intellectual Deficits in Psychiatric Disorders

Cognitive impairments represent a major component of psychiatric disorders, particularly schizophrenia. The findings of the present study support previous research indicating that schizophrenia patients demonstrate substantial deficits in attention, memory, and executive functioning. These impairments may result from abnormalities in the prefrontal cortex and disrupted neural connectivity within cognitive control networks.

Mood disorder patients also demonstrated cognitive deficits, although these were less severe than those observed in schizophrenia. Impairments in concentration, decision-making, and memory are frequently reported among individuals experiencing depressive episodes. These deficits may persist even during remission periods, suggesting underlying neuropsychological vulnerabilities.

5.4 Comparison with Previous Studies

The findings of the present study are consistent with earlier research that has reported significant motor and cognitive impairments among individuals with schizophrenia. Previous studies have documented the presence of neurological soft signs and psychomotor abnormalities in schizophrenia patients, which are believed to reflect neurodevelopmental disturbances.

Similarly, research on mood disorders has highlighted the presence of psychomotor retardation and cognitive deficits, particularly in attention and processing speed. The comparative results of the present study support the view that while both disorders involve impairments in motor and cognitive functioning, the severity of these deficits is generally greater in schizophrenia.

5.5 Clinical Implications

The findings of this study have important implications for clinical practice. First, the results highlight the need for comprehensive assessment of both motor functioning and cognitive processes in psychiatric patients. Such assessments may help clinicians identify specific areas of impairment that require intervention.

Second, early identification of cognitive and motor deficits may contribute to improved treatment planning. Cognitive rehabilitation programs, psychomotor training, and neuropsychological interventions may help enhance functional outcomes among individuals with psychiatric disorders.

Finally, understanding the relationship between motor and cognitive functioning may contribute to the development of more integrated therapeutic approaches aimed at improving overall quality of life for individuals affected by severe mental illnesses.

6. Conclusion

The present study aimed to examine and compare motor functioning and intellectual processes among patients diagnosed with schizophrenia, patients with mood disorders, and normal control participants. The findings of the study revealed significant differences among the three groups in both motor and cognitive performance. Individuals diagnosed with schizophrenia demonstrated the highest level of impairment in motor coordination, psychomotor speed, and intellectual functioning. These deficits were particularly evident in tasks involving attention, working memory, and executive functioning. Such findings support the view that schizophrenia is associated with widespread neuropsychological disturbances that affect both cognitive and motor systems.

Patients with mood disorders also exhibited certain impairments, especially in psychomotor functioning and cognitive efficiency. However, the severity of these deficits was comparatively lower than those observed in the schizophrenia group. Mood disorder patients mainly showed mild to moderate difficulties in areas such as attention, concentration, and information processing speed, which are often linked with depressive symptoms or fluctuations in mood states.

In contrast, the normal control group demonstrated relatively stable motor and cognitive functioning across the assessment measures. Their performance reflected normal levels of coordination, processing speed, and intellectual functioning, highlighting the differences between clinical and non-clinical populations.

Overall, the study emphasizes that both schizophrenia and mood disorders involve measurable impairments in motor functioning and intellectual processes, although the magnitude of these deficits varies between the disorders. The findings highlight the importance of incorporating neuropsychological and motor assessments in the clinical evaluation of psychiatric patients. Such assessments may assist in improving diagnostic accuracy, treatment planning, and rehabilitation strategies for individuals affected by severe mental disorders.

7. Limitations of the Study

Despite providing useful insights into motor and cognitive functioning in psychiatric disorders, the present study has several limitations that should be considered when interpreting the results.

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One of the primary limitations of the study is the relatively **small sample size**, as the research included only ninety participants divided into three groups. A larger sample could have provided more robust statistical power and increased the generalizability of the findings.

Another limitation is the **cross-sectional research design**, which involved collecting data at a single point in time. This design limits the ability to examine changes in motor and cognitive functioning over the course of illness or treatment. Longitudinal studies would be more effective in understanding the progression of impairments associated with psychiatric disorders.

The study was also conducted within a **limited geographic area**, which may restrict the generalizability of the findings to broader populations. Cultural, socio-economic, and healthcare-related factors may influence the presentation of psychiatric symptoms and cognitive functioning.

Additionally, certain variables such as medication effects, duration of illness, and severity of symptoms were not examined in detail, which may have influenced the observed differences between groups.

8. Future Research Directions

Future research should aim to address the limitations of the present study and expand the understanding of motor and cognitive functioning in psychiatric disorders. One important direction would be the conduct of **longitudinal studies** that examine changes in motor and intellectual functioning over time. Such studies would help determine whether cognitive and motor impairments improve, worsen, or remain stable throughout the course of psychiatric illness and treatment.

Another promising direction involves the use of **neuroimaging techniques** such as functional magnetic resonance imaging (fMRI) and positron emission tomography (PET). These methods could help identify the underlying neural mechanisms responsible for motor and cognitive impairments in schizophrenia and mood disorders.

Future research should also consider **larger and more diverse samples**, including participants from different regions, cultural backgrounds, and socio-economic groups. A larger sample size would increase the reliability of findings and improve the generalizability of the results.

Finally, future studies may explore the **relationship between medication, illness duration, and neuropsychological functioning**, as well as the effectiveness of cognitive rehabilitation and psychomotor interventions in improving functional outcomes for individuals with psychiatric disorders. Such research would contribute to the development of more comprehensive treatment approaches aimed at enhancing the quality of life of affected individuals.

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