

EVALUATION OF COGNITIVE FUNCTIONS AMONG LEBANESE PATIENTS WITH SCHIZOPHRENIA



Presented by

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DEFINITION

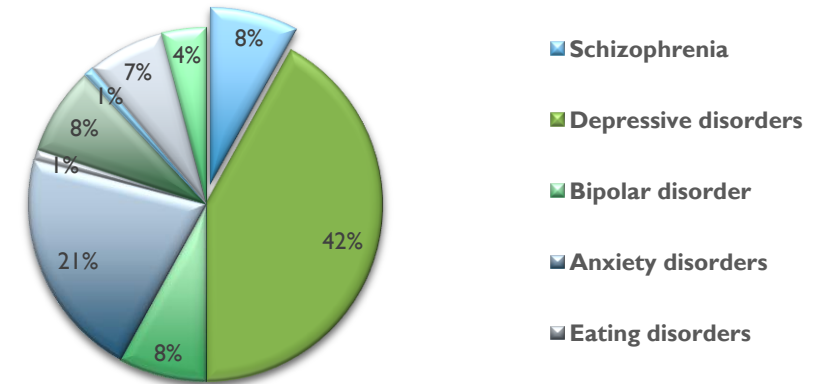
- Schizophrenia is a mental disorder **characterized by** disruptions in thought processes, perceptions, emotional responsiveness, and social interactions
- Schizophrenia is typically a persistent disease and can be severe and disabling
- Symptoms of schizophrenia
 - Positive symptoms : hallucinations, delusions, and thought disorder
 - Negative symptoms : reduced expression of emotions, reduced motivation to accomplish goals, difficulty in social relationships
- The worldwide prevalence of schizophrenia is between 0.7 - 1%.
- Starts at an early age between 18 – 25 years old
- Occurs more often in males



EPIDEMIOLOGY OF SCHIZOPHRENIA

In Arab Countries

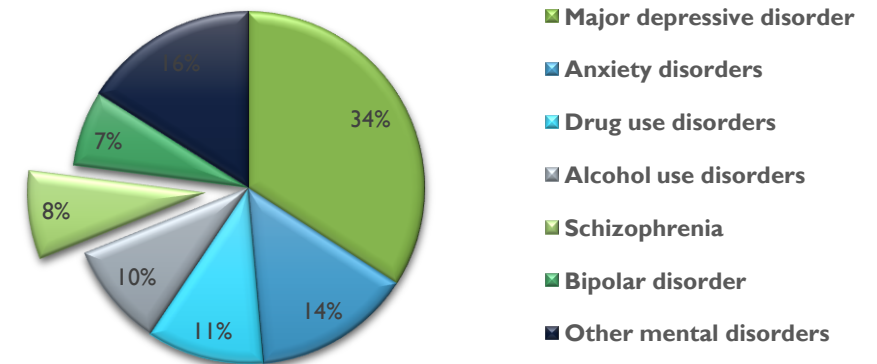
- Prevalence of psychotic disorders: between 0.7% and 5.6% without gender difference. (Ref: Saab R, Moussaoui D, Tabet CC, El Hamaoui Y, Salamoun MM, Mneimneh ZN, Karam EG. Epidemiology of schizophrenia and related disorders in the Arab World. Arab J Psychiatry. 2011;22:1-9).
- Depression and anxiety disorders are the most common mental disorders.



Distribution of disability-adjusted life-years (DALYs) due to mental disorders in the Eastern Mediterranean Region, 2015
(d'après Global Burden of Disease Study 2015, Eastern Mediterranean Region, 2015)

In Lebanon

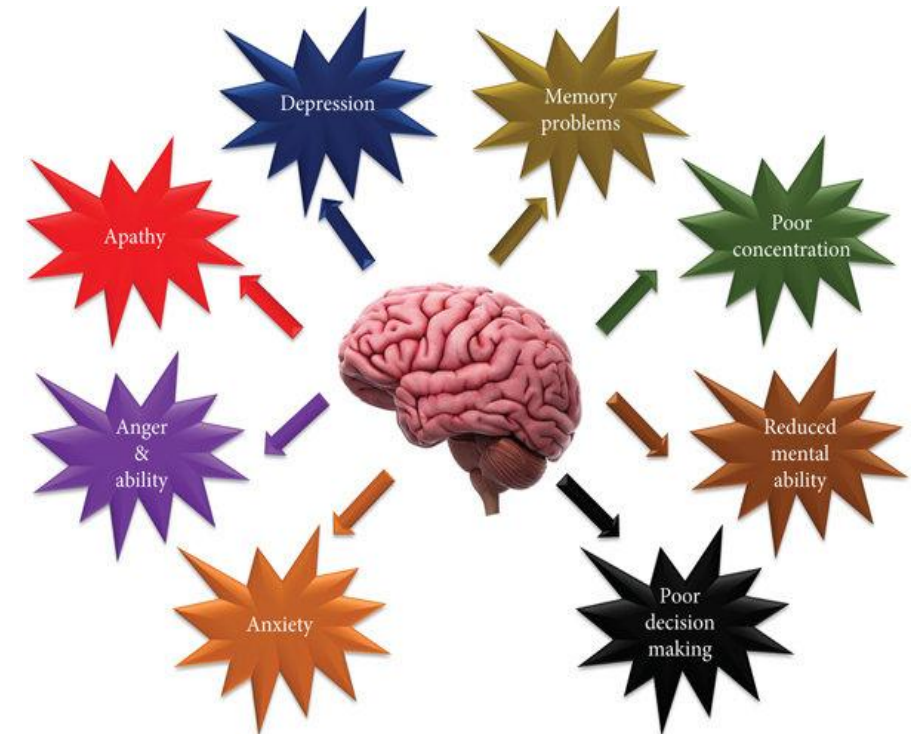
- More than 25% of people are affected by mental and behavioral disorders. (Ref: Chahine LM, Chemali Z. Report: Mental health care in Lebanon: policy, plans and programmes. Information for authors. 1995;1).
- Schizotypal and Delusional Disorders (47%) and Mood Disorders (12%) are the most common diagnosis for admission to psychiatric hospitals
- The prevalence of schizophrenia in Lebanon is still not estimated



Percent of Global DALYs within the mental disorders category (2010)
(d'après Republic of Lebanon. Ministry of Public Health. Mental Health and Substance Use Strategy for Lebanon 2015 - 2020).

COGNITIVE FUNCTION AMONG PATIENTS WITH SCHIZOPHRENIA

- Cognitive deficits are a core feature of schizophrenia, affecting up to 75% of patients
- Schizophrenia affects a wide range of cognitive functions, particularly
 - Attention,
 - Working memory
 - Verbal learning and memory
 - Speech fluency
 - Executive functions
- Cognitive impairment occurred at all clinical stages and throughout life
- Most schizophrenic patients demonstrate at least one cognitive impairment



COGNITIVE ASSESSMENT INSTRUMENTS

- Cognitive assessment is one of the best indicators of the functional and social prognosis of schizophrenic patients
- Assessment methods involve batteries and screening tests

Batteries of neuropsychological tests

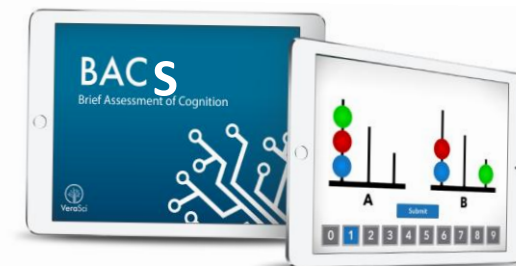
- BACS
(Brief Assessment of Cognition in Schizophrenia)
- MATRICS
(Measurement and Treatment Research to Improve Cognition in Schizophrenia)
- WAIS
(Wechsler Adult Intelligence Scale)
- RBANS
(Repeatable Battery for the Assessment of Neuropsychological Status)
- CANTAB
(Cambridge Neuropsychological Test Automated Battery)

Rapid Screening Tools

- MOCA
(Montreal Cognitive Assessment)
- MMSE
(Mini-Mental State Examination)
- BCA
(Brief Cognitive Assessment)
- SCIP
(Screen for Cognitive Impairment in Psychiatry)
- B-CATS
(Brief Cognitive Assessment Tool for Schizophrenia)

Brief Assessment of Cognition In Schizophrenia (BACS) Battery

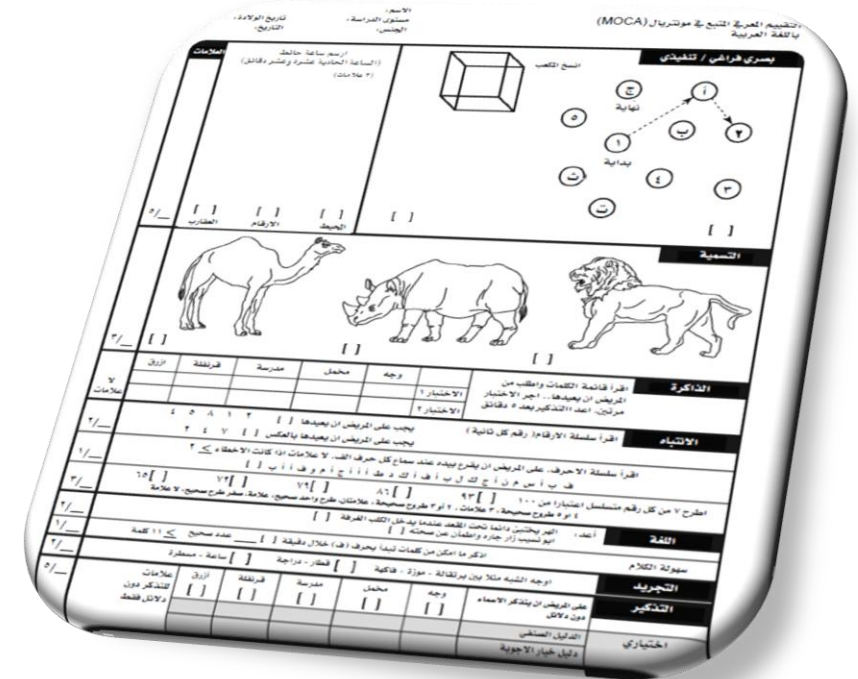
- 6 tests that measure 6 cognitive domains
- Short duration (≈35 min)
- Quick and Short
- Easily used by medical professionals
- Evaluates the main cognitive functions impaired in SCZ



	Domaines cognitifs	Tests
1	Verbal Memory	List learning test (15 words)
2	Working Memory	Digit sequencing
3	Motor Speed	Token motor task
4	Speed Of Information Processing	Symbol coding
5	Verbal Fluency	Verbal fluency
6	Executive Functions	Tower of London

MONTREAL COGNITIVE ASSESSMENT (MOCA) TEST

- The MoCA is a rapid screening tool (10 min) that assess cognitive impairment in elderly
- It is mainly dedicated to screening for mild cognitive impairment
- The items assessed are grouped into six subsections:
 - Short term memory
 - Visuospatial skills
 - Executive functions
 - Attention, concentration, working memory
 - Speech
 - Orientation in time and space



(Nasreddine ZS, Phillips NA, Bédirian V, Charbonneau S, Whitehead V, Collin I, Cummings JL, Chertkow H. The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment. Journal of the American Geriatrics Society. 2005 Apr;53(4):695-9)

SELF PERCEPTION OF COGNITIVE FUNCTIONING

- Patients with schizophrenia have difficulties to self-evaluate their cognitive function (neurocognitive and social cognitive domains).
- Patients with schizophrenia have a particularly low level of insight into their illness compared to healthy people.
- Misestimating the ability of patients with schizophrenia can be either by
 - overestimating or underestimating it in about equal proportions across cognitive domains

The importance of self-perception assessment

- Enables one to become aware of their symptoms and address the negative effects in everyday life.
- Improves the therapeutic connection and the patient's desire to receive care, especially in cognitive rehabilitation
- If patients could reliably report their own cognitive issues
 - this could help with the planning of functional outcomes and individual treatments



- Haddad C, Salameh P, Hallit S, Sacre H, Clément JP, Calvet B. Self-assessment of social cognition in a sample of Lebanese in-patients with schizophrenia. *Schizophrenia Research: Cognition*. 2021 Dec 1;26:100207.
- Haddad C, Salameh P, Sacre H, Polin C, Clément JP, Calvet B. Subjective cognitive complaints and relations to objective cognitive performance among Lebanese patients with schizophrenia. *BMC psychiatry*. 2021 Dec;21(1):1-4.

PROBLEM STATEMENT

- Few studies have been done in the Arab countries that evaluate the cognitive impairment in patients with schizophrenia
- In Lebanon, some studies evaluated cognitive function in older people.
- However, no study was done to assess cognitive functions (objective and self-report) in individuals with neurological or psychiatric diseases.
- Clinicians had limited options, since they had to rely on untranslated assessments or translations that had not been validated.
- Some neuropsychological batteries had been used locally among patients with schizophrenia to assess their cognition

OBJECTIVES OF THE STUDY

- To validate a diagnostic and screening tool for cognitive disorders among patients with schizophrenia
- To evaluate subjective cognitive complaints and related factors among these patients.

METHODOLOGY

Study design

- Cross-sectional study
- Performed at the “Psychiatric Hospital of the Cross – Lebanon (HPC)”,
- Between July 2019 and March 2020



Participants

- 120 inpatients diagnosed with schizophrenia and schizoaffective disorders
- 60 healthy controls recruited from the staff of the HPC hospital

Inclusion criteria

- Inpatients
- Aged between 18-60 years
- Having an educational level over five years
- Meeting the “DSM-5 criteria (diagnostic and statistical manual of mental disorders, fifth edition)” for schizophrenia and schizoaffective disorders
- Being treated with antipsychotics medication and clinically stable

METHODOLOGY

Selection of participants

- Schizophrenic subjects was selected using a randomized method from a list generated by the computer software
- Healthy control were matched for age, education and sex with the patients group
- The ratio of 2:1 was considered when selecting the participants:
 - 120 patients with schizophrenia
 - 60 healthy controls

Procedure

- Two independent psychologists assessed the objective cognitive functions among participants
 - One specialized in the administration of the BACS battery
 - The other trained in the use of the standard battery
- The assessment was done on two different days in less than 2 weeks
- The two evaluators were blind to each other

METHODOLOGY

Tests used to assess cognitive function

- Brief Assessment of Cognition In Schizophrenia (BACS) battery
- Standard battery (tests designed to examine the same structures as the BACS).
 - 16 item Free and Cued Recall test; Forward and Backward Digit Span Sequencing from the WAIS-IV; Trail Making Test A (TMT-A); Controlled Oral Word Association Test; Digit Symbol Coding from the WAIS-IV; Block Design Test from the WAIS-IV.
- Montreal Cognitive Assessment (MOCA) test

Scales used

- PANSS : Positive and Negative Syndrome scale
- CDSS : Calgary depression Scale for Schizophrenia
- IS : Insight scale for Psychosis
- ACSO : Self-Assessment of Social Cognitive Impairments
- SASCCS : Self-Assessment Scale of Cognitive Complaints in Schizophrenia
- ADL : Activities of Daily Living

METHODOLOGY

Data Analysis

- SPSS version 25 software
- Descriptive analysis of variables (mean \pm standard deviation; frequencies and percentages)
- Factor analysis to confirm the validity of the tests
- Cronbach's Alpha to test internal consistency
- Specificity and Sensitivity (ROC curve)
- Pearson's correlation coefficients to calculate the relationship between the tests used
- Student's t test for comparing two means and ANOVA for comparing three or more means
- Multivariable regression analysis

The significance threshold was retained at $p < 0.05$

RESULTS

Sociodemographic characteristics

■ Schizophrenia patients

- Mean age 48.4 ± 7.6 years
- 59.2% males
- 81.9% were single
- low monthly income (52.6%)
- 50% have a secondary level of education
- 36.5% have a family history of psychiatric illness
- Duration of illness was 20.6 ± 12.4 years
- Duration of hospitalization was 12.4 ± 8.5 years

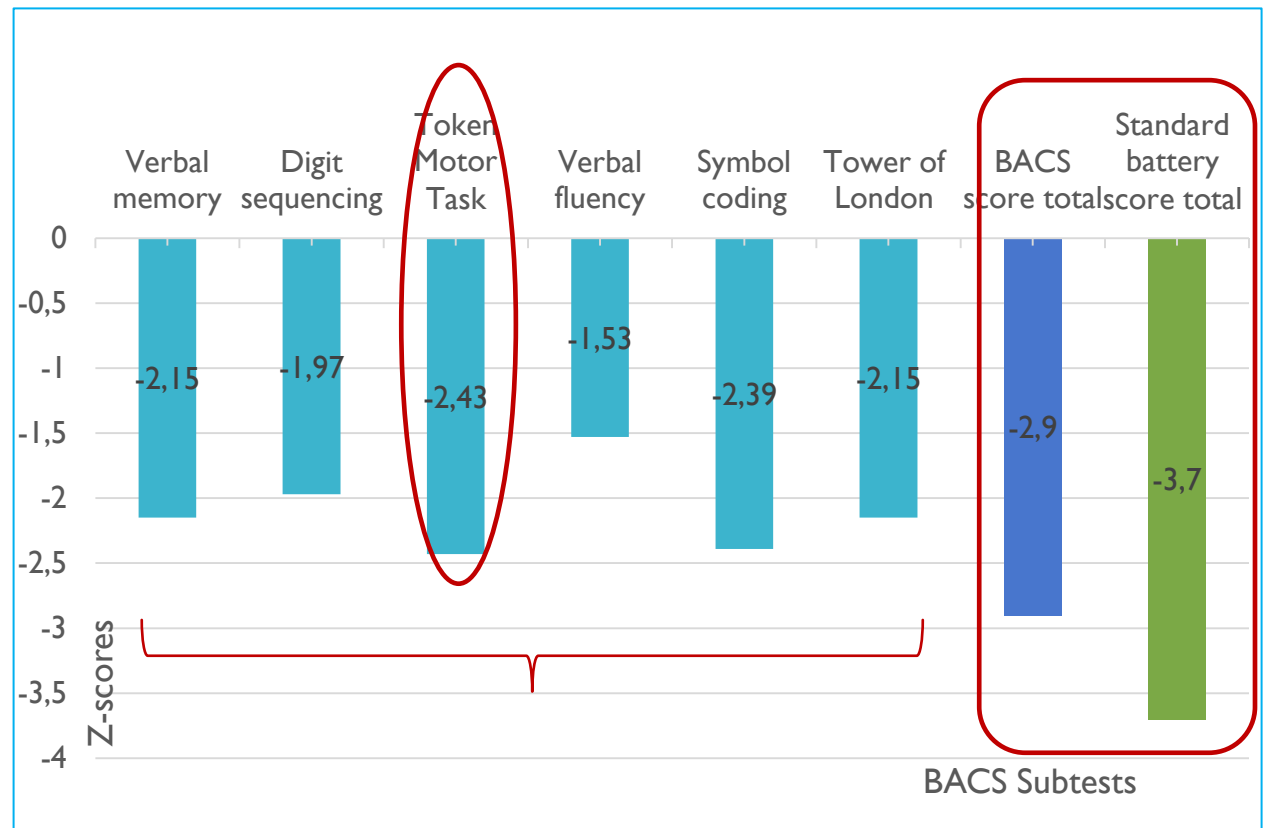
■ Healthy controls

- was matched with the schizophrenia group according to sex, education level and age
- Married participants with high monthly income and without any psychiatric illness were found in the control group as compared to the patient group.

RESULTS

Validation of the BACS battery

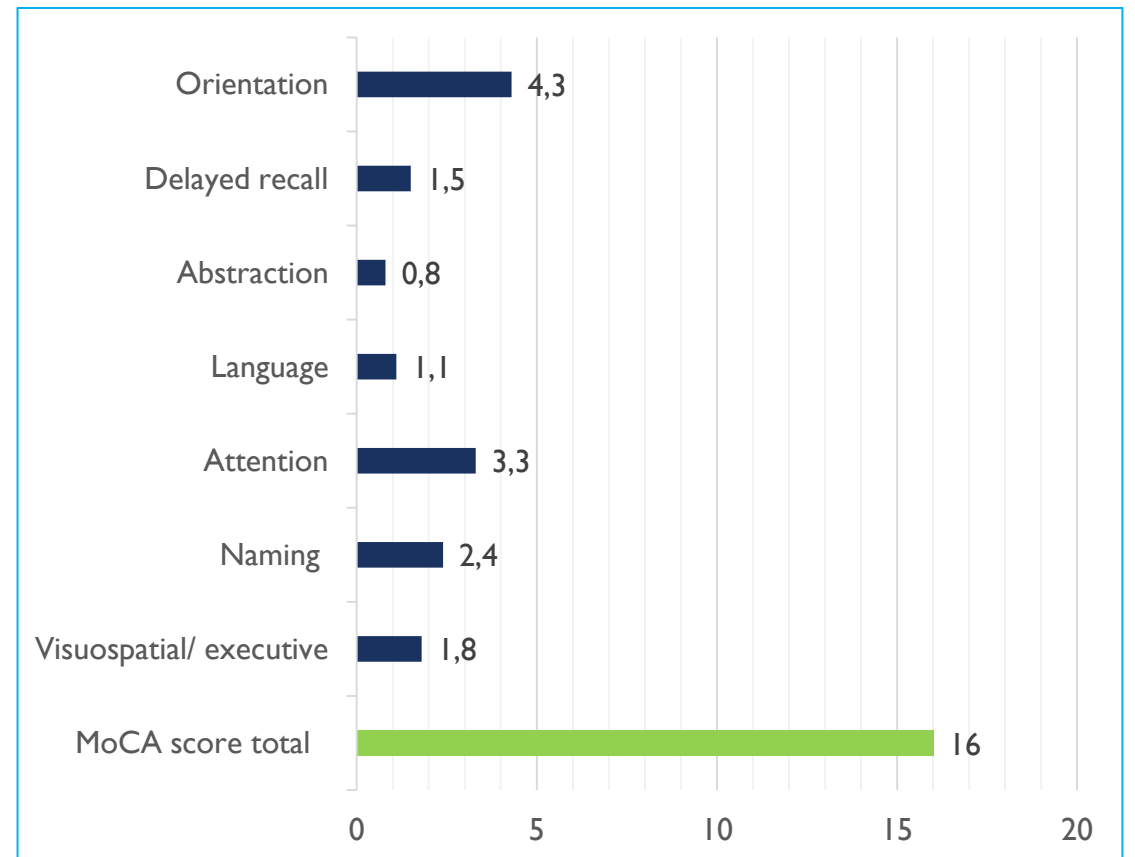
- Strong concurrent validity with a standard battery of cognitive Tests
 - Correlation coefficient = 0.73 in patient and 0.78 in control
- High internal consistency
 - Cronbach's alpha. (0.85)
- Factor analysis for the BACS have produced a one-factor structure
- High sensitivity (0.93) and specificity (0.86) to distinguish patients with schizophrenia from healthy controls



RESULTS

Validation of the MOCA test

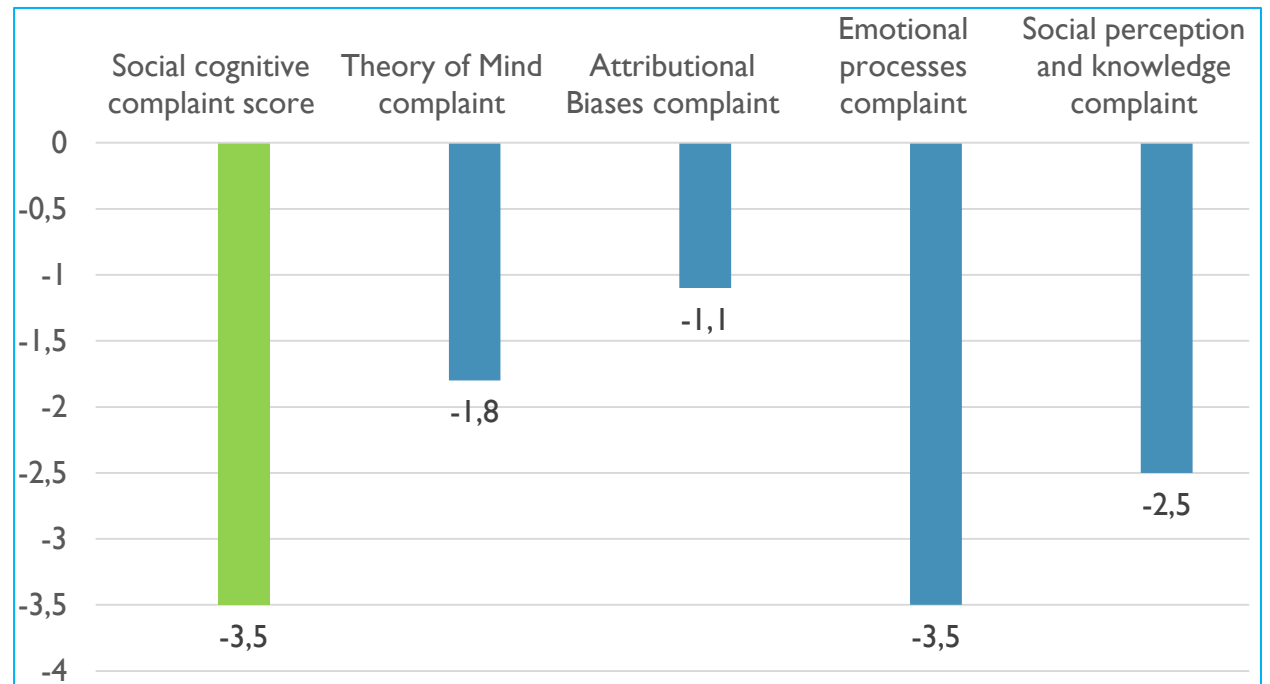
- **Strong concurrent validity with the BACS test**
 - Correlation coefficient = 0.72
- **High internal consistency**
 - Cronbach's alpha. (0.79)
- **Factor analysis** for the BACS have produced a one-factor structure
- **High sensitivity and specificity** of MoCA screening tool to detect
 - Mild (se=0.81; sp=0.75),
 - Moderate (se=0.81; sp=0.81),
 - Severe (se=0.93; sp=0.85) cognitive impairments in schizophrenia
- **Regression analysis:**
 - Higher objective cognition (higher BACS) ($B = .09, p < .001$) was significantly associated with a higher MoCA total
 - Higher depression ($B = .18, p = .02$) and higher total PANSS score ($B = .04, p = .01$) were significantly associated with lower MoCA



RESULTS

Social cognitive complaint

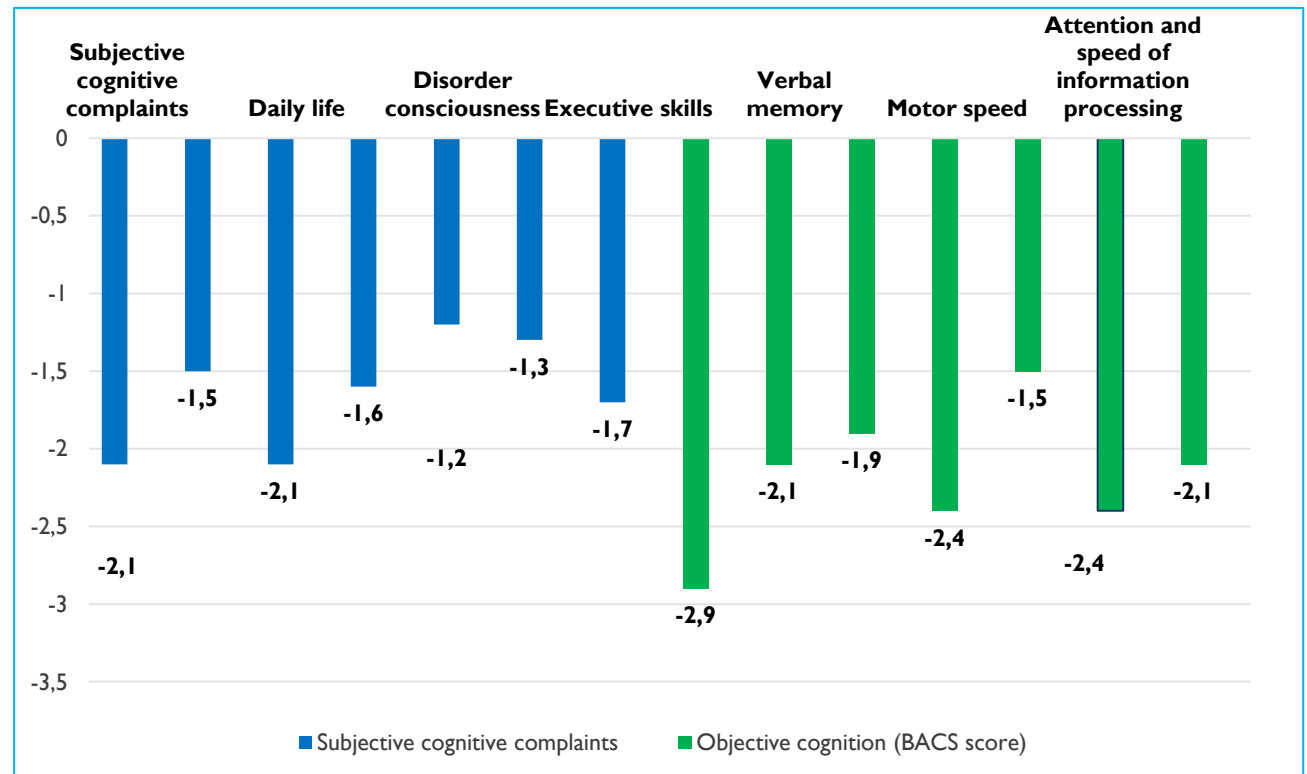
- The schizophrenia group scored significantly higher mean than the healthy controls in all social cognitive complaint tests
- **Regression analysis**
 - Higher objective cognition (Beta = 0.08, $p = 0.001$) was associated with lower total social cognitive complaints.
 - Higher depression (Beta = 0.38, $p = 0.04$) was significantly associated with higher social cognitive complaints
 - Insight and PANSS were not related to social cognitive complaint



RESULTS

Subjective cognitive complaint (SCC)

- Schizophrenia group scored significantly lower mean composite score than the healthy controls in SCC and neurocognition tests in all domains
- **Regression analysis**
 - The BACS total score (beta = $-.06$, $p = .04$) and higher autonomy (beta = -6.35 , $p = .001$) was significantly associated with lower SCC
 - The PANSS general psychopathology (beta = $.29$, $p = .003$) and higher depression (beta = $.75$, $p = .003$) were significantly associated with higher SCC.



DISCUSSION

Validation of diagnostic tools (BACS) and screening tools (MoCA)

- Strong concurrent validity
- High internal consistency
- A good ability to detect cognitive impairments

Subjective cognitive complaints

- Patients could subjectively express their cognitive functioning
- Relationship between cognitive complaints and objective cognition
- Psychopathological symptoms and depression were associated with cognitive complaints
- No relationship existed between subjective cognitive complaint and Insight

The results were comparable to other studies found in the literature

LIMITATIONS

- **Cross sectional type of the study**
 - Difficult to infer causal relationships
- **Sample size**
 - Limited sample size, the study's findings could not be generalized to the whole population
- **Selection bias:** the sample consists of chronic hospitalized patients whose cognitive functioning could be seriously impaired
- **Information bias:** information was self-reported by participants
- **Confounding bias:** factors related to cognition that could not be tested (e.g. Global assessment of functioning)
- The responses of schizophrenic patients may be affected by the severity of their disease
- Fatigability bias, particularly in patients
- Some tests used were not validated in Lebanon

PERSPECTIVE

Short term

- Initiate the use of the BACS battery and the MoCa tool in the evaluation of cognitive disorders
- Assessment of cognitive complaints (self-assessment of cognitive deficits)
- Consider depressive affects when assessing cognitive functions
- Studying Insight among patients

Long term

- Initiate The Clinicians In Psychiatric Hospitals To Assess Cognitive Functions
- Set Up Psychosocial Rehabilitation Programs:
 - Include cognitive rehabilitation strategies in the treatment plan of patients with schizophrenia

CONCLUSION

- BACS battery Arabic version is a reliable and useful tool to measure objective cognitive functions among patients with schizophrenia
- MoCA screening tool is a useful tool for the rapid screening of cognitive disorders in patients with schizophrenia
- Schizophrenic patients complain about their cognition and can estimate their cognitive impairment, independent of their level of insight
- Social cognitive complaints and subjective cognitive complaints are related to depressive symptoms
 - This aspect should be studied with the clinical symptomatology of the disease



**Thank you for your
attention**
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