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Research Paper

Subjective cognitive complaints in first episode psychosis: A focused follow-up on sex effect and alcohol usage

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ABSTRACT

A network of early psychosis-specific intervention programs at the University of Montreal in Montreal, Quebec, Canada, conducted a longitudinal naturalistic five-year study at two Urban Early Intervention Services (EIS). In this study, 198 patients were recruited based on inclusion/exclusion criteria and agreed to participate. Our objectives were to assess the subjective cognition complaints of schizophrenic patients assessed by Subjective Scale to Investigate Cognition in Schizophrenia (SSTICS) in their first-episode psychosis (FEP) in relation to their general characteristics. We also wanted to assess whether there are sex-based differences in the subjective cognitive complaints, as well as differences in cognitive complaints among patients who use alcohol in comparison to those who are abstainers. Additionally, we wanted to monitor the changes in the subjective complaints progress for a period of five years follow-up. Our findings showed that although women expressed more cognitive complaints than men [mean (SD) SSTICS, 28.2 (13.7) for women and 24.7 (13.2) for men], this difference was not statistically significant ($r = -0.190$, 95 % CI, −0. 435 to 0. 097). We also found that abstainers complained more about their cognition than alcohol consumers [mean (SD) SSTICS, 27.9 (13.4) for abstainers and 23.7 (12.9) for consumers], a difference which was statistically significant ($r = -0.166$, 95 % CI, −0. 307 to −0.014). Our findings showed a drop in the average score of SSTICS through study follow-up time among FEP patients. In conclusion, we suggest that if we want to set up a good cognitive remediation program, it is useful to start with the patients' demands. This demand can follow the patients' complaints. Further investigations are needed in order to propose different approaches between alcohol users and abstinent patients concerning responding to their cognitive complaints.

1. Introduction

Metacognition can be defined as a broad term referring to a set of processes related to self-awareness, self-assessment and self-reflection regarding one's emotional state and cognitive abilities (Flavell, 1979). According to some authors, metacognitive deficits are a central feature of schizophrenia (Lysaker and Dimaggio, 2014; Lysaker et al., 2019). The impairment of metacognition has been studied in a wide range of processes in individuals with schizophrenia, including reasoning and memory biases (Moritz et al., 2018), beliefs (Beck et al., 2004), autobiographical memory (Raffard et al., 2010), and insight into illness (Amador et al., 1993). This metacognitive ability also known as clinical insight, has been specifically studied in schizophrenia (Amador et al., 1994). The clinical implications of insight (or lack of) in schizophrenia are complex (Stip, 1996; Bertrand et al., 2007; Bozikas and Andreou, 2011). While a lack of unawareness of the disorder may lead to treatment non-compliance (Lien et al., 2018a, 2018b), and ultimately, poor prognosis, good clinical insight, on the other hand, may be associated with self-stigma, depression, and possibly even suicide (Belvederi Murri et al., 2016; Sheffield et al., 2018).

Besides the presence of psychotic symptoms in patients with first-episode psychosis (FEP), cognitive impairment may also be observed

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in most patients (Lussier and Stip, 2001). These disorders affect roughly the same cognitive functions in patients in the prodromal phase, after a first psychotic episode or suffering from schizophrenia. A meta-analysis suggests that cognitive impairment is stable regardless of the period considered and falls short of other work showing a deterioration in the profile between these phases of the development of psychosis (Bora and Murray, 2014; Bora et al., 2018; Bozikas and Andreou, 2011; Townsend et al., 2001; Aas et al., 2014). The cognitive disturbances classically observed in psychotic patients are to a large extent already present, both quantitatively and qualitatively, during the 1st episode; they do not, therefore, seem to be explained by the treatments prescribed to patients or by the duration of the disease, but rather to be an integral part of the schizophrenia disorder. There are still uncertainties regarding the chronology of their onset: cognitive difficulties are already present in several patients from childhood or adolescence, and they seem to worsen, perhaps, during the period of early prodromes, that is, several years before the onset of psychotic symptoms.

Whether there is an alteration directly related to the psychotic emergence during episode 1 remains debated. The cognitive deficits observed in patients with the first episode of psychosis encompass several domains of cognition, including attention, executive functions (cognitive flexibility, planning, etc.), social cognition (theory of mind, emotion recognition), speed of processing, verbal, and visual memory, and working memory (Bertrand et al., 2007; Zhang et al., 2019). Importantly, there is reliable evidence showing that cognitive dysfunctions are among the best predictors of social and occupational functioning in schizophrenia (Homayoun et al., 2011), including evidence from the seminal CATIE trial (Manschreck and Boshes, 2007). Because of their impact on functioning, cognitive deficits are now considered key targets of pharmacological, psychological, and technological intervention in schizophrenia (Moritz et al., 2018). In view of these observations, it is therefore fundamental to determine whether patients are aware or not of their own cognitive difficulties, given that a lack of awareness may lead them to underestimate the relevance of cognitive remediation interventions, and may therefore impede their motivation to participate in such interventions.

The awareness of the weaknesses of one's cognitive functioning can be considered as a kind of metacognitive knowledge that effectively helps to know the limits of one's cognitive resources. In comparison with clinical insight, few studies have examined subjective cognition in people with schizophrenia. To evaluate subjective cognition in schizophrenia, several scales have been developed and validated (Burton et al., 2016). These self-report instruments include the Cognition Failure Questionnaire (CFQ; Broadbent et al., 1982), the Measure of Insight into Cognition self-rated (MIC-SR; Medalia et al., 2008), and the Subjective Scale to Investigate Cognition in schizophrenia (SSTICS, Stip et al., 2003) which is the most widely used tool for assessing self-perception of cognitive function in this mental disorder (Potvin et al., 2014a, 2014b; Burton and Twamley, 2015). Using these different scales, a certain number of studies have been conducted, showing that when people with schizophrenia are asked to subjectively assess their cognitive performance, their self-assessment of neurocognition problems is not constantly linked to objective cognitive measures. Indeed, while some studies have shown significant associations between cognitive complaints and objective measures of cognition, other studies failed to do so. In view of the heterogeneity of results, our research team conducted a meta-analysis of 22 studies on cognitive insight in schizophrenia (Potvin et al., 2014a, 2014b). Although, individuals with schizophrenia reported higher complaints compared to non-clinical controls, weak associations were observed between subjective and objective cognition, and only moderate associations were found with the problem-solving cognitive domain. Importantly, this lack of cognitive insight was independent of the severity of positive and negative symptoms and the level of knowledge of mental illness (Potvin et al., 2014a, 2014b). Cognitive insight can therefore be understood as part of the general framework of metacognitive knowledge, the absence of which can lead to poor self-awareness of one's cognition. While the association between subjective and objective cognition was relatively weak, a moderate association was found between cognitive complaints and depressive symptoms (Szöke et al., 2008; Broadbent et al., 1982).

Several studies were published after this meta-analysis, reporting similar overall results (e.g., weak associations between subjective and objective cognition) (Cella et al., 2014; Gould et al., 2015; Burmester et al., 2016; Gehring et al., 2015). In addition, recent studies have all shown that subjective cognitive complaints are more likely related to mental factors, such as depression and anxiety rather than psychiatric symptoms or cognitive impairment in schizophrenia (Burmester et al., 2016; Bayard et al., 2009; French et al., 2014). One of the main limitations of the available evidence is that previous research in non-clinical individuals has also reported weak correlations between subjectively and objectively assessed cognitive functions (r's range is from 0.20 to 0.30) (Burmester et al., 2016; Gehring et al., 2015; Rothlind et al., 2017). Another key limitation has to do with the fact that many studies on subjective cognition in schizophrenia have adopted cross-sectional designs, which impede our ability to assess how patients' cognitive complaints evolve during treatment.

In this article, we present the evolution of the subjective cognitive complaints in a population of patients in a follow-up program for FEP, while paying attention to factors that have been linked to psychosis onset, namely sex differences and substance use disorders. Indeed, it is well established that the psychosis onset occurs earlier in males relative to females, and that substance use is one of the key triggers of the FEP (Verdaguer-Rodríguez et al., 2021). Not only substance use disorders (alcohol, cannabis & stimulants) are highly prevalent in this population, but they are also associated with a worsening prognosis, characterized by increased depressive symptoms, psychotic relapses, and functional impairments (Hendricks et al., 2017). Despite the clinical relevance of these factors, we are unaware of any study having investigated their potential influence on subjective cognition in schizophrenia. Considering that alcohol, cannabis, and stimulants use are known to impair cognition (Hendricks et al., 2017), one might wonder if patients who use psychoactive substances have the same propensity or not to complain about cognitive problems relative to those who do not.

In view of the current state of knowledge, the main objectives of this study were 1) to describe the general characteristics of FEP patients enrolled in the follow-up programs that studied patients' subjective cognitive complaints, 2) to determine if subjective cognitive complaints differ between sexes, 3) to investigate if subjective cognitive complaints differ between patients who use alcohol and/or cannabis an those who do not, and finally 4) to describe the changes in subjective cognitive complaints during a follow-up time of four years.

2. Methods

2.1. Participants

A network of early psychosis-specific intervention programs at the University of Montreal in Montreal, Quebec, Canada, conducted a longitudinal naturalistic five-year study at two Urban Early Intervention Services (EIS) (Nolin et al., 2016; Lutgens et al., 2015). Both programs serve all patients in the first episode program in their respective defined catchment areas, according to international guidelines (Orygen 2016; Cotton et al., 2016). EIS is a PEP program at the University Institute of Mental Health (IUSMM) Montreal, with Clinique JAP at the CHUM, Montreal which has a population of 340,000 in the eastern part of the city and a catchment area of 225,000 in the city center (Nicole et al., 2007). The five-year program provides professional treatment based on guidelines for early intervention in mental illness. This includes a variety of psychosocial treatments, case management, and pharmacological treatments (Malla et al., 2021; Baki and Roy, 2021). This study was approved by the Organization's Ethics and Scientific Committee. Patients were approached when they were stable and able to give written

informed consent. The selection criteria were between the ages of 18 and 30 and within 1 year of the primary diagnosis or initiation of treatment for untreated psychotic disorders. Patients with FEP and comorbidity (e.g., SUD or Cluster B personality) were included.

Patients with primary intellectual disabilities were excluded. We also excluded subjects who received antipsychotics from another facility within one year of admission to EIS and did not have the necessary information on treatment and could not accurately assess medication adherence. 198 patients were recruited based on inclusion/exclusion criteria and agreed to participate in the study (see Table 1).

2.2. Clinical assessment

Symptoms were assessed with the Positive and Negative Syndrome Scale (Kay et al., 1987) and the Calgary Depression Scale for Schizophrenia (CDSS) (Addington et al., 1993).

The Subjective Scale to Investigate Cognition in Schizophrenia (SSTICS) was used to assess subjective cognition. This is a self-reported questionnaire used to examine subjective complaints in clinical and non-clinical populations (Stip et al., 2003). Used in over 20 published studies, the SSTICS includes questions on working memory, explicit memory (episodic memory and semantic memory), attention, executive function, language, and praxis. The Global SSTICS score is calculated with a value between 0 (no cognitive complaints) and 84 (maximal cognitive complaints). The original and brief (e.g., SSTICS-B) versions of the scale were considered in the final analysis (Cella et al., 2020).

2.3. Statistical analyses

We performed statistical analyses using the SPSS version 20 software for Windows. The significance level was set at $p < 0.05$. The clinical variables and socio-demographic data were analyzed using descriptive analyses. Differences in means between sub-group of patients were analyzed and effect size estimates were calculated using Cohen's *d* (Diener, 2010). Point biserial correlations were performed between dichotomous variables and continuous variables. The potential association between the continuous SSTICS and PANSS symptoms; delusions, hallucinations, depression, poor attention, lack of judgment and insight, and active social avoidance was examined using Pearson's correlation analyses. To account for the multiple testing, and to avoid any potential type I errors, we also performed Bonferroni alpha corrections. Finally, the temporal changes in subjective cognitive complaints during the follow-up were analyzed using one-way repeated measures ANOVA.

Table 1
Descriptive characteristics of patients (n = 198).

		n (%)
Gender	Male	164 (82.8)
	Female	34 (17.2)
Age categories, years	27–34	83 (41.9)
	35–39	81 (40.9)
	40–45	34 (17.2)
Marital status	Single	169 (85.4)
	In a relationship	26 (13.1)
	Separated/divorced	3 (1.5)
Current education status	Full time	31 (15.7)
	Part-time	12 (6.0)
	None	155 (78.3)
Employment status	Full time	40 (20.2)
	Part-time	16 (8.1)
	None	142 (71.7)
Living arrangements	Single/roommate	108 (54.5)
	With spouse	7 (3.5)
	With parents	83 (42.0)
Alcohol intake diagnosis (AUD score) (n = 196)	Abstinent	79 (40.3)
	Use without persistent or recurring disturbance	82 (41.8)
	Abuse	23 (11.7)
	Dependence	12 (6.1)

3. Results

3.1. Socio-demographics

The characteristics of patients are presented in Table 1. Of 198 patients, 81.2 % were males, and mean age was 35.6 (SD 3.5) years. The majority were single (85.4 %) and with no involvement in full-time or part-time education (78.3 %), as well as with no full-time or part-time job (71.7 %). Approximately half of the patients live independently alone or with their roommate (54.5 %)., Interestingly, when patients were screened for alcohol use using alcohol use screening (AUD) tests, the larger group among the study sample were the patients who use alcohol without persistent or recurring disturbance (41.8 %), followed by the group of abstinent patients (40.3 %) (see Table 1).

3.2. Association between the SSTICS and PANSS scores

The mean values of SSTICS and PANSS domains are presented in the Table 2. At baseline, the memory dimension scores in SSTICS-B were negatively correlated with the delusions on PANSS - positive and negative syndrome scale ($r = -0.155$, $p = 0.03$) (see Table 3). We also observed a significant negative correlation between praxia dimension in SSTICS-B and the poor attention in PANSS ($r = -0.199$, $p = 0.006$). However, these correlation estimates were not significant after the Bonferroni alpha corrections. Similarly, no statistically significant correlations were observed between the large scale SSTICS and PANSS.

3.3. SSTICS in relation to the sex differences among patients

Study results in Table 4 showed that women in our study population expressed more cognitive complaints than men [mean (SD) SSTICS, 28.2 (13.7) for women and 24.7 (13.2) for men], but this difference was not statistically significant, based on effect size, the Cohen's *d* estimate, −0.256 (95 % CI, −0.627 to 0.118), point-biserial *r* estimate, −0.190 (95 % CI, −0.435 to 0.097).

Table 2
Means (SD) for SSTICS and PANSS scores at baseline.

	Mean (SD)
SSTICS total score (n = 198)	25.33 (13.25)
Memory	12.59 (6.92)
Attention	7.72 (4.22)
Executive functions	3.80 (2.47)
Language	1.12 (1.01)
Praxia	0.10 (0.37)
PANSS total score (n = 187)	75.60 (15.01)
PANSS Positive	19.55 (6.06)
PANSS Negative	20.33 (5.03)
PANSS Psychopathology	35.72 (6.97)

SSTICS, Subjective Scale to Investigate Cognition in Schizophrenia; PANSS, Positive and Negative Syndrome Scale.

Table 3
Correlations between the subjective perception of cognitive deficits (as measured by SSTICS) and psychotic symptoms (as measured by the PANSS) at baseline (n = 187).

PANSS	SSTICS total					
	Memory			Praxia		
	r	$p^{\dagger}$	$p^{\dagger\dagger}$	*r*	$p^{\dagger}$	$p^{\dagger\dagger}$
Delusions	−0.155	0.034	0.943	−0.041	0.578	1.000
Hallucinations	−0.051	0.488	1.000	0.054	0.466	1.000
Depression	−0.096	0.192	1.000	0.038	0.607	1.000
Poor attention	0.043	0.562	1.000	0.199	0.006	0.180
Lack of judgment & insight	−0.024	0.741	1.000	−0.036	0.623	1.000
Active social avoidance	−0.064	0.382	1.000	0.065	0.38	1.000

r, correlation coefficient; $p^{\dagger}$, unadjusted; $p^{\dagger\dagger}$, alpha adjusted.
SSTICS, Subjective Scale to Investigate Cognition in Schizophrenia; PANSS, Positive and Negative Syndrome Scale.

Table 4
Effect sizes of sex and alcohol intake on SSTICS.

	Cohen's d	Hedges's g	Point-biserial r
Sex			
Estimate	−0.256	−0.255	−0.190
95 % CI	−0.627 to 0.118	−0. 625 to 0. 118	−0. 435 to 0. 097
Alcohol - abstainers			
Estimate	−0.316	−0.315	−0.166
95 % CI	−0. 603 to −0. 028	−0. 601 to −0.028	−0. 307 to −0.014
Alcohol - use without persistent or recurrent disturbance			
Estimate	0.308	0.306	0.153
95 % CI	−0. 004 to 0.618	−0. 004 to 0.615	−0. 002 to 0.297
Alcohol - abuse			
Estimate	0.054	0.053	0.038
95 % CI	−0.411 to 0.518	−0. 408 to 0.514	0. 337 to −0.272
Alcohol - dependency			
Estimate	0.868	0.861	0.629
95 % CI	0.184 to 1.531	0.182 to 1.518	0.242 to 0.804

SSTICS, Subjective Scale to Investigate Cognition in Schizophrenia; CI, confidence interval.

3.4. SSTICS in relation to alcohol-related disorders

Looking into the association between patients with alcohol-related disorders and their subjective cognitive complaints using SSTICS, our findings showed that abstainers complained more about their cognition than consumers: mean (SD) SSTICS, 27.9 (13.4) for abstainers and 23.7 (12.9) for consumers; $r = -0.166$ (95 % CI, −0.307 to −0.014) (see Table 4). It's as if drinking alcohol to varying degrees results in a poorer perception of cognitive impairment, mean (SD) SSTICS, 23.8 (13.0) for those using alcohol without persistent or recurrent disturbance, $r = 0.153$ (95 % CI, −0.002 to 0.297). This is under what is known about Alcohol Use Disorder: it alters a sort of judgment or awareness of the disorder, the person denies and/or trivializes, mean (SD) SSTICS, 16.5 (10.7) for those with alcohol dependency, $r = 0.629$ (95 % CI, 0.242 to 0.804) (see Table 4).

3.5. Association between the SSTICS and the CDSS at baseline

When we tested the correlation between the Calgary Depressions Scale for Schizophrenia (CDSS) at baseline with SSTICS at baseline, our findings showed no correlation except with item "7-early awakening" where there was a significant correlation ($r = -0.256$, $p < 0.0001$) (see Table 5). The correlation estimate was still significant even after the alpha correction ($p = 0.02$).

Table 5
Correlations between the subjective perception of cognitive deficits and depressive symptoms at baseline (n = 187).

	r	$p^{\dagger}$	$p^{\dagger\dagger}$
	SSTICS total		
CDSS (Depression)	−0.111	0.131	0.99
CDSS (Hopelessness)	−0.102	0.165	1.00
CDSS (Self-depreciation)	−0.076	0.304	1.00
CDSS (Guilty ideas of reference)	−0.117	0.108	0.99
CDSS (Pathological guilt)	0.041	0.581	1.00
CDS (Morning depression)	0.091	0.216	1.00
CDSS (Early wakening)	−0.256	0.000	0.02
CDSS (Suicide)	−0.060	0.417	1.00
CDSS (Observed depression)	−0.114	0.122	0.99

r, correlation coefficient; $p^{\dagger}$, unadjusted; $p^{\dagger\dagger}$, alpha adjusted.
SSTICS, Subjective Scale to Investigate Cognition in Schizophrenia; CDSS, Calgary Depression Scale for Schizophrenia.

3.6. SSTICS and SSTICS-B average scores changes across study follow-up time

Our study results showed a drop in the SSTICS average score through the study follow-up period of five years among FEP patients, which indicates that there is better cognition (repeated measured ANOVA $F = 24.41$, $p < 0.001$) (see Fig. 1). Furthermore, monitoring FEP patients after 36 months, our results showed a decrease in the average SSTICS score (26.0 (12.1) at baseline and 12.9 (9.3) at 36 months) (see Fig. 2). The temporal curve for the SSTICS-B is also valid similar to the total SSTICS, as it follows the same decrease (see Fig. 3).

4. Discussion

This study is the first to explore the subjective cognition complaints among FEP patients in relation to their sex differences, as well as in relation to their alcohol-related disorders. Additionally, we wanted to see whether patients drinking alcohol will assess their subjective cognition complaints differently than patients who don't drink alcohol.

The literature discusses several studies about objective cognitive complaints among FEP patients. Rarely do we find studies focusing on subjective cognitive complaints among FEP patients or assessing the sex differences towards subjective complaints in cognition or alcohol use effect on FEP patients' awareness of their cognition problems.

Our findings showed that women expressed more cognitive complaints than males; the point-biserial correlation and Cohen's *d* estimates showed that women scored high on the SSTICS than men, although these estimates were not statistically significant. Our study findings are in

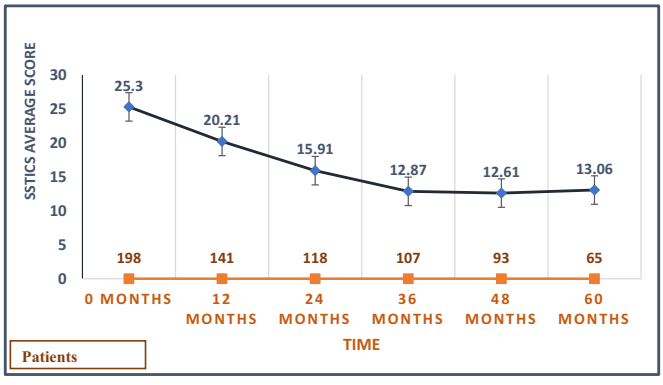

Fig. 1. Evolution of the patient's subjective perception of cognitive deficits as measured by SSTICS over time.

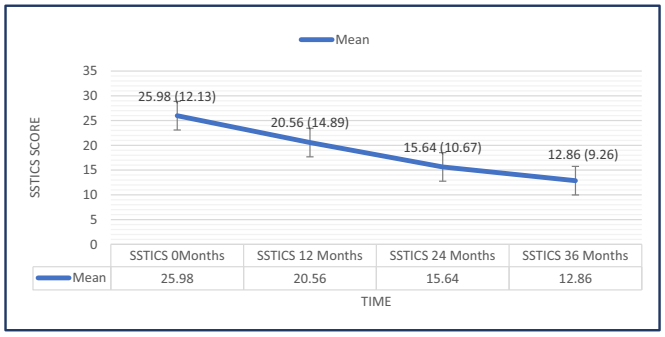

Fig. 2. Patients who completed SSTICS from baseline to 36 months (N = 107).

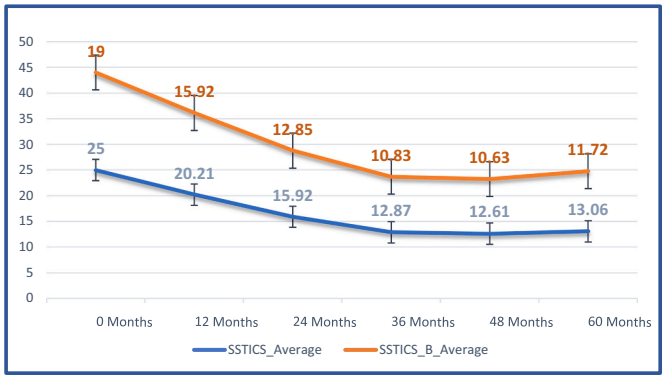

Fig. 3. Evolution of the patients' subjective perception of cognitive deficits as measured by SSTICS and SSTICS-Brief over time.

agreement with the study conducted by Verdaguer-Rodríguez et al. (2021), showing that men and women have similar performances in social cognition awareness. However, few differences between these studies should be noted. Their study was addressing only the social cognitive complaints, and the total number of participating women was almost doubled (n = 62, 32 %) than our female participants (n = 34, 17 %), and they were younger (mean age 30 years) compared to mean age of women in our study (36 years). Moreover, their study was conducted in a different setting and culture (Spain) while our study was conducted in Canada.

When comparing the SSTICS-B domains with the Positive and Negative Syndrome Scale (PANSS) scores, we found that there were no correlations between SSTICS-B domains and the PANSS scores, except between the memory domain in SSTICS-B and PANSS delusion score ($r = -0.155$, $p = 0.034$), also we found a correlation between the praxia domain in SSTICS_B and poor attention score for PANSS ($r = 0.199$, $p = 0.006$). However, these results were not statistically significant after applying multiple comparison corrections ($p \geq 0.05$). A recent study showed slightly positive correlations (without alpha corrections) between PANSS scores and SSTICS_B, (Cella et al., 2020), and the findings suggest that those non-severe patients' (SSTICS-B) might have a significant correlation related to poor illness complaints and low self-esteem. In their study, the authors presented and assessed SSTICS-B in two independent samples (n = 607); one sample with longer schizophrenia duration in the UK (n = 283) and the second sample was FEP in Canada (n = 364). The two samples were different from each other by schizophrenia length and symptoms severity, and their findings showed higher levels of general symptoms while the Canadian sample also showed higher positive symptoms.

Studies addressing the correlation between alcohol consumption among FEP patients and their awareness of cognitive problems are rare. The findings of a study (Le Berre and Sullivan, 2016) suggest that the lack of awareness by uncomplicated alcoholic patients following alcohol treatment can be justified mechanistically by neurobiological substrates. Another study (Hendricks et al., 2017) examined the neuro-cognitive decline of the alcohol-induced psychotic disorder compared to the cognitive decline of simple alcohol dependence. In this study, participants were recruited from the acute psychiatric admission wards of the Department of Psychiatry in South Africa, and the groups were matched demographically with a similar period of abstinence prior to assessment. The results showed statistically significant differences in tasks measuring immediate memory, remembering after delay, excess memory difficulty, and abstract thinking (Hendricks et al., 2017). Our study findings between patients-level of alcohol drinking and their subjective cognitive complaints vary depending on their alcohol use. Interestingly, we found that abstainer FEP patients complained more about their subjective cognition (Cohen's $d = -0.316$, $r = -0.166$), compared to FEP patients who consumed alcohol. Our study findings also indicate that higher the alcohol consumption, the lower the awareness of subjective cognition complaints among FEP schizophrenic patients (Cohen's $d = 0.868$, $r = 0.629$ among AUD dependence group). These results are consistent with the meta-cognition deficits that have been observed in non-psychotic patients with alcoholism (Le Berre and Sullivan, 2016).

When we correlated the Calgary Depressions Scale for Schizophrenia (CDSS) at baseline with SSTICS scores at the baseline, our study found no correlation with all items of the CDSS except with "7- early awakening", where there was a significant correlation ($r = -0.256$, p adjusted = 0.02). In a study assessing the first perceptions of cognition impairments and cognition functions among 120 schizophrenic patients in a psychiatric hospital in Lebanon, and 60 healthy controls using both self-assessment scales for cognitive complaints (SASCCS), and brief assessment of cognition in schizophrenia (BACS), Haddad and colleagues (Haddad et al., 2021) reported positive correlations between SASCCS and CDSS scores, suggesting that patients with more depression symptoms tend to complain more about their cognitive problems. The possible reasons for different results are the difference between patients' demographics and cultural aspects between Lebanon and Canada. Furthermore, patients with depression will be extremely sensitive, and they tend to link their depressive symptoms to their cognitive impairments.

4.1. Strengths and limitations

This study's strength is to be the first study, as far as our knowledge, to address the subjective cognitive complaints among a cohort of FEP patients in a longitudinal naturalistic (5 years) follow-up study design. Another strength is to explore the sex differences in FEP patients towards their insight cognitive problems. Furthermore, the findings of this study add to literature knowledge related to alcohol consumption and subjective cognitive complaints among FEP patients.

Due to the limited sample size, most of the multiple testing corrections were not statistically significant. However, this is a trade-off for controlling type I error rate and loss of statistical power. Furthermore, patients dropping out of the study limited our capacity to conclude on the evolution of cognitive complaints over time. Since this study involved only two clinical sites in Montreal in Canada, it may restrict the generalization of the findings. Our study did not comprise a cognitive battery, meaning that we were not able with this sample to examine the potential associations between subjective and objective cognition in FEP patients. Future studies including other clinical sites in other provinces of Canada and in other countries will allow better external validity.

To set up a good cognitive remediation program, it is useful to start from the requests of the patients. This request for remediation may follow complaints from patients or be facilitated. However, the relationships between cognitive complaints and cognitive remediation, although suggested, are not explored in our study. We did not explore if the subjective cognitive data may or may not be related to engagement or adherence to treatment. The subjective complaints, insight, and

metacognitive levels of people with early psychosis appear to be related to their occupational outcomes in several studies (Barlati et al., 2012, Revell et al., 2015). Assessment including measures of subjective complaints, insight and metacognition would be relevant in FEP program and/or vocational rehabilitation centers (employment, studies, etc.). Further studies should focus on possible predictive relationships between subjective cognition/insight/metacognition and the ability to (return to) studies, work of people with FEP. Additionally, shared decision making (SDM) has made inroads in mental health care in recent years. Besides ethical considerations, it is the expectation of improvements in patient care that facilitates the investigation and implementation of SDM. Subjective complaints could easily be part of the discussion in the first phases of SDM or motivational interviewing. Furthermore, the fact that alcohol is one of the variables involved in our results on cognitive complaints is consistent with the concerns of mental health and addictology professionals regarding the motivation of patients to engage in treatment programs.

5. Conclusion

Although objective measurements have an essential role in clinical practice to better support diagnosis, therapy and their impact they cannot however pretend to describe a patient in his globality. Planning good cognitive remediation program should include tailoring the therapy on the patient's needs as identify by him/her, which will likely improve motivation and compliance to the program. Further research should take into account different patient characteristics likely associated with different cognitive complaints such as sex and alcohol users and abstinent patients as suggested by the present study results.

Ethical approval

Our institutions did require ethical approval for reporting individual cases or case series and gave approval.

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Informed consent

Written informed consent was obtained.

CRediT authorship contribution statement

Each author has substantially contributed to the case report description or to the follow-up. All participated in data interpretation, manuscript writing. All authors participated in the critical revision and final approval. The manuscript is not presented elsewhere for publication.

Declaration of competing interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Further Reading

Matrics Consensus Cognitive Battery (MCCB), n.d., Matrics Consensus Cognitive Battery (MCCB) profile of impairment. General Psychiatry, 32(3), e100043. doi:10.1136/gpsych-2018-100043.