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A preliminary examination of the validity and reliability of new brief rating scale for symptom domains of psychosis: Brief Evaluation of Psychosis Symptom Domains (BE-PSD)

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ABSTRACT

Background: Brief assessments have the potential to be widely adopted as outcome measures in research but also routine clinical practice. Existing brief rating scales that assess symptoms of schizophrenia or psychosis have a number of limitations including inability to capture five symptom domains of psychosis and a lack of clearly defined operational anchor points for scoring.

Methods: We developed a new brief rating scale for five symptom domains of psychosis with clearly defined operational anchor points – the Brief Evaluation of Psychosis Symptom Domains (BE-PSD). To examine the psychometric properties of the BE-PSD, fifty patients with schizophrenia or schizoaffective disorder were included in this preliminary cross-sectional study. To test the convergent and discriminant validity of the BE-PSD, correlational analyses were employed using the consensus Positive and Negative Syndrome Scale (PANSS) five-factor model. To examine the inter-rater reliability of the BE-PSD, single measures intraclass correlation coefficients (ICCs) were calculated for 11 patients.

Results: The BE-PSD domain scores demonstrated high convergent validity with the corresponding PANSS factor score (r_s = 0.81–0.93) as well as good discriminant validity, as evidenced by lower correlations with the other PANSS factors (r_s = 0.23–0.62). The BE-PSD also demonstrated excellent inter-rater reliability for each of the domain scores and the total scores (ICC(2,1) = 0.79–0.96).

Conclusions: The present preliminary study found the BE-PSD measure to be valid and reliable; however, further studies are needed to establish the psychometric properties of the BE-PSD because of the limitations such as the small sample size and lacking data on test-retest reliability or sensitivity to change.

1. Introduction

The Positive and Negative Syndrome Scale (PANSS) (Kay et al., 1987) represents a widely used clinical measure designed to capture the different symptom domains in schizophrenia. Widespread use is highlighted by its adoption as one of key outcome measures in several recent large medication effectiveness trials in schizophrenia (Chen et al., 2010; Honer et al., 2006; Jones et al., 2006; Kahn et al., 2008; Kane et al., 2016; Lieberman et al., 2005; McEvoy et al., 2014, 2007; Rosenheck et al., 2003, 2011). A large number of studies examining the PANSS using factor analysis have demonstrated that symptoms of schizophrenia consist of five domains including psychotic symptoms (i.e., hallucinations and delusions), disorganization, negative symptoms (i.e., diminished emotional expression and avolition), depression/anxiety, and excitement/mania (Stefanovics et al., 2014; van der Gaag et al., 2006a, 2006b; Wallwork et al., 2012). These same five symptom domains have been reported in other forms of psychosis such as

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bipolar disorder (Lindenmayer and Bossie, 2008).

Practically speaking, though, completing a PANSS assessment takes approximately 45 min, a considerable demand in terms of time for both clinicians and patients, which in turn limits its use in routine clinical practice and even research. In contrast, the Clinical Global Impression-Severity of Illness (CGI-S) (Guy, 1976) is a simple measure that comprises one item to assess a clinician's impression on overall severity of "illness". While it can be administered quickly, it falls short in capturing symptom domains and possible differences between them, for example, individuals where positive symptoms are severe but negative symptoms are mild (Busner et al., 2009). Optimally, a measure would be able to capture these differences as the information has significant implications in terms of interventions and outcomes. Using another example, an individual's positive symptoms may have resolved but the ongoing presence of prominent negative symptoms poses challenges in terms of functional recovery.

In this context, the CGI-Schizophrenia scale (CGI-SCH) has been developed to briefly assess various symptom domains of schizophrenia (Haro et al., 2003); more recently, the CGI for schizoaffective disorder (CGI-SCA) has also been established to measure the different symptoms of schizoaffective disorder (Allen et al., 2012). Though these scales have solved the above-mentioned issue regarding CGI-S, there still remains a problem: each includes only four of the five symptom domains captured by the PANSS. More specifically, the CGI-SCH and CGI-SCA do not include the domains of excitement/mania and disorganized symptoms (included in positive symptoms), respectively. Exclusion of these domains limits the scope of clinical information offered by these tools and, importantly, also limits direct comparison with gold-standard measures such as the PANSS. After the CGI-SCH was published, the CGI for aggression (CGI-A) was released to assess agitated/aggressive symptoms (Huber et al., 2008) and, theoretically, the scales could be used in combination. However, the range of the CGI-A score is 1–5, not 1–7 as is the case for the CGI-SCH, preventing a direct comparison between the different measures. Along similar lines, the recently released Diagnostic and Statistical of Mental Disorders (5th ed.) (DSM-5) (American Psychiatric Association, 2013) provides the Clinician-Rated Dimensions of Psychosis Symptom Severity (CRDPSS), which includes eight symptom domains: hallucinations, delusions, disorganized speech, abnormal psychomotor behavior, negative symptoms, impaired cognition, depression, and mania (Barch et al., 2013). Notably, it too does not specifically assess excitement, as is the case with the CGI-SCA, and for each domain its scoring range is 0–4 (i.e., 5-point scale).

A further problem with the current CGI scales including CGI-SCH, CGI-SCA, and CGI-A is a lack of clearly defined operational anchor points for scoring, which may contribute to the low observed inter-rater reliabilities for at least some of the domains evaluated (Allen et al., 2012; Haro et al., 2003; Huber et al., 2008), although this is overcome to some extent with the CRDPSS. Specifically, the CGI-SCH user's guide simply instructs to "rate the severity of symptoms". The CGI-SCA user's guide generally instructs to "rate the frequency, severity, and impact on behavior of the patient's symptoms"; however, there are no specific descriptions of anchor points for each symptom domain. In addition, scales such as the PANSS and CGI-S include not only symptoms and their impact on behavior but also functional outcome in the anchor points. There is an argument to be made for separately assessing symptomatic and functional outcome, as there is evidence that their interrelationship is complex and influenced by a number of factors (Correll et al., 2011; Remington et al., 2010).

In order to overcome the numerous aforementioned problems, we developed a new scale, the Brief Evaluation of Psychosis Symptom Domains (BE-PSD). It focuses specifically on symptoms and captures the five symptom domains of psychosis; moreover, it employs a 7-point scoring range for each item with clearly defined operational anchor points. While such a brief rating scale could find a role in research, it might also better serve clinicians in adapting an objective assessment tool as part of routine practice and in conducting naturalistic/observational studies. The purpose of the present preliminary study was to examine the validity and reliability of this new scale.

2. Material and methods

2.1. Development of the BE-PSD

We developed the BE-PSD as a partially concept-/theory-based, partially evidence-based scale following three procedures: (i) selection of symptom domains; (ii) selection of symptoms in each domain; and (iii) development of anchor points and scoring. As part of this process, we drew upon the following sources: DSM-5 (American Psychiatric Association, 2013); literature on factor analytic studies using the PANSS (Stefanovics et al., 2014; van der Gaag et al., 2006a, 2006b; Wallwork et al., 2012) and the expanded version of the Brief Psychiatric Rating Scale (BPRS-E) (Picardi et al., 2012), in particular Wallwork et al.'s study (Wallwork et al., 2012); the CGI-SCH (Haro et al., 2003); CGI-A (Huber et al., 2008); CGI-SCA (Allen et al., 2012); CRDPSS (Barch et al., 2013); and, the Remission in Schizophrenia Working Group's remission criteria (Andreasen et al., 2005).

The full description and instruction manual for the BE-PSD is provided in the Supplement. The BE-PSD was designed to individually assess the overall severity of the five symptom domains of psychosis, but was not designed to comprehensively assess the severity of all symptoms of psychosis. The BE-PSD consists of five symptom domains of psychosis: (i) psychotic symptoms; (ii) disorganized thinking; (iii) negative symptoms; (iv) excitement/mania; and (v) depression/anxiety. Of note, bizarre behavior was not included as disorganized symptoms in this scale since only symptoms related to thinking/cognitive process (i.e., P2, conceptual disorganization; N5, difficulty in abstract thinking; and G11, poor attention) were included in the consensus five-factor model (Wallwork et al., 2012). Negative symptoms consist of two components, diminished emotional expression and avolition, in line with DSM-5 (American Psychiatric Association, 2013) and findings from factor analytic studies of negative symptoms using the PANSS (Fervaha et al., 2014; Liemburg et al., 2013). Manic symptoms were included as the scale was designed to be used not only for schizophrenia spectrum disorders but also other forms of psychosis such as bipolar disorder. The severity of each symptom domain is scored based on the frequency of symptoms and their impact on behavior during the past week, with scores ranging from 0 (Absent) to 6 (Very severe). The anchor point is provided in each severity score; the severity must be scored according to the anchor points. Disorganized thinking and diminished emotional expression of negative symptoms are scored based on the frequency of behavior observed during the interview and its impact on the interview. The sum of the five symptom domain scores, ranging from 0 to 30, is used as the overall symptom severity of the disorder. Completing the assessment of the BE-PSD takes approximately 5–10 min depending on the patient's status and/or how familiar the rater is with the patient.

2.2. Study design

This preliminary cross-sectional study was conducted at the Centre for Addiction and Mental Health (CAMH) in Toronto, Canada,