UCSD Performance-Based Skills Assessment (UPSA): validation of a Brazilian version in patients with schizophrenia

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ABSTRACT

The UCSD Performance-based Skills Assessment (UPSA) is a measure of Functional Capacity and assesses skills involved in community tasks. It has good psychometrics properties, and is currently recommended as a co-primary assessment of cognition in the MATRICS Project. To our knowledge so far, there are no studies in western developing countries concerning Functional Capacity in Schizophrenia. The aims of this study were to translate, culturally adapt and validate the UPSA to assess Functional Capacity in community-dwelling patients with Schizophrenia living in Brazil. Eighty-two subjects (52 patients, 30 controls) were evaluated using: the Brazilian version of the UPSA (UPSA-1-BR), PANSS, Personal and Social Performance (PSP) and Global Assessment of Functioning (GAF). In the reliability test, UPSA-1-BR showed good Internal Consistency (Cronbach's alpha of 0.88) and strong correlation between test and retest (4-month gap; r = 0.91; p < 0.01). Spearman's rho values showed a moderate correlation between UPSA-1-BR and both PSP (0.50; p < 0.01) and GAF (0.46; p < 0.01) scores. UPSA-1-BR is capable of differentiating people with and without Schizophrenia. Patients scored lower than controls (58.9 versus 79.1), with an AUC of 0.79 (95%IC: 0.69–0.89). Sensitivity and specificity values of 0.71 and 0.70, respectively, were found in the cut-off point of 73.5, for separation of patients and controls, with predictive values of 80% (positive) and 58% (negative). UPSA-B-BR was also evaluated. UPSA-1-BR and its brief version presented adequate psychometric properties and proved to be valid and reliable instruments in the assessment of Functional Capacity in subjects with Schizophrenia.

1. Introduction

In the last two decades, it has become more widely accepted that changes in remission criteria are necessary in Schizophrenia (Harvey et al., 2007). The control of delusions and hallucinations by antipsychotics led to a growing number of patients living in the community and exposed to everyday challenges. According to the World Report of Disability (WHO, 2011), Schizophrenia stands in the ninth position as the most disabling disease in people under 60 years, considering those living in low-income countries.

Achievement of typical milestones of an adult life, such as keeping a job, raising a family or maintaining a home, is strongly dependent on performance on basic daily abilities that constitutes what is named Everyday Functioning. Currently, assessment of everyday functioning might be done by instruments that measure what someone is apt to

do (Functional Capacity) or by those focusing on what they actually do (Real-World Functioning) (McKibbin et al., 2004). Functional Capacity approach uses performance-based instruments developed to assess everyday activities, including adaptive (Velligan et al., 2007), social (Bellack, 2006; Patterson et al., 2001a), community (Patterson et al., 2001b) and medicament-managing skills (Patterson et al., 2002). Evaluation takes place in a controlled environment, by means of a role-played situation where individuals are asked to perform, sometimes using props, as if they were in the real world. Thus, it is expected that usual bias, like the quality of the informant or the opportunity to perform, will not interfere in the results. Not surprisingly, evidence supports that Functional Capacity is strongly related to Cognitive Performance, but only moderately to real-world scores (Keefe et al., 2006; Bowie et al., 2006).

The UCSD Performance-based Skills Assessment (UPSA) (Patterson et al., 2001b) measures skills involved in community tasks. It is composed of five subdomains (comprehension and planning, finance, communication, mobility and house management) and has shown to have good psychometric properties when measuring Functional Capacity (Patterson et al., 2001b; Heinrichs et al., 2006; Leifker et al., 2010) and predicting residential independence in Schizophrenia

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patients (Mausbach et al., 2008). UPSA has been recommended as a co-primary assessment of cognition in the Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) Project (Buchanan et al., 2005), in line with its potential sensitivity to change (Leifker et al., 2010). Currently, several clinical trials employ improvements in UPSA scores as one of the outcomes when evaluating a possible "cognitive-enhancing" drug or remediation.

UPSA and its brief version (UPSA-B) had already been validated in a number of western developed countries (Heinrichs et al., 2006; Harvey et al., 2009; Helldin et al., 2012; Garcia-Portilla et al., 2013) and also had been used to access a specific ethnicity (Cardenas et al., 2008; Bengoetxea et al., 2014) inside a multicultural country (USA). Recently, a Japanese version of the UPSA-B was validated (Sumiyoshi et al., 2014), the first one in a non-western developed country. Cross-cultural and cross-linguistic comparisons showed that, at least among patients from high-income nations, Functional Capacity levels (as measured by the UPSA) are very similar, even when assessing different realities such as those found in big cities and in the countryside (Harvey and Velligan, 2011). Today, a relevant concern is whether Functional Capacity is likewise impaired in low-income countries, with all their cultural and educational particularities, and to what extent existent performance-based instruments are adequate to reliably verify this. UPSA has been used to assess functional skills in a large study in China (McIntosh et al., 2011), where scores for all groups (healthy controls included) were lower than previously reported in western samples. Educational limitations, usually found in developing countries, may have served as an important predictor, as pointed out by the author. To our knowledge so far, there are no studies in western developing countries concerning Functional Capacity in Schizophrenia.

The aims of this study were to translate (Brazilian Portuguese), culturally adapt and validate the UPSA to assess Functional Capacity in community-dwelling patients with Schizophrenia living in Brazil. Data concerning the psychometric properties of its brief version (UPSA-B) were also analyzed and presented in this paper.

2. Material and methods

2.1. Participants

We included in the study 52 community-dwelling stable patients with a diagnosis of Schizophrenia and 30 normal controls. Patients were recruited in the Nova Lima Mental Health Outpatients Clinic, a public device located in the Belo Horizonte metropolitan area (Brazil).

Patient's inclusion criteria were: age ≥ 18 years, Schizophrenia diagnosis following the Diagnostic and Statistical Manual 4th edition definition (APA, 2000), clinical stability and regular treatment. Diagnosis was confirmed by a MINI-Plus interview (Sheehan et al., 1998; Amorim, 2000). Stability was defined when individuals scored 19 or less in the Positive Subscale of the Positive and Negative Symptoms Scale (PANSS) (Kay et al., 1987) and 4 or less in any PANSS Positive Subscale item in the last 3 months. Regular treatment consisted of at least one visit to doctor's office every other month and continuous use of antipsychotic medication, as prescribed. Control's inclusion criteria were: age ≥ 18 years, absence of any current or previous psychiatric condition or treatment with any kind of psychotropics for any reason, and residing in the same geographic area of patients.

Exclusion criteria were: illiteracy or any eye condition that could prevent individuals from reading, primary neurological diseases such as epilepsy or previous head trauma, intellectual disability, and refusal to participate.

All participants invited were previously instructed about the study design and objectives. Those who agreed to be enrolled provided a written informed consent, in accordance to the requirements of the Ethics Committee for Research (*Fundação Hospitalar do Estado de Minas Gerais – FHEMIG*).

2.2. Clinical measures

For each patient, demographic and clinical assessments were obtained at baseline and 4 months later. Normal controls were assessed once. When available, a high-contact informant helped in providing patients' data. Illness severity was graded using the PANSS (Kay et al., 1987). Real-World Functioning assessment was performed using the Global Assessment of Functioning (GAF) (APA, 1987) and the Personal and Social Performance scale (PSP) (Morosini et al., 2000; Menezes et al., 2012). UPSA was employed in its Brazilian version, presently under validation process.

2.3. Instrument

The original UCSD Performance-based Skills Assessment (UPSA) was obtained directly from the author. A 36-page Manual of Instructions was translated to Brazilian Portuguese by the first author of this paper (LMM). Adaptation to the Brazilian culture and to the local reality tried to respect at most the original instrument, with changes related to weather and geography, currency, local habits or general availabilities.

In the Comprehension and Planning subdomain, the beach outing on a hot day task was adapted into a trip to a very well known local club, since Belo Horizonte is an inland city. In the other one, the local Zoo and its peculiarities replaced the original. Financial skills subdomain demanded a currency adaptation, through the substitution of the Dollar's coins and bills by their correlates in the Real (BRL). The difficulty and possible sum challenges, as the amount of bills and coins, were kept. One of the items demanded when writing a check to pay a utility bill, named "account number of the utility bill", needed to be suppressed, since this is not a valid field in regular check sheets available in the country. The Communication subdomain needed little adjustment. Telephone numbers useful in emergencies in Brazil vary depending on their nature: police department (*190*), fire department (*193*) or medical assistance (*192*). All three were equally considered correct. Mobility, as measured by the ability to use buses maps, demanded the employment (as expected) of Belo Horizonte public transportation information panels and local reality, in integration with the subway system. The Household Managing subdomain required a cautious look over local habits and pantry items availability. The laminated photograph option of pantry items was used instead of the shelf or cart containing the actual products.

Translated and adapted UPSA was back-translated into English by an independent and English proficient researcher (JPM). The original author approved the final version of the UPSA, and suggested the acronym UPSA-1-BR for the Brazilian version, since currently there are available three versions of UPSA. The Brazilian brief version of the UPSA was named UPSA-B-BR and included the Financial Skills and the Communication subdomains from the UPSA, as studied originally by Mausbach et al. (2007).

2.4. Experimental design

Patients and controls were tested in a single day each, in the following order: obtainment of the signed consent, demographic assessment, clinical assessment (if patient), GAF, PSP and UPSA-1-BR. In the retest, patients had clinical status and UPSA-1-BR reassessed.

2.5. Statistical analysis

We used the 21st version of the software SPSS (IBM) to perform data analysis. Skewness, kurtosis, coefficient of variance, floor and ceiling effects ($<5\%$ or $>95\%$ of the total score, respectively) were calculated from the UPSA-1-BR scores for both patients and controls, as an evaluation of their distribution profile. For both skewness and kurtosis, the $-1/1$ interval was considered adequate. Kolmogorov–Smirnov test assessed the normality of the sample.

Chi-square was applied to compare gender, parenthood, marital and work status between patients and controls. Comparison of age was performed through the Student's t test, while for years of study and mean scores of PSP and GAF we used the Mann–Whitney test.

Reliability was verified through the Cronbach's alpha at item level (Internal Consistency) and Pearson correlation coefficient (Test Retest correlation). Spearman's correlation was used in the evaluation of the construct validity between UPSA-1-BR and GAF and PSP, since these last distributed non-parametrically. For discriminative validation, we employed the Student's t test when comparing UPSA-1-BR mean scores between patients and controls. Also, we analyzed the discriminative power of UPSA-1-BR by means of the receiver operating characteristic (ROC) curve.

3. Results

3.1. Sample

Clinical, demographic and real-world functioning data are presented in Table 1. Patients and controls didn't differ statistically in age and years of education. Individuals with Schizophrenia were more likely to be single (69.2% versus 6.7%), while controls appeared to have children and to be presently working more frequently (93.3% versus 28.8% and 70% versus 11.5%, respectively). Patients presented low scores in PANSS Positive scale, and low-to-moderate negative symptoms scores in the same instrument. As expected, real-world functioning was higher among controls than in patients, both in PSP and in GAF.

3.2. Psychometric properties of UPSA-1-BR

3.2.1. Distribution features of UPSA-1-BR

Schizophrenia patients scored significantly lower than controls in all 5 sub-domains and in total score of UPSA-1-BR (see Table 2). In

normality tests, both patients and controls presented a normal distribution. Also, as shown in Table 2, scores in UPSA-1-BR had a symmetric and mesokurtic distribution. No significant ceiling or floor effects were observed.

3.2.2. Reliability

UPSA-1-BR showed a good Internal Consistency in patients and in controls (Cronbach's *alpha* of 0.88 and 0.84, respectively). As seen in Table 3, the instrument presented good internal consistency in all subdomains for patients, with the exception of Communication (Cronbach's *alpha* of 0.61). Among controls, however, good internal consistency was seen only for Planning Recreation Activities subdomain (Cronbach's *alpha* of 0.75).

Temporal stability was assessed through the application of UPSA-1-BR twice in patients, with a mean interval of 120 days (4 months). Total score showed a strong correlation between test and retest (r = 0.91). Considering subdomains, correlation coefficients ranged from moderate to strong values (Table 3).

3.2.3. Construct validity

Spearman's *rho* values show a moderate correlation between UPSA-1-BR total scores and both PSP (0.50; p < 0.01) and GAF (0.46; p < 0.01) scores. Subdomain correlations with PSP were: Planning Recreational Activities = 0.36 (p < 0.05); Finances = 0.56 (p < 0.01); Communication = 0.37 (p < 0.01); Transportation = 0.25 (p = 0.07); Household = 0.41 (p < 0.01). For the GAF, subdomain results were: Planning Recreational Activities = 0.26 (p = 0.07); Finances = 0.54 (p < 0.01); Communication = 0.35 (p < 0.05); Transportation = 0.30 (p < 0.05); Household = 0.43 (p < 0.01).

3.2.4. Discriminant validity

As shown in Table 2, UPSA-1-BR is capable of differentiating people with and without Schizophrenia. Patients scored lower than healthy controls (58.9 versus 79.1), matching for age and years of education. Differences were observable also at subdomain level. The Area Under the Curve (AUC), as seen in the ROC Curve of Fig. 1, was 0.79 (95%IC: 0.69–0.89), which represents a fair-to-good accuracy of UPSA-1-BR.

Table 1
Demographic, clinical and real-world functioning scores for patients and controls.

	Patients n = 52	Controls n = 30	Statistical test	p
Mean age (sd)	42 (12.3)	39.3 (8.0)	1.2[a]	0.227
Gender, males [n (%)]	33 (63.5)	6 (20.0)	14.4[b]	0.000
Parenthood, parent [n (%)]	15 (28.8)	28 (93.3)	31.7[b]	0.000
Education (yrs), mean (sd)	7.6 (3.4)	8.9 (2.6)	586.5[c]	0.058
Marital status [n (%)]			162.7[b]	0.000
Single	36 (69.2)	2 (6.7)		
Married	13 (25)	20 (66.7)		
Cohabitation	0 (0.0)	6 (20.0)		
Divorced	3 (5.8)	2 (6.7)		
Work Status [n (%)]			120.3[b]	0.000
Not working[d]	27 (51.9)	8 (26.7))		
Working	6 (11.5)	21 (70.0)		
Retired	3 (5.8)	1 (3.3)		
Permanently Disabled due to mental illness	16 (30.8)	0 (0.0)		
PANSS [mean (sd)]				
Positive	9.1 (2.6)			
Negative	18.8 (6.9)			
General Psychopathology	24.3 (6.4)			
Total	51.8 (13)			
Anti-psychotics class, atypicals [n (%)]	19 (36.5)			
Anti-psychotics dose, Chlorp. Eq. [mean (sd)]	304.2 (200.5)			
GAF [Mean (sd)]	63.7 (15.0)	95.2 (6.6)	13.0[c]	0.000
PSP total score [Mean (sd)]	63.7 (14.7)	94.9 (6.6)	17.0[c]	0.000

n: subjects; sd: standard deviation; yrs: years; Chlorp. Eq.: Chlorpromazine Equivalent; PANSS: Positive and Negative Syndrome Scale; GAF: Global Assessment of Functioning; PSP: Personal and Social Performance Scale.
[a] Student's t test.
[b] Chi-square test.
[c] Mann–Whitney test.
[d] Not working included: unemployed, temporarily disabled.

Table 2
Distribution profile of UPSA-1-BR and UPSA-B-BR for patients and controls.

UPSA-1-BR Domain	Patients n = 52	Controls n = 30	Student test, t	p
Planning recreational activities [Mean (sd)]	13.4 (4.0)	16.5 (3.4)	−3.6	0.001
Finances [Mean (sd)]	10.3 (5.5)	15.1 (3.9)	−4.7	0.000
Communication [Mean (sd)]	9.3 (4.7)	14.0 (3.9)	−4.7	0.000
Transportation [Mean (sd)]	14.0 (5.8)	16.4 (4.3)	−2.0	0.048
Household [Mean (sd)]	11.9 (7.7)	17.0 (3.1)	−4.2	0.000
UPSA-1-BR Total Score [Mean (sd)]	58.9 (21.3)	79.1 (13.7)	−5.2	0.000
Coefficient of Variance (%)	36.2	17.3		
Skewness (se)	-.61 (.33)	-.82 (.43)		
Kurtosis (se)	-.10 (.65)	.43 (.83)		
Ceiling effect[a]	-	2 (6.7)		
Floor effect[b]	0 (0.0)	-		
UPSA-B-BR Total Score [Mean (sd)]	49.1 (22.1)	73.1 (16.9)	−5.1	0.000
Coefficient of Variance (%)	45.0	23.1		
Skewness (se)	-.09 (.33)	-.52 (.43)		
Kurtosis (se)	-.38 (.65)	-.43 (.83)		
Ceiling effect[a]	-	1 (3.3)		
Floor effect[b]	1 (1.9)	-		

n: subjects; sd: standard deviation; se: standard error.
[a] Number (%) of controls with scores greater than 95%.
[b] Number (%) of patients with scores lower than 5%.

Table 3
Reliability of the UPSA-1-BR and the UPSA-B-BR.

UPSA-1-BR Domains	Internal Consistency[a]		Test–Retest[b]
	Patients	Controls	
Planning recreational activities	0.76	0.75	0.52**
Finances	0.71	0.62	0.79**
Communication	0.61	0.46	0.89**
Transportation	0.71	0.58	0.59**
Household	0.81	− 0.37	0.75**
UPSA-1-BR Total Score	0.88	0.84	0.91**
UPSA-B-BR Total Score	0.78	0.70	0.88**

[a] Cronbach's alpha at item level.
[b] Pearson Correlation Coefficient, with a mean test-retest interval of 120 days, in patients.
* $p < 0.05$.
** $p < 0.01$.

Sensitivity and specificity values of 0.71 and 0.70, respectively, were found in the cut-off point or 73.5, for separation of patients and controls, with predictive values of 80% (positive) and 58% (negative).

3.3. Psychometric properties of UPSA-B-BR

Raw scores from the Financial Skills and Communication subdomains were reassessed and converted to the standard score ranging from 0 to 50 each. For both patients and controls UPSA-B-BR scores remained with a normal, mesokurtic and symmetric distribution (Table 2). A consistent reliability pattern was found, considering internal consistency at item level and temporal stability (Table 3). Construct validity analysis showed a moderate correlation between UPSA-B-BR and PSP total scores (rho = 0.54; p < 0.01). A similar result emerged for GAF (rho = 0.51; p < 0.01). As presented in Table 2, patients scored significantly lower than normal controls. UPSA-B-BR appeared to have a good accuracy, with an AUC of 0.80 (95%IC: 0.71–0.90) in the ROC Curve presented in Fig. 1. Values of sensitivity and specificity of 0.75 and 0.70, respectively, were found in the cut-off point or 66.5, with positive predictive value of 81% and negative predictive value of 62%.

4. Discussion

Functional Capacity performance-based instruments have become since the last decade a keystone assessment of everyday functioning of patients with Schizophrenia, less vulnerable to environment biases and more strongly related to cognition. Together with neuropsychological tests and real-world assessments of functioning, they are intended to provide a more comprehensive evaluation on how these patients deal with everyday tasks, currently serving as relevant co-primary cognitive outcomes in clinical trials. Thus, it is essential to ensure how reliable and valid such instruments are, and to what extent they are capable of encompassing patients with Schizophrenia from different countries and cultures.

This study focused on the validation process of a translated and culturally adapted measure of Functional Capacity in Schizophrenia, the Brazilian version of the UCSD Performance-based Skills Assessment (UPSA-1-BR). Supported by existent evidences (Bengoetxea et al., 2014) and based on our results, we believe that the adaptation process (language and culture) didn't interfere with the original instrument's essence.

Our results showed that Brazilian middle-aged patients have impaired Functional Capacity, as measured by UPSA-1-BR, when compared with healthy controls living in the same area. This is in line with the known functional disability present in Schizophrenia, and with our sample low real-world functioning scores and scarce achievement of adult life hallmarks, such as marriage, parenthood and employment. Also, it should be noted that the few number of exclusion criteria approximates our sample of the general schizophrenia population, enabling a generalization of our results.

UPSA-1-BR total scores of our patients agreed with those found by Patterson et al. (2001b) in elder and better educated patients (58.8), but are lower than those presented by Heinrichs et al. (2006) in patients with same mean age, with better educational level (83.2). Interestingly, more educated Canadian patients of this last paper (at least high-school graduated) display similar UPSA score levels as Brazilian healthy controls with 8.9 years of study average (79.1). Since age and instruction are known Functional Capacity predictors (Gould et al., 2012), matching of patients and controls in regard to these parameters is a strength of our study.

Another methodological care regarding the matching of patients and controls is related to geographic peculiarities. Since Holshausen et al. (2014) presented evidence that experience in the community may limit some sort of skills acquisition, we recruited controls in the same region as patients inside the metropolitan area of Belo Horizonte, aiming to assess people with similar needs and opportunities towards everyday functioning.

Internal Consistency and Temporal Stability tests contributed to prove UPSA-1-BR as a reliable instrument. Results of internal reliability
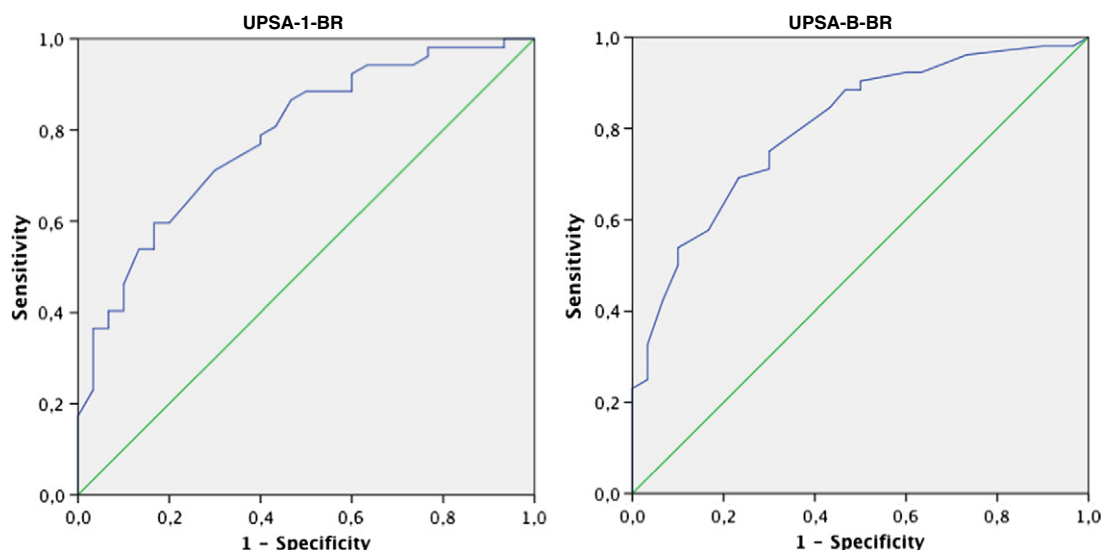

Fig. 1. Total UPSA-1-BR and UPSA-B-BR ROC Curves for Schizophrenia.

(0.88) among patients suggest that all 5 subdomains comprise different branches of the same construct of competence to perform everyday community activities. These are in agreement with the Spanish version of the UPSA (Sp-UPSA) (Garcia-Portilla et al., 2013), which found a Cronbach's *alpha* of 0.9. However, UPSA-1-BR presented a much better result among healthy controls (0.84 versus 0.44), even though one subdomain (Household) evidenced no consistence. Further investigation will be necessary to verify the applicability of this particular subdomain in the evaluation of Functional Capacity among healthy people. Test–retest evaluation assessed the reliability with which UPSA-1-BR measures Functional Capacity over time, more specifically, after 4 months from baseline. Our results show that UPSA-1-BR total scores from test and retest are strongly correlated (r = 0.91). These results are better than those found by Leifker et al. (2010) (r = 0.77) and by Garcia-Portilla et al. (2013) (r = 0.74), both in a test–retest measure with a six-month gap.

Real-World Functioning scales (i.e. PSP and GAF) and performance-based instruments of Functional Capacity are complementary ways to assess Everyday Functioning. Since the first focuses on actual performance and the latter intends to evaluate the competence under ideal conditions, it is expected that the construct validity test will show significant but not very strong correlations. Accordingly, UPSA-1-BR total scores correlated positively and moderately with both PSP (rho = 0.5) and GAF (rho = 0.46). Similar results were presented by Keefe et al. (2006) (r = 0.4), Leifker et al. (2009) (r = 0.48) and Bowie et al. (2006) (ranging from r = 0.34 to r = 0.61) when analyzing the relationship between total scores of UPSA and Real-World Functioning scales. Further studies including UPSA-1-BR and multiple-domain Real-World Functioning scales are necessary to unveil if these correlations get stronger when specific skills are matched with particular situations in daily activities.

As mentioned earlier, discriminant validity emerged when comparing performance in the UPSA-1-BR between patients and healthy controls. Accuracy appeared to be adequate, with sensitivity and specificity at a cutoff score of 73.5 very similar to what Mausbach et al. (2008) found when checking the usefulness of UPSA for predicting residential independence in such patients.

The alternative data analysis, considering only Financial Skills and Communication, also revealed that UPSA-B-BR kept good psychometric properties from the original scale. It is worth noting that it presented a good accuracy (AUC 0.80), higher than that found by Mausbach et al. (2007) in the original UPSA-B study (0.73), and close to what Sumiyoshi et al. (2014) presented for the Japanese version (0.77).

To our knowledge, our study is the first to evaluate Functional Capacity among schizophrenics outside high-income western countries. The results support the hypothesis raised by Harvey et al. (2012) that impairment in Functional Capacity may be an endophenotype in Schizophrenia, based on similar levels of impairment across diverse populations, among other evidences. Besides, the Brazilian version of UPSA, minimally modified and approved by the original author, proved to be valid in our population and allows transcultural comparison studies in the future.

An important limitation of this study is the absence of assessment of patients from other centers. Even though Belo Horizonte is a large and multicultural city, quite representative of Brazilian culture, regional particularities may require Functional Capacity studies elsewhere, including small towns and countryside. A major topic, not explored here, is whether UPSA-1-BR is adequate for illiterate people (excluded), still an unfortunate reality among patients and healthy people in Brazil.

In sum, UPSA-1-BR and its brief version presented adequate psychometric properties and proved to be valid and reliable instruments in the assessment of Functional Capacity in subjects with Schizophrenia and available to be employed in clinical trials. It also provided a relevant and more comprehensible data about the functional status of such population living in Brazil, enabling international comparisons and identification of transcultural similarities.

Contributors

LM Mantovani wrote the first draft of the manuscript.
LM Mantovani and JV Salgado analyzed the data.
All the authors reviewed the manuscript and contributed to its final version.

Ethical Approval

The Ethics Committee for Research (*FHEMIG, 034-B/2010; CAAE 0038.0.287.000-10*) approved the study.

Conflicts of Interest

The authors have no conflict of interest related to the topic of this article.

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