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BRIEF COMMUNICATION

The Crack Use Relapse Scale (CURS): development and psychometric validation

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Objective: To report the development and validation of the Crack Use Relapse Scale (CURS) in an inpatient population.
Methods: A pilot study with 30 male crack users was conducted to generate 35 sentences related to the construct of interest. A five-point Likert scale including 25 items and, initially, nine theoretical factors was generated and utilized in a cross-sectional study with a sample of 333 hospitalized male crack users.
Results: Overall Cronbach's alpha was $\alpha = 0.86$. The exploratory factor analysis (EFA) with oblimin rotation kept the 25 items (factor loadings > 0.40) and six definitive factors, which explained 62.1% of the total variance.
Conclusions: The six-factor model yielded by the EFA of the CURS reflects the various dimensions of the construct, assigning satisfactory values and demonstrating good psychometric properties, including validity and reliability.

Keywords: Relapse; crack users; scale; validation

Introduction

Health is a broad and multifactorial concept in the context of psychoactive substance use, and particularly in the context of crack cocaine use. Prior studies[1-4] have shown that a variety of factors are directly involved in the dependence behavior and relapse process, including family, criminality, ties with the drug trade, availability of housing, personal relationships, financial issues, spirituality, ability to cope with high-risk situations, and clinical aspects, such as psychiatric comorbidities and craving.[5]

However, there is a lack of specific, reliable, validated research instruments for the assessment of the psychological, psychiatric, and social constructs involved in the use of crack.[6] Such instruments could be helpful in the diagnosis and assessment of crack use relapse, a relatively frequent occurrence in the first weeks after discharge, either from outpatient or inpatient rehabilitation.[7]

The objective of the present study was to describe the development and psychometric validation of an instrument (Crack Use Relapse Scale - CURS) designed to assess the risk factors that may lead crack users to relapse shortly after discharge from rehabilitation treatment. This is an attempt to support the development of new strategies to improve self-efficacy and the skills required to face relapses of crack cocaine use. We recently published a qualitative study[8] with 14 crack users receiving inpatient treatment. These participants were interviewed and their reports on factors associated with relapse were analyzed to serve as the basis for the construction of the instrument described herein.

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Methods

Development of the scale

Pilot study

Thirty male crack users were interviewed to generate 35 sentences related to the construct of interest. Content and semantic validation were obtained later via a focus group of eight male crack users, as well as an expert panel of 10 drug dependence specialists. After discussion, the group selected 25 sentences, which were adapted by the principal investigator into 25 items, divided into nine theoretical factors: family and emotional aspects; negative feelings; positive feelings; craving; physical aspects; treatment; legal aspects; social aspects; and coping. The entire pilot study procedure was described in detail elsewhere.[8]

Psychometric validation of the scale

Using a cross-sectional design, a convenience sample of 333 male crack users hospitalized in a public psychiatric hospital in Porto Alegre, Brazil, was recruited. Sample size was calculated on the basis of the number of items of the study instrument. Therefore, our sample met the established criteria for exploratory factor analysis (EFA), with a ratio of 10 subjects for each item of the 25-item scale.[9]

Most participants were white (74.47%). Only a minority of subjects claimed to have a marital relationship

(16.52%). Mean age (25.9±7.96 years) and educational attainment (median, 12.0 years of formal education; interquartile range: 12.0-13.0) were also noteworthy characteristics.

All subjects had a diagnosis of cocaine dependence - specifically, crack cocaine dependence.[10] No subjects were excluded from analysis.

Instruments

- Semi-structured interview: conducted to evaluate the sociodemographic profile of the sample and to describe the pattern of psychoactive substance use.
- CURS: a five-point Likert-type scale[11] with 25 items. Instruction to respondents: "Read each item and circle the number that best describes how much you disagree or agree with the statements related to your use of crack during the past 6 months."

Data analysis

Cronbach's alpha was used to test the reliability of internal consistency (Table 1). We analyzed each factor individually and the 25-item scale as a whole. The kappa coefficient was used to assess inter-rater reliability. The Kaiser-Meyer-Olkin test (KMO) was used to evaluate sampling adequacy, and Bartlett's test was used to test for sphericity of the CURS and to assess the suitability of the data for EFA.

Ethical aspects

The study was approved by the Institutional Review Board of the Hospital de Clínicas de Porto Alegre.

Results

The KMO test (0.774) was used to evaluate the adequacy of the data, and Bartlett's test ($p < 0.001$) rejected sphericity, which is indicative of significant correlations between the items of the CURS. The data therefore met the assumptions for EFA, which was performed using oblimin rotation. EFA kept the 25 items with factor loadings > 0.40 (Table 1) and six definitive factors, which explained 62.1% of the total variance. The six

Table 1 Exploratory factor analysis and assessment of reliability (factor loadings > 0.40 after oblimin rotation)

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Crack Use Relapse Scale	Emotions, family and affect	Coping	Health, sex and treatment	Legal and social aspects	Positive expectations	Craving
Total Cronbach's alpha = 0.86	$\alpha = 0.84$	$\alpha = 0.71$	$\alpha = 0.59$	$\alpha = 0.81$	$\alpha = 0.77$	$\alpha = 0.80$
Eigenvalues (> 1)	5.94	2.89	2.32	1.90	1.33	1.16
1 - Family conflicts	0.581	0.087	0.187	0.228	0.103	-.0124
2 - Intimate relationship conflicts (e.g., with partner)	0.579	0.023	0.225	0.245	0.080	-0.384
3 - Feelings of sadness	0.840	-0.026	0.016	0.068	0.008	-0.029
4 - Feelings of loneliness	0.797	0.032	0.032	-0.003	0.003	0.123
5 - Feelings of anxiety	0.728	-0.002	0.023	0.103	0.142	0.208
6 - No hope*	0.679	0.232	0.017	-0.054	0.159	0.187
7 - Dissatisfaction*	0.646	0.278	0.058	-0.030	0.192	0.162
8 - Feelings of pleasure	0.116	0.064	0.081	0.006	0.837	0.097
9 - Feelings of euphoria	0.162	0.093	0.068	0.058	0.870	0.059
10 - Excessive self-confidence	0.102	0.114	0.003	0.044	0.586	0.128
11 - Craving for crack	0.243	0.059	-0.032	0.184	0.229	0.686
12 - Craving for crack after the use of another drug	0.080	0.061	0.193	0.054	0.137	0.765
13 - Exchange of sex for crack when the craving strikes	0.076	0.094	0.741	0.004	0.058	0.249
14 - HIV infection	0.015	-0.049	0.881	0.082	0.046	0.008
15 - Infection with sexually transmitted diseases other than HIV	0.009	0.065	0.897	0.120	0.004	-0.006
16 - Difficulty accessing treatment in the public health service	0.119	0.157	0.577	0.277	0.053	-0.097
17 - Imprisonment due to crack use	0.029	0.104	0.389	0.650	0.116	0.095
18 - Theft and robbery due to crack use	0.021	0.154	0.073	0.787	0.046	0.107
19 - Involvement with drug trade	0.065	0.151	0.095	0.805	0.013	-0.029
20 - Unemployment	0.157	0.379	0.091	0.533	0.033	0.047
21 - Favorable social environment for the consumption of crack	0.253	0.480	-0.051	0.449	-0.125	0.097
22 - Inability to cope with situations posing a high risk of crack use	0.159	0.704	0.009	0.277	0.044	0.125
23 - Lack of perspectives for a new lifestyle	0.107	0.801	-0.27	0.119	0.088	0.095
24 - Lack of healthy habits, e.g., involvement with sports	0.010	0.801	0.137	0.061	0.088	-0.077
25 - Lack of spirituality*	0.021	0.692	0.142	0.160	0.165	-0.015

* Items modified in response to exploratory factor analysis.

factors are important because they express the aspects reported by crack users to be involved in their relapse.[8]

Discussion

Our findings show that the CURS is based on a valid model for measuring the factors that influence relapse among crack users, as demonstrated by satisfactory psychometric parameters. EFA immediately established the good fit of the constructed model, distributing the nine initial theoretical factors across a six-factor model. This shows that the original scale had an appropriate *a priori* model, as none of the essential concepts of the CURS were removed; that is, the concepts were regrouped without losing the meaning assigned to the initially constructed domains.

Although EFA retained all 25 items of the scale with factor loadings > 0.40 and data showed that all items exceeded this parameter and were thus fully satisfactory,[6,12] we decided that the wording of three items should be modified. Item 13, "Exchange of sex for crack when the craving strikes," was modified when we realized it contained two complex constructs in a single statement. We simplified this item, replacing it with the expression "Exchange of sex for crack," which facilitated understanding by respondents. Item 16, "Difficulty accessing treatment in the public health service," was simplified to read "Difficulty accessing treatment." Item 25, "Lack of spirituality," was modified to read "Spirituality," a broader term.

EFA was performed with oblimin rotation to facilitate factor readings. This analysis demonstrated high factor loadings for one factor and lower loadings for others; thus clearly defining the clusters of variables that compose each factor of interest. On the basis of these results, item 21, "Favorable social environment for the consumption of crack," was distributed across two factors; although its factor loading was higher in Factor 2 - Coping, we chose to keep it in Factor 4 - Legal and social aspects, as it was conceptually more adequate to explain the construct assessed by this domain.[13]

We are aware of some limitations of our study. Although a heterogeneous, diverse sample is advisable for validation studies, our sample was entirely male, as male crack users are still more likely to receive treatment in Brazil.[8] The facility where the study was conducted has a dedicated unit for the treatment of male users, but no such unit for women. Nevertheless, we believe studies with female samples would be important.

It bears stressing that this study presents satisfactory results for the first-ever scale developed for the assessment of crack use relapse. The CURS is a short scale that can be easily and quickly administered (about 7 minutes), which is key for crack users. At least partially, this scale can now be used as an alternative to bridge the gap in preventive strategies for coping with high-risk situations in this population. According to the media, over 70% of crack cocaine users treated at inpatient drug rehab facilities will relapse after discharge. However, scientifically sound data on what really happens to this population after discharge are still lacking.[8] The CURS proved adequate for assessment of risk factors associated with relapse after discharge. It can also be used for follow-up interviews within a psychosocial treatment model,[14] which is an essential intervention for following the trajectory of crack users after discharge from rehabilitation and, perhaps, even modifying the now almost-certain bad outcome (i.e., relapse).

Finally, we believe that effective prevention of relapse among crack users can be achieved based on the users' knowledge of their vulnerabilities. This is in agreement with the health belief model, according to which individuals are able to perform preventive behaviors related to a certain condition merely because they believe they are susceptible to such condition and subsequently take preventive action to modify their behavior. Therefore, the importance of the CURS lies on the fact that it provides such data for researchers and clinicians working with crack cocaine users.[15]

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Disclosure

The authors report no conflicts of interest.

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