



Preliminary Study: Psychometric Properties of the Obsessive-compulsive Inventory: The Persian Child Version; a Preliminary Study



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Running Title Child Persian Version of Obsessive-compulsive Inventory
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ABSTRACT

Background: The Obsessive-Compulsive Inventory-Child Version (OCI-CV) is an approved self-report assessment tool that includes various domains of Obsessive-Compulsive Disorder (OCD).

Objectives: This study was done to evaluate the psychometric properties of the OCI-CV in a sample of youth with OCD.

Materials & Methods: This was a descriptive-analytic study. The subjects were 107 children and adolescents, 7 to 17 years old admitted to the Shafa hospital and Gill psychiatric center in the north of Iran in 2017-2018. The subjects with the diagnosis of OCD based on a diagnostic interview by a youth psychiatrist based on the DSM-5 were included in the study. They were assessed by the OCI-CV, Revised Children's Manifest Anxiety Scale (RCMAS), and children depression inventory (CDI). Data were analyzed by SPSS v. 22, using Cronbach alpha, Pearson correlation coefficient, and exploratory factor analysis.

Results: Youth with the Mean±SD age 11.18±3.1 years participated in the study. Results showed that 51% of the samples were girls. The internal consistency assessed by the Cronbach alpha for the total scale was 0.75, indicating good reliability. The Pearson correlation coefficient between OCI-CV and RCMAS was 0.584 (P=0.01), and between OCI-CV and CDI was 0.232 (P=0.05), showing an excellent concurrent validity. Construct validity showed that all subscales had a high correlation with the total score of the questionnaire and the correlation coefficient was significant (P<0.05).

Conclusion: The Persian version of the OCI-CV has good psychometric characteristics in the clinical sample of youth with OCD.

Keywords: Obsessive-Compulsive Disorder, Personality inventory, Iran, Psychometrics, Child

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Highlights

- The Persian version of OCI-CV showed good internal consistency (Cronbach's alpha for the total scale was 0.75). Construct validity showed that all subscales had a high correlation with the total score of the questionnaire and the correlation coefficient was significant.
- It has excellent concurrent validity. The Pearson correlation coefficient between OCI-CV and RCMAS was 0.584 and between OCI-CV and CDI was 0.232.

Introduction

Obsessive-Compulsive Disorder (OCD) is a chronic and disabling neuropsychiatric disorder with a lifetime prevalence of 2% to 3% [1]. The symptoms begin in childhood or adolescence most of the time [2]. The average age for the onset of the symptoms is 9-10 years. However, this disorder often begins between the ages of 6 and 12.5 years in childhood [3, 4]. Pediatric OCD is a chronic neuropsychiatric condition associated with broad impairment in functioning [5].

In recent years, the treatment of pediatric OCD has been attracted more attention due to the high prevalence of OCD and the negative effect of this disorder on the youth [6, 7]. OCD in childhood might be followed by the increased risk of other psychiatric disorders in adulthood [8, 9]. Due to the high prevalence and importance of OCD in children, there is a need for a suitable tool with good psychometric properties to diagnose OCD in children [10, 11].

The gold standard in the assessment of pediatric OCD is the Children's Yale-Brown Obsessive-Compulsive Scale (CY-BOCS) [12]. The CY-BOCS is a semi-structured interview, including a symptom checklist with options for assessing the severity of obsessions and compulsions, providing a total severity score. This questionnaire has many advantages, such as separation of obsessions and compulsions' severity. But measures that need an interview are time-consuming and expensive, need training for the interviewer. These reasons limit the use of this type of tool in the clinical population [6]. Thus, a complete and brief self-report measure for pediatric OCD is needed.

There are different self-reported measures for pediatric OCD: the Obsessive-Compulsive Inventory-Child Version (OCI-CV), the CY-BOCS-Child Report, the Children's Obsessional Compulsive Inventory (ChOCI), and the Children's Florida Obsessive-Compulsive Inventory (C-FOCI). Although all these scales are good measures

to evaluate OCD symptoms, the OCI-CV is the only self-report measure to assess common dimensions and symptoms of this disorder [13].

The OCI-CV was created by Foa et al. in 2010, used for children and adolescents aged 7-17 years. The OCI-CV indicated very good psychometric properties in a clinical sample of 109 children and adolescents with OCD. The exploratory factor analysis of this version indicated six factors, including doubt/checking, obsessions, hoarding, washing, ordering, and neutralizing. The OCI-CV had good internal consistency for the total scale and subscales (α more than 0.81). The test-retest reliability was reported to be 0.77 for the total scale, 0.68-0.89 for subscales. The correlations between OCI-CV and CY-BOCS were statistically significant [14]. The OCI-CV dimensions consist of the most symptoms and functional aspects of pediatric OCD. These characteristics, in addition to the short format, make it a suitable tool in the assessment of pediatric OCD [15].

The OCI-CV has been validated in several languages, including Spanish, Turkish, Italian, and Swedish. Validation studies of the OCI-CV were done in both clinical OCD samples [6, 16, 17] and the general population previously [14, 17-23]. Karimi et al. administered the OCI-CV to 831 elementary, middle, and high school students in Iran and found satisfactory validity for evaluating OCD symptoms in non-clinical samples. They proposed more research to confirm the results in samples of youth with OCD [24]. Zemeštani et al. in 2021 [25] evaluated the psychometric properties of the OCI-CV in a sample (391 cases) of youth aged 7-17 years in Iran and found good convergent and discriminant validity, acceptable reliability, and good sensitivity and specificity for the detection of OCD. But only 62 cases of their sample were children and adolescents with OCD and most of the participants were from the whole community. In addition, they did not exclude other psychiatric disorders from their clinical sample; for example, 48.3% of their sample had anxiety disorder and 19.4% had depression. Because

the symptoms of OCD overlap with anxiety and depression, we only included OCD youth cases in this study.

There is little information about the Persian version of this scale, especially in the clinical sample. Therefore, this study was done to examine the OCI-CV in a clinical setting in Iranian youth. The purpose of this study was to 1) examine the factor structure of the OCI-CV in a clinical population of pediatrics with OCD, 2) examine the validity of OCI-CV and its subscales, and 3) examine the reliability of OCI-CV.

Materials and Methods

Participants

The study population consisted of all patients (boys and girls) aged 7 to 17 years who were referred to Shafa hospital and one private psychiatric center in the north of Iran, considering all cultural-geographical distribution during 2017-2018. The present study was a correlational descriptive-analytic study and the sampling method was purposive sampling. The sample size for exploratory factor analysis should be at least 100 [26].

Considering the possibility of incomplete questionnaires, 107 subjects were selected. The diagnosis was made by clinical interview by one child and adolescent psychiatrist based on the Diagnostic and Statistical Manual Disorders, Fifth Edition (DSM-5) criteria. They had normal intelligence because all of them were students and had already passed the preschool screening and were able to answer questions. Participants with the diagnosis of OCD comorbid with other psychiatric or medical disorders were excluded from the study. After a complete explaining and written informed consent for all parents and patients, 107 samples completed the questionnaires.

The translation of OCI-CV was done in three steps: In the first stage, two bilingual translators fluent in medicine, Persian, and English, translated this test from English to Persian and Persian to English independently. In the second stage, two copies of the translation were referred to another expert to make his final judgment on the test. The third stage of this test was performed as a pilot for 60 OCD patients (27 girls and 33 boys with the mean age of 11.5 ± 3.2 years) and if the sentence was incomprehensible to the patient, the translation of this test was revised.

Scales

The Obsessive-Compulsive Inventory-Child Version (OCI-CV)

Foa et al. (2010) created this scale for determining the symptoms of OCD in youth aged 7-17 years [6]. This questionnaire has 21 items and based on a 3-point Likert scale, it is scored 0-2 (0=never, 1=sometimes, and 2=always). The maximum score is 42 and a higher score means the severity of symptoms. The total scale and subscales of OCI-CV had good internal consistency (Cronbach's $\alpha > 0.81$). Cronbach's alpha for the test-retest reliability was reported 0.77 for the total scale and 0.68-0.89 for the subscales: 0.82 for doubting checking, 0.83 for obsession, 0.88 for hoarding, 0.83 for washing, 0.83 for ordering, and 0.81 for mental neutralizing [6]. Zemeštani et al. [25] reported good internal consistency for this scale ($\alpha=0.84$), and the result of predictive validity showed 0.77 probability of a diagnosis of OCD in participants, which revealed the accuracy of this scale.

Revised Children's Manifest Anxiety Scale (RCMAS)

This scale is a 37-item self-report tool for children aged 8 to 18 years that 28 of items measure anxiety (including three subscales of physiological anxiety, worry/oversensitivity, and social concerns/concentrations) and nine items are for the lie scale [27]. This multidimensional scale is fast and easy to use. Subjects can choose the answer yes or no, one score for yes and zero for no. The final score is the sum of all answers. Hence, the scores for the anxiety and lie scale are from 0-28 and 0-9, respectively. The lower scores show a lower level of anxiety [28]. The test-retest reliability of this scale was reported by correlation coefficient ($r=0.88$ after a one-week interval and $r=0.77$ after a five-week interval) [29]. The study by Taghavi and Alishahi showed that the RCMAS is a suitable scale to discriminate between anxious patients and healthy individuals in Iran, with good discriminant validity ($P<0.001$) and the test-retest reliability ($r=0.67$, $P<0.001$) [28].

Children's Depression Inventory (CDI)

This self-assessment scale was designed by Kovacs [30] to measure cognitive, behavioral, and emotional symptoms of depression in youth aged 7-17 years. It has 27 questions and each question consists of three sentences and the subject chooses one of the three sentences that express his feelings, thoughts, and behavior during the last two weeks. Questions are scored from 0 to 2 (0=the absence of a sign, 1=a moderate sign, and 2=the

Table 1. Exploratory factor analysis of Obsessive Compulsive Inventory-Child Version

Factors	Variance (%)	Eigenvalue	Questions
1	19.670	13.01	3-7-9-10-19
2	9.01	10.43	1-12-13-17-20
3	6.751	7.99	6-11
4	5.447	6.37	2-4-8-16-21
5	5.179	6.05	14-15
6	4.567	5.34	5-18

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presence of an obvious sign), and the range of scores is from zero to 54. Higher scores indicate more depression. The internal consistency of this scale was reported to be 0.86 in Swedish children [31]. In an Iranian sample, the reliability of retest and internal consistency of this questionnaire were equal to 0.82 and 0.83, respectively [32].

Statistical analysis

The data were analyzed by SPSS v. 22. The construct validity of OCI-CV was evaluated by exploratory factor analysis, and Kaiser-Meyer-Olkin measure of the sampling adequacy (KMO) was used to investigate the sampling adequacy and Bartlett's test of sphericity was used to ensure that the correlation matrix was not random and for the overall significance of all correlations with correlation matrix [33]. Also, we used Varimax rotation determining that questions with a correlation rate of less than 0.3 should be removed from the questionnaire. Concurrent and convergent validity was measured by the Pearson correlation coefficient. The reliability of the scale was explored by the internal consistency using Cronbach's alpha and split-half methods.

Results

According to the demographic variables of the present study, the total study sample of children (107) included 54 (51%) girls and 53 (49%) boys, with a mean age of 11.18 ± 3.1 years.

Exploratory factor analysis

The results of Bartlett's test of sphericity showed that the correlation matrix was not random (Chi-square=651.043, $df=64$, and $P<0.001$), and the KMO statistic was 0.889, which was above the minimum standard for conducting factor analysis. Therefore, it was determined that the correlation matrix was appropriate for factor analysis.

In principal component analysis, only factors whose eigenvalue (eig) is more than one are considered as significant factors, and all factors whose eig was less than one were excluded from the analysis. Determining the number of factors by many researchers, such as Kaiser [34], was based on the eig greater than 1. According to Table 1, the Persian version of the obsessive-compulsive disorder questionnaire in youth with OCD has 6 factors. Table 2 presents the extracted components. Based on this table, OCI-CV has six factors that explain 50.624% of the total variance.

Varimax rotation determines that questions with a correlation rate of less than 0.3 should be removed from the questionnaire because none of the questions were less than 0.3; no questions were removed.

Construct validity

Table 3 shows the standard construct validity of the OCI-CV. The correlation at the level of 0.01 and 0.05 between the subscales and the total score of the questionnaire indicated a high correlation.

Concurrent validity

The correlation coefficient between OCI-CV and RC-MAS CDI was 0.584 ($P=0.01$) and 0.232 ($P=0.05$), which showed a significant relationship between the two questionnaires and indicated that the scale has good concurrent validity.

Reliability

The internal consistency of the total scale showed acceptable reliability ($\alpha=0.75$). Also, the internal consistency and split-half reliability of the subscales of OCI-CV by Cronbach's alpha were 0.69-0.79.

Table 2. Total variance explained by the Obsessive-Compulsive Inventory-Child Version

Components	%					
	Eigenvalues			Rotation Sums of Squared Loadings		
	Total	Variance	Cumulative	Total	Variance	Cumulative
1	13.01	19.67	19.67	16.76	14.32	14.32
2	10.43	9.01	28.68	10.10	8.67	22.96
3	7.99	6.75	35.43	9.49	8.11	31.07
4	6.37	5.44	40.87	8.43	7.20	38.28
5	6.05	5.17	46.05	7.51	6.42	44.70
6	5.34	4.56	50.62	6.93	5.92	50.62

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Discussion

This study examined the psychometric properties of OCI-CV in a large sample of youth with OCD in Iran. Although Zemeštani et al. [25] also did this study, our study was had a larger sample size (107) and OCD patients had no comorbidity. In addition, the diagnosis was made based on a diagnostic interview by a child and adolescent psychiatrist. This study was done to evaluate the psychometric properties of the OCI-CV in Iranian youths with OCD. Fifty percent of adult OCD begins in childhood. This disorder has severe effects on personal and social performance and adaptation and causes different degrees of functional impairment for a person [14]. A standard measurement tool for early diagnosis of OCD symptoms in youths is very important for the treatment of these young populations. Compliance of treatment in children and adolescents strongly depends on the compliance of parents, and using a valid questionnaire makes the parents sure to accept the treatment plan.

The psychometric properties of the OCI-CV show a strong six-factor structure with high factor loading. The total variance was 50.624; hence, this Persian version of the OCI-CV was found to have satisfactory levels of psychometric properties with the same factor structure in the English and other languages translations [6, 16, 17].

The first factor was about doubting/checking subscale. Many children have some symptoms, like obsessive-compulsive behavior in their normal development. Obsessive behaviors, like repetitive touching of objects, rigid rituals before sleep, obsessive thoughts about objects, and daily events are more common in children, but they will disappear after a short time in their developmental process. Unlike other conditions, the clinical feature of OCD in youths is stable and distressing for them [23].

The second factor was about obsessive thoughts, the third factor was about hoarding subscale, the fourth

Table 3. Inter-subscale correlations of the Obsessive-Compulsive Inventory-Child Version

Subscales of OCI-CV	Total Score	W	D	O	OB	H	N
Total score	1						
Washing/Checking	0.702**	1					
Doubting	0.831**	0.552**	1				
Ordering	0.692**	0.313**	0.501**	1			
Obsessing	0.433**	0.218*	0.309**	0.237*	1		
Hoarding	0.658**	0.324**	0.412**	0.613**	0.218*	1	
Neutralization	0.511**	0.702**	0.834**	0.692**	0.433**	0.668**	1

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**Correlation is significant at the 0.01 level (2-tailed); *Correlation is significant at the 0.05 level (2-tailed).

factor was about washing subscale, the fifth factor was about ordering, and finally, the sixth factor was about neutralizing subscale in this research.

The results of Martinez and Gonzalez in 2015 in Chile showed a six-factor structure for this scale, including doubting, hoarding, washing, ordering, and neutralizing [18]. The results of their study, like ours, showed that the extracted factors can explain more than 50% of the variance of the OCI-CV questionnaire. Consistent with Zemestani et al. [25] and the original version of the OCI-CV [6], our results showed that the Persian translation of this scale had a six-factor structure, good convergent validity, and good reliability to detect OCD in Iranian youths.

The construct validity of the scale was measured by exploratory factor analysis. Kaiser-Meyer measure used for adequacy of sampling in exploratory factor analysis showed KMO=0.889, indicating that the selected samples have good adequacy and data fitness. Bartlett's method also showed a significant relationship between variables. Exploratory factor analysis is a statistical method for the analysis of data in order to test whether the data examined by the researcher are in good correlation with the original structure [14].

The concurrent validity of the OCI-CV in our study was supported by its significant correlation with RCMAS and CDI. Previous studies that examined the validity of the OCI-CV, have reported significant correlations between this scale and other scales [13, 14, 24]. One of the limitations of the study was the lack of sociodemographic information of the participants. Besides, we did not determine test-retest reliability because all of our subjects were patients and could not refer again, and also, they were under treatment and their symptoms changed and their reevaluation was not possible. For generalizing the results of this study in the country, more studies should be done.

Conclusion

Our results showed that the Persian version of OCI-CV has good psychometric characteristics in clinical samples of children and adolescents with OCD. Because our results were consistent with the results of similar studies of other parts of the world, this questionnaire might not depend on culture and can be used in Iranian society.

Ethical Considerations

Compliance with ethical guidelines

The study was approved by the Ethical Committee at the Research Center of Guilan University of Medical Sciences (Code: IR.GUMS.REC.1396.303). All study

procedures were done in compliance with the ethical guidelines of the Declaration of Helsinki, 2013.

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Authors' contributions

Conceptualization, investigation, writing of the original draft, writing, review, and editing.: All author; Methodology: Maryam Kousha, Mahnaz Fallahi-Khesht Masjedi, Robabeh Soleimani; Formal analysis: Mahnaz Fallahi-Khesht Masjedi; Funding acquisition: Maryam Kousha; Supervision: Maryam Kousha, Robabeh Soleimani; Data collection: Adele Isanazar.

Conflict of interest

The authors declared no conflicts of interests.

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