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Development and testing of an Arabic language version of yale: Brown obsessive compulsive scale-second edition

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Abstract
Background: The Yale-Brown Obsessive Compulsive Scale is regarded as the gold standard tool for measuring obsessive-compulsive disorder symptom severity. The Yale-Brown Obsessive Compulsive Scale - Second Edition was developed for better measurement. Aim of the study to translate Yale-Brown Obsessive Compulsive Scale II into the Arabic language, and to evaluate its validity and reliability according to Iraqi culture.
Methods: The original Y-BOCS-II was translated into Arabic, which involved forward and backward translation. Modification and cross-cultural adaptation were made. The psychometric properties were evaluated by administering the questionnaire to 210 participants. Results the Iraqi Y-BOCS-II Severity scale had excellent validity. While, the Symptoms Checklist showed a significant statistical value in differentiating between OCD cases and the general population, but not statistically significant in comparison with patients with other psychiatric disorders, reliability, the mean difference between the first and second measurements showed good stability between the two- time stations. Conclusion the Iraqi version of Y-BOCS-II severity scale is valid and reliable in evaluating the severity of the obsessive-compulsive disorder. And the Symptoms checklist is reliable also, and valid regarding the healthy subjects but has no role in detect OCD symptoms in patients with other psychiatric disorders.

Keywords: Obsessive compulsive disorder, yale brown

Introduction

Obsessive-compulsive disorder (OCD) encompasses a broad range of potentially debilitating symptoms, including intrusive thoughts, preoccupations, rituals, and compulsions. Individuals may present with obsessions, compulsions, or both [1]. These symptoms are often time-consuming, highly distressing, and can significantly disrupt occupational and social functioning. Consequently, early detection and assessment are crucial [2]. Historically, OCD was evaluated through subscales of multiphasic personality inventories. However, over the past two decades, standalone scales have emerged, with the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) being widely regarded as the gold standard for assessing symptom severity in OCD [3]. The Y-BOCS is a clinician-administered tool that also exists in self-report, computerized, and child-specific versions (4). It consists of two main components: a symptom checklist and a severity scale. The symptom checklist includes 54 dichotomous items assessing the current or past presence of specific obsessions and compulsions. The severity scale comprises 10 core items, with the first five evaluating time, interference, distress, resistance, and control related to obsessions, and the subsequent five assessing the same dimensions for compulsions. Items are rated on a scale from 0 (no symptoms) to 4 (severe symptoms), yielding a total severity score between 0 and 40. Additionally, introduced six exploratory items addressing insight, avoidance, indecisiveness, pathological responsibility, pathological slowness, and pathological doubt [3]. While the Y-BOCS demonstrates strong psychometric properties, certain limitations have been identified, such as poor conceptual alignment of the "resistance to obsessions" item, insufficient divergent validity relative to depressive symptoms, and inconsistent factor structures [5]. To address these issues, the Y-BOCS-II was developed [4]. The Y-BOCS-II introduced several modifications, including the removal of the formal distinction between obsessions and

compulsions, the addition of a new avoidance checklist, and the revision of the severity scoring system from 0-5. Notably, the "resistance to obsessions" item was replaced by the "obsessions-free interval" item. The overall scoring system remains consistent with the original version, ensuring comparability at lower severity levels, while the upper range was expanded to improve differentiation at higher levels of symptom severity. The maximum total score increased from 40 to 50, with minor adjustments to the anchor points for lower severity levels [3]. In Iraq, OCD symptoms have been identified as the second most prevalent lifetime mental health disorder, particularly among younger populations [6], with a significant prevalence among undergraduate medical students [7]. Given that Khalek [8] highlights the scarcity of validated OCD assessment tools in languages other than English, there is a pressing need to adapt and validate the Y-BOCS-II for Arabic-speaking populations. This effort would support Arabic-speaking clinicians, particularly in Iraq, in addressing the significant burden of OCD in the region. The objectives of the current study are twofold: a) to translate the Y-BOCS-II into Arabic and b) to assess its factor structure, validity, and reliability within the Iraqi population.

Methods

A forward and backward translation process was employed to ensure the cultural and linguistic appropriateness of the Y-BOCS-II for the Iraqi population. An expert English-Arabic translator initially translated the English version of the Y-BOCS into Arabic. Subsequently, an independent professional translator, who was blind to the original tool, conducted a back-translation from Arabic to English. The back-translated version was compared to the original version and evaluated for face validity by a panel of six Arabic-speaking psychiatry experts. Certain items in the checklist were deemed culturally inappropriate and were adapted to align with cultural sensitivities. For instance, references to "fear triggered by the red devil," sports teams with "devil" in their names, "666," and "pentagrams" were modified to focus on "fear of charlatans and witchcraft." The Arabic version of the Y-BOCS-II was administered to three distinct groups. Group 1 included 30 patients diagnosed with OCD according to DSM-5 criteria. The second group served as a control group and consisted of 60 psychiatric patients with diagnoses including mood disorders, anxiety disorders, post-traumatic stress disorder, and substance use disorder. Both the OCD and control groups were recruited from Ibn Rushed Training Hospital, a specialized tertiary mental health facility in Baghdad, Iraq. The third group comprised 120 individuals randomly selected from the general population. Two sets of scores were calculated during the study. The first set was derived from the Symptom Checklist and was further divided into three subsets by summing the counts of positive items within each checklist category. The number of positive obsessions ranged from 0 to 29, positive compulsions from 0 to 29, and positive avoidance behaviors from 0 to 9. The Symptom Checklist was modified to support empirical research exploring the clinical relevance of these distinctions. These adjustments were informed by findings from several factor-analytic studies [3].

The second set of scores was obtained using the Y-BOCS-II Severity Scale. These scores were compared across the three groups to evaluate the tool's capacity to distinguish between individuals with OCD, other psychiatric conditions, and the general population.

Analytic Strategy

The construct validity of the Y-BOCS-II was evaluated through a confirmatory factor analysis (CFA) conducted on the entire sample. The decision to perform CFA was guided by the need to investigate whether the conceptual challenges and inconsistent factor structure observed in the original Y-BOCS had been resolved in the revised version. This approach allowed for an in-depth examination of the psychometric properties of the Arabic version of the Y-BOCS-II within the Iraqi context.

Results

The results were based on the analysis of 3 study groups. The OCD cases group consisted of 30 patients. Two control groups were also included in the study. A general population control group with 120 individuals and another positive control group of 60 individuals randomly selected from cases with psychiatric disorders. Two types of scores were calculated in the current study. The first type is related to the inventory questionnaire. Three scores were constructed for this type by summing the count of positive items in each inventory list. The count of positive obsessions can assume a value ranging between zero and a maximum of 29. Similarly, that of positive compulsions can assume a value between zero and 29, while the count of positive avoidance compulsions can assume a value ranging between zero and 9. The second type of scores is calculated using the Yale-Brown II OC scale, which is composed of 5 questions assessing the severity (impact) of obsessions and another 5 questions for assessing severity of compulsions. Each question is scored from zero to 5. Therefore, the resulting Yale-Brown II Obsession impact score can assume a value between zero and a maximum of 25. Similarly, the resulting Yale-Brown II Compulsion impact score can assume a value between zero and a maximum of 25, while the total Yale-Brown II OC score can assume a value between zero and a maximum of 50. The mean of the three scores was significantly different between the three comparison groups, namely: OCD cases and the two control groups. The difference in mean of count of positive obsessions, compulsions and avoidance was almost negligible and not significant statistically between OCD cases and positive controls (with other psychiatric disorders), while OCD cases was associated with a statistically significant increase in mean score compared to general population control and this effect was classified as a large effect size based on Cohen's d value for each. On average the OCD cases had a higher mean obsession, compulsion and avoidance scores by 4.5, 4.1 and 1.2 respectively compared to general population controls. The scores from the three checklists (positive obsessions, compulsions and avoidance compulsions) showed a significant p value<0.001 in differentiating between OCD cases and general population controls (the ROC area showed a good and statistically significant ROC area). The Yale-Brown II OC score and its two components showed an excellent test validity with a very high and statistically significant ROC area, being very close to the value of 1 associated with a prefect test. the cut-off value of Yale-Brown II OC score associated with highest sensitivity (100%) in predicting a possible diagnosis of OCD

differentiating it from the general population is ≥14, The optimum cut-off value for Yale-Brown II test is ≥18, which is associated with accuracy of 85.3% in classifying assessed individuals into having OCD or not. As in table 1.

Table 1: Validity of selected scores in diagnosing OCD cases differentiating them from General population controls.

	Area under ROC	P
Count of positive obsessions (max = 29)	0.773	<0.001
Count of positive compulsions (max = 29)	0.810	<0.001
Count of positive avoidance compulsions (Max = 9)	0.746	<0.001
Yale-Brown Obsession impact score (max = 25)	0.912	<0.001
Yale-Brown Compulsion impact score (max = 25)	0.939	<0.001
Yale-Brown OC score (max=50)	0.934	<0.001

Table 2: Validity parameters for selected cut-off values of selected scores in diagnosing OCD cases differentiating them from General population controls

Positive if ≥ cut-off value	Sensitivity	Specificity	Accuracy	PPV at pretest probability		NPV at pretest probability = 10%
				50%	90%	10%
Count of positive obsessions (max = 29)						
4 (Highest sensitivity cut-off value)	100.0	39.2	51.3	62.2	93.7	100.0
5	93.3	54.2	62.0	67.1	94.8	98.7
6	86.7	63.3	68.0	70.3	95.5	97.7
7 (Optimum cut-off value)	76.7	71.7	72.7	73.0	96.1	96.5
8	53.3	76.7	72.0	69.6	95.4	
9	40.0	80.0	72.0	66.7	94.7	
10	36.7	83.3	74.0	68.8	95.2	
11	26.7	85.8	74.0	65.3	94.4	
12	20.0	86.7	73.3	60.0	93.1	
13	13.3	92.5	76.7	64.0	94.1	
14	10.0	93.3	76.7	60.0	93.1	
15	10.0	94.2	77.3	63.2	93.9	
16	6.7	95.0	77.3	57.1	92.3	
17	6.7	95.8	78.0	61.5	93.5	
18	6.7	96.7	78.7	66.7	94.7	
19	6.7	98.3	80.0	80.0	97.3	
20 (Highest specificity cut-off value)	3.3	98.3	79.3	66.7	94.7	
Count of positive compulsions (max = 29)						
2 (Highest sensitivity cut-off value)	100.0	32.5	46.0	59.7	93.0	100.0
3	96.7	51.7	60.7	66.7	94.7	99.3
4	93.3	64.2	70.0	72.3	95.9	98.9
5 (Optimum cut-off value)	90.0	71.7	75.3	76.1	96.6	98.5
6	66.7	79.2	76.7	76.2	96.6	
7	50.0	81.7	75.3	73.2	96.1	
8	36.7	81.7	72.7	66.7	94.7	
9	30.0	84.2	73.3	65.5	94.5	
10	26.7	87.5	75.3	68.1	95.0	
11	20.0	89.2	75.3	64.9	94.3	
12	20.0	91.7	77.3	70.6	95.6	
13	13.3	95.0	78.7	72.7	96.0	
14	10.0	96.7	79.3	75.0	96.4	
15 (Highest specificity cut-off value)	6.7	97.5	79.3	72.7	96.0	
Count of positive avoidance compulsions (Max = 9)						
1 (Highest sensitivity cut-off value)	96.7	25.0	39.3	56.3	92.1	98.5
2 (Optimum cut-off value)	93.3	54.2	62.0	67.1	94.8	98.7
3	50.0	78.3	72.7	69.8	95.4	
4	23.3	87.5	74.7	65.1	94.4	
5	16.7	93.3	78.0	71.4	95.7	
6	6.7	95.8	78.0	61.5	93.5	
7 (Highest specificity cut-off value)	3.3	100.0	80.7	100.0	100.0	
Yale-Brown OC score (max=50)						
14 (Highest sensitivity cut-off value)	100.0	74.2	79.3	79.5	97.2	100.0
15	96.7	79.2	82.7	82.3	97.7	99.5
16	96.7	80.0	83.3	82.9	97.8	99.5
17	96.7	80.8	84.0	83.5	97.8	99.5
18 (Optimum cut-off value)	96.7	82.5	85.3	84.7	98.0	99.6
19	93.3	82.5	84.7	84.2	98.0	
20	93.3	83.3	85.3	84.8	98.1	
21	90.0	84.2	85.3	85.0	98.1	

22	90.0	85.0	86.0	85.7	98.2	
23	86.7	85.8	86.0	86.0	98.2	
24	76.7	87.5	85.3	86.0	98.2	
25	70.0	88.3	84.7	85.7	98.2	
26	70.0	90.0	86.0	87.5	98.4	
27	63.3	92.5	86.7	89.4	98.7	
28	60.0	94.2	87.3	91.1	98.9	
29	60.0	95.0	88.0	92.3	99.1	
30	50.0	95.0	86.0	90.9	98.9	
32	43.3	95.8	85.3	91.2	98.9	
33	36.7	96.7	84.7	91.7	99.0	
34	36.7	97.5	85.3	93.6	99.2	
35	33.3	97.5	84.7	93.0	99.2	
36	30.0	97.5	84.0	92.3	99.1	
37	30.0	98.3	84.7	94.7	99.4	
39	30.0	99.2	85.3	97.3	99.7	
41 (Highest specificity cut-off value)	20.0	100.0	84.0	100.0	100.0	

of the 60 positive controls, 35 individuals completed the questionnaire a second time, two weeks after the initial administration. The scores for positive obsessions, compulsions, and avoidance behaviors demonstrated good stability across the two time points. The paired differences in the Obsessive-Compulsive (OC) scores between the first and second measurements were minimal and classified as having a small effect size. The reliability of the count of positive obsessions, compulsions, and avoidance behaviors was assessed in the sample of 35 individuals who completed the questionnaire on two separate occasions, two weeks apart. The findings indicate that the scores were consistent over time, supporting the temporal stability of the Arabic version of the Y-BOCS-II. As in table 3 and 4.

Table 3: Reliability (paired differences) of the count of positive obsessions, compulsions and avoidance behaviors in a sample of 35 individuals completing the questionnaire on two different occasions two weeks apart.

Count of OC thoughts (max = 29)	First measurement	Second measurement	Paired differences	P 0.86[NS]	Cohens d 0.03
Range	(2 to 23)	(2 to 23)			
Mean	9.89	9.91	0.029		
SD	5.2	5.1	0.923		
SE	0.9	0.9			
N	35	35			
Count of OC behaviors (max = 29)				0.28[NS]	-0.19
Range	(0 to 19)	(0 to 19)			
Mean	9.74	9.6	-0.143		
SD	5.3	5.1	0.772		
SE	0.9	0.9			
N	35	35			
Count of OC avoidance behaviors (Max = 9)				0.42[NS]	-0.14
Range	(0 to 7)	(0 to 7)			
Mean	3.03	2.97	-0.057		
SD	1.6	1.6	0.416		
SE	0.3	0.3			
N	35	35			

Table 4: Reliability (paired differences) of the Yale-Brown OC score (severity or impact score) in a sample of 35 individuals completing the questionnaire on two different occasions two weeks apart.

OC impact score (max = 50)	First measurement	Second measurement	Paired differences	P 0.23[NS]	Cohens d-0.21
Range	(0 to 38)	(0 to 38)			
Mean	13.46	13.31	-0.143		
SD	8.3	8.2	0.692		
SE	1.4	1.4			
N	35	35			

Discussion

To the best of the authors' knowledge, this is the first study to investigate the criterion-related validity of the Y-BOCS-II in OCD patients, individuals with other psychiatric disorders, and healthy controls in Iraq. The Area Under the Curve (AUC) of the Receiver Operating Characteristic (ROC) analysis demonstrated that the Y-BOCS-II severity scale is highly accurate in distinguishing patients with OCD from those without the disorder. The ROC analysis revealed excellent test validity, with a statistically significant AUC value very close to 1 ($p< 0.001$), indicating near-perfect diagnostic accuracy for both control groups. These findings align with those of the Portuguese version of the Y-BOCS-II (5) (AUC = 0.96), as well as the Persian [9] and Italian versions [10], and confirm that the Arabic version retains the psychometric properties of the original English version [4]. The symptom checklist was also found to be valid and enhances the diagnostic specificity of OCD, particularly in individuals from the general population with no comorbid psychiatric disorders. This result mirrors the diagnostic

utility and psychometric properties of the original Y-BOCS-II [11]. Moreover, the findings indicate that the Y-BOCS-II is effective in diagnosing OCD in patients with comorbid psychiatric disorders. Patients with other primary psychiatric complaints were found to exhibit high levels of OCD symptoms. The Y-BOCS-II demonstrated excellent sensitivity and high specificity in discriminating OCD symptoms, consistent with the Portuguese version, which established a cutoff score of 13. Notably, the original English version [4] lacks an assessment of known-groups validity (i.e., comparing OCD with non-OCD anxiety disorders). Both the symptom checklist and severity scale of the Y-BOCS-II showed strong test-retest reliability. This result is consistent with findings from the Chinese version [12], which reported high internal consistency for both components, as well as the original American version (11) and the Italian version [10]. These findings further affirm the reliability and validity of the Arabic Y-BOCS-II in diverse clinical and non-clinical settings.

Conclusion

The Iraqi version of the Y-BOCS-II severity scale (SS) is a valid and reliable tool for assessing the presence and severity of obsessive-compulsive disorder. Additionally, the symptom checklist is both reliable and valid. The Arabic Y-BOCS-II retains the psychometric properties of the original English version.

Conflict of Interest

Not available

Financial Support

Not available

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