

The Quick Inventory of Depressive Symptomatology – the Self Report Romanian version

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Clinical depression is a debilitating disorder affecting a significant percentage of population. In this context, having reliable screening instruments for depression represents a major advantage. A widely used screening tool is the Quick Inventory of Depressive Symptomatology – Self-Report version (QIDS-SR). The aim of this study was to investigate the psychometric proprieties of the Romanian version of QIDS-SR as a diagnostic measure for depression. The data were collected from Romanian adult participants ($N = 148$) who expressed interest in an online therapeutic program for depression. Our sample included both normal ($N = 48$) and clinically depressed ($N = 100$) participants. Diagnostic assessments were conducted using the Structured Clinical Interview for DSM-IV. The Romanian QIDS-SR demonstrated high convergent validity with Beck Depression Inventory - II ($r = .83$) and good internal consistency ($\alpha = .74$). Receiver operating characteristics analysis demonstrated satisfactory diagnostic validity for the QIDS-SR. The optimal ratio between sensitivity and specificity was set at 15 for the QIDS-SR. It was concluded that QIDS-SR represents an adequate, useful and cost-effective screening instrument for clinical depression in Romania.

Keywords: depression measures, QIDS-SR, ROC analysis, optimal cut-off score.

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Introduction

Depression significantly contributes to the global burden of disease affecting 350 million people around the world (WHO, 2013). Besides the great personal struggle, clinical depression is also associated with high financial costs for the sufferer and for the society, due to diminished productivity and expensive treatment (Luppa, Heinrich, Angermeyer, König & Riedel-Heller 2007; Sobocki, Jonsson, Angst & Rehnberg, 2006). It was estimated that the total annual cost of depression was €92 billion in Europe, making it the third most expensive mental disorder (Olesen, Gustavsson, Svensson, Wittchen & Jönsson, 2012).

An epidemiological study demonstrated that lifetime prevalence of major depressive disorder (MDD) in Romania is 3.3%, with higher values for women (4.1%) than man (2.5%, Florescu, Moldovan, Mihăescu-Pintia, Ciutan & Sorel, 2010). These point values converted into absolute numbers corresponds to about 574,000 people. On average, an affected individual spends 5.7 years suffering from a MDD (Florescu, Moldovan, Mihăescu-Pintia, Ciutan & Sorel, 2010). In Europe, the total costs associated

with clinical depression were estimated at 113.4 billion Euros in 2010 (Gustavsson et al., 2011).

It was proven that early identification and appropriate treatment reduces the negative impact of depression for most patients (Coulehan, Schulberg, Block, Madonia, Rodriguez, 1997). An alternative way of achieving this goal would be to conduct systematic screenings for at-risk populations (e.g., patients with chronic diseases and/or chronic pain, patients with unexplained symptoms or stressful environments, socially isolated and/or elderly population etc.; Sharp & Lipsky, 2002).

Given the high costs associated with clinical depression, it seems necessary to improve both prevention and intervention methods. In this context, it is very important to have effective and efficient depression measures. These instruments should identify the existence, the severity and the intensity of depressive symptoms. Moreover, they should be useful for diagnostic purposes, and for the evaluation of the treatment outcome.

To expand the possibility of using robust depression measures in other cultures, we translated into Romanian and adapted the Quick Inventory of Depressive Symptomatology – Self Report version (QIDS-SR, Rush et al., 2003). The psychometric proprieties of the Romanian

QIDS-SR were investigated. A comparative analysis between QIDS-SR and the well-known Beck Depression Inventory-II (BDI-II, Beck, Steer, Brown, 1996) was also conducted.

Method

Ethical considerations

This study was reviewed and approved by the Ethics Committee of the West University of Timișoara, Romania. After the terms and conditions for the study were presented, all participants signed an informed consent by surface mail.

Participants

Participants were recruited through an online platform (<https://www.iterapi.se/sites/psitod>). A total of 220 participants completed all the screening questionnaires. Participants having a high score on the depression questionnaire (i.e., higher than 14 on BDI-II) were further contacted for a telephone interview. After the interview, 100 participants confirmed the diagnosis of either MDD or dysthymia. The data used for the present study included only participants who had a clear diagnostic status ($N = 148$). Participants' demographic characteristics are presented in Table 1.

Table 1. Demographic characteristics of participants

Variable	N	% or mean \pm SD
Gender		
Male	43	29.1
Female	105	70.9
Age (years)	148	34.7 \pm 11.1
Education level		
PhD	3	2
Master degree	27	18.2
University degree	75	50.7
High school degree	38	25.7
Vocational school	2	1.4
Primary school	3	2
Profession		
Full time worker	86	58.1
Part-time worker	11	7.4
Unemployed	3	2
Student	26	17.6
Staying home	16	10.8
Retired	6	4.1
Marital status		
Never married	47	31.8
Married	50	33.8
Divorced	33	22.3
Widower	10	6.8
In a relationship	8	5.4
Religious affiliation		
Orthodox	117	79.1
Roman Catholic	7	4.7
Other religions	18	12.1
Atheist	6	4.1
Total	$N = 148$	

Measures

Quick Inventory of Depressive Symptomatology – Self-Report version (QIDS-SR, Rush et al. 1986, 1996) was designed to assess the severity of depressive symptoms during the previous week. The questionnaire is available as a clinician-administered (QIDS-C) and self-

report version (QIDS-SR), covering nine symptoms used for the diagnoses of depression. Participants are instructed to rate each item on a 4 point Likert scale ranging from 0 to 3. In this study only the self-report version was used, with an internal consistency of .74. Previous studies demonstrated that QIDS-SR is a sound psychometric measure (Rush et al. 1986, 1996).

Beck Depression Inventory-II (BDI-II) was developed by Beck (1961) to assess the severity of depressive symptoms. The 21 items of the scale assess the most common depressive symptoms encountered during the previous 14 days. Initially Beck recommended a cut-off score of 13, but later, Baumesderfer and Beck (1974) recommended a cut-off score of 21 to distinguish a “pure” depressive population in scientific studies. In our sample a high internal consistency ($\alpha = .90$) for BDI-II was obtained.

Automatic Thoughts Questionnaire (ATQ - 15 items, Hollon & Kendall, 1980) measures the frequency of occurrence of automatic negative thoughts (negative self-statements) associated with depression. Subjects are instructed to read each item and indicate, on a scale of 1 to 5, how frequently, if at all, that thought occurred to them over the last week.

The Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research version (SCID-I) Module A (First, Spitzer, Gibbon, & Williams, 2002) was used to assess the diagnostic status of all included participant. If additional symptoms were reported during the SCID-I overview, the needed modules were also administered.

Procedure

Participants were recruited in Romania by briefly presenting the study in local and national newspapers during March and September 2014. Interested participants were directed to the study web page (<https://www.iterapi.se/sites/psitod>) where general information about the study and a brief presentation of the research team were presented. After reading the informed consent, participants signed up for the study and completed a series of online questionnaires and demographics. For privacy purposes, participants were encouraged to create a special email account used only for this study. If the screening process was interrupted (e.g., due to failed internet connection), the already filled information was saved on a server, and participants could continue the screening from where they have left it.

Participants who scored above 14 on BDI-II were contacted for a telephone interview, while the ineligible participants were sent an email with the summary of their results. The telephone interview was conducted using the Overview, Screening and Module A of the Structured Clinical Interview for DSM-IV-TR-Axis I disorders, research version – patient edition (SCID-I/P) (First, Spitzer, Gibbon and Williams, 2002). If additional symptoms were reported during the SCID-I/P interview (e.g., marked embarrassment in social settings), additional modules were administered (e.g., Module F – Anxiety Disorders, Social Phobia)..

Statistical analysis

SPSS 20 (SPSS, Inc., Chicago, IL) and MedCalc 14.8.1 (MedCalc Software bvba, Ostend, Belgium) were used for data analysis. The internal consistency for each measure was assessed with the Chronbach's alpha. The independent t test was used to highlight the differences between MDD/dysthymic and normal participants. Receiver

Operating Characteristics (ROC) was used to evaluate the diagnostic validity of the QIDS-SR and the BDI-II. ROC represents an elegant way of estimating the performance of a screening instrument (in our case two depression measures) at various cut-off points. A graphical plot is created by plotting the true positive rate (sensitivity) against the false positive rate (specificity) along a continuum of possible cut-off points. By estimating the sensitivity as a function of specificity, ROC analysis enables us to better approximate the optimal cut-off scores used in diagnostic decisions.

Results

QIDS-SR convergent validity was confirmed by the high and significant correlations with the BDI-II ($r = .83$; $p < 0,001$). Before conducting the ROC analysis, we compared the two groups (i.e., MDD/dysthymic vs. non-clinical participants) to make sure they differ in terms of depressive symptoms. The means and SD's for normal and clinical participants are presented in Table 2, as well as the obtained large effect sizes for all comparisons.

ROC analysis was used to identify the recommended cut-off scores for QIDS-SR and BDI-II. Both questionnaires yielded a significant difference when the area under the curve (AUC) was compared with the area under the diagonal (all z 's are significant, see Table 3). Although the BDI-II displays a slightly higher AUC, both measures fall into the moderate category (see Streiner & Cairney, 2007) and no significant differences could be established between the two measures. These results are graphically illustrated in Figure 1.

Table 4 shows the sensitivity and specificity for both measures. The cut-off score for QIDS-SR was set by calculating the maximum Youden index value (sensitivity+specificity-100). The optimal cut-off score for severe depression was set at 15, which correspond to 76.79% chances to correctly classify cases. The predictive values associated with this cut-off score are relatively high (PPV=92.8%; NPV=54.4%). Moreover, the optimal cut-off score for BDI-II was set at 21, which corresponds to 80.37% correctly classified cases. When the AUC for the two measures were compared no differences emerged ($z = 1.64$, $p > .05$). Therefore, the two measures seem equally potent when it comes to discriminating between people with and without MDD/dysthymia.

Table 2. Descriptive and comparative data

Instruments	Clinical Population MDD/dysthymia (N=100)		Non-clinic population (N=48)		<i>t</i>	<i>d</i>
	m	SD	m	SD		
BDI-II	33.81	8.76	18.23	9.50	9.85**	1.70
QIDS	16.80	4.05	10.79	4.12	8.405**	1.47
ATQ	54.92	9.71	39.47	12.06	7.745**	1.41

Notes: ** $p < 0.01$.

Table 3. Area under the curve (AUC) for QIDS-SR and BDI-II

	<i>BDI-II</i>	<i>QIDS-SR</i>	<i>BDI-II – QIDS-SR Difference</i>
AUC	.88	.84	.04
95%CI	.81 - .92	.77 - .89	-.006 to .079
<i>z</i>	12.23	10.16	1.65
<i>p</i>	<0.00	<0.00	0.09

Table 4. Sensitivity and specificity for a selection of cut-off scores on the BDI-II and QIDS-SR

Criterion	BDI-II		Criterion	QIDS-SR	
	Sensitivity	Specificity		Sensitivity	Specificity
>13	100.00	35.42	>6	100.00	12.50
>14	99.00	39.58	>7	99.00	22.92
>15	99.00	45.83	>8	98.00	33.33
>16	98.00	47.92	>9	97.00	45.83
>17	98.00	50.00	>10	94.00	47.92
>18	97.00	56.25	>11	90.00	54.17
>19	96.00	62.50	>12	82.00	66.67
>20	94.00	66.67	>13	76.00	75.00
>21*	92.00	68.75	>14	70.00	79.17
>22	88.00	70.83	>15*	64.00	89.58
>23	86.00	70.83	>16	56.00	93.75
>24	83.00	75.00	>17	46.00	93.75
>25	80.00	77.08	>18	36.00	93.75
>27	74.00	81.25	>19	24.00	97.92
>28	70.00	85.42	>20	22.00	97.92
>29	65.00	89.58	>21	13.00	100.00
>30	63.00	89.58	>22	7.00	100.00

Note: Values in bold indicate optimal cut-off point.

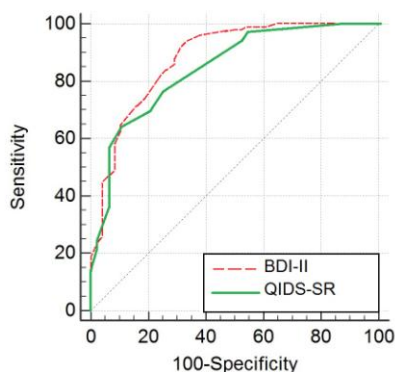


Figure 1. ROC curves for QIDS-SR and BDI-II

Discussion

The aim of this study was to investigate the psychometric proprieties of QIDS-SR when used as a proximal diagnostic instrument for detecting clinical depression in Romanian adults. Overall, the results show that along with BDI-II, QIDS-SR is a valid screening tool for depression. A cut-off score of 15 seems to represent the best discriminant between the normal and the MDD/dysthymic participants in our sample. This cut-off score corresponds to a specificity of 89.58% and a sensitivity of 64%, while ROC analyses revealed that the AUC was 84%. Using a bigger sample ($N = 1595$) Gili et al., (2014) reported a higher AUC (94%) for QIDS-SR, while the AUC for BDI-II varied between 86 and 96% (Arnau et al., 2001; Kumar, Steer, Teitelman, & Villacis, 2002; Uslu et al., 2008).

The proposed cut-off scores for QIDS-SR vary between 5 and 14 in previous studies (Gili et al., 2014; Lamoureux et al., 2010; Liu et al., 2014; Mergen et al., 2012). Our recommended cut-off score for QIDS-SR is definitely higher than 6 which was originally recommended by Rush et al. (2003). However, the predictive values associated with our recommended cut-off score for QIDS-SR are related with a low percentage of false positives.

Other studies reported a higher internal consistency for QIDS-SR when data was collected from a clinical sample ($\alpha = .86$, Rush et al., 2003; Trivedi et al., 2004). However, similar convergent validity coefficients were previously reported in the literature (i.e., correlation between QIDS-SR and HRSD was .82; Rush et al., 2004).

When interpreting the results of this study one should take into account its limitations. First and foremost, our results are limited by the specific characteristics of our sample – an all white outpatient population seeking depression treatment online. Moreover, compared to the usual prevalence of clinical depression in general population (3.3%), we had an unusually high MDD/dysthymia prevalence in our sample (67%). Future studies could investigate the psychometric proprieties of the QIDS-SR as a screening measure in a representative sample. Second, all assessments were conducted over the internet or phone in the absence of a face-to-face contact with participants. Therefore, some of the participants' non-verbal messages might have been lost, especially during the SCID-I interview, making the diagnostic procedure more difficult.

Summarizing, although QIDS-SR is not a perfect screening instrument for clinical depression, it represents a good and reliable measure that seems to perform in the same range as other widely used depression instruments (i.e., BDI-II). Using the QIDS-SR in research and clinical practice has a number of advantages: a) it is freely available, b) it is time efficient, requiring minimum amount of training, and c) could be used in an automated, telephone-administered format if needed. Most importantly, an increasing number of studies seem to support the QIDS-SR as an effective measure that could be successfully used to assess the main diagnostic criteria for depression (Gili et al., 2014; Lamoureux et al., 2010; Liu et al., 2014; Mergen, et al., 2012; Rush et al., 2003). There is also some support for the usefulness of the QIDS-SR as a sensitive outcome measure (Rush et al., 2003). Therefore, in spite of its limitations, we recommend the QIDS-SR as a proximal instrument for detecting clinical depression in non-psychotic outpatients.

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Note: The Romanian version of the Quick Inventory of Depressive Symptomatology – Self Report (QIDS-SR) is available upon request from the authors.

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