Factor Structure of the Inventory of Depressive Symptomatology, self-reported version (IDS-30-SR) Questionnaire on a Slovenian Sample

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ABSTRACT

Depression is a multifaceted psychiatric disorder that can be characterized by various symptom dimensions. Considering the prevalence and societal burden of depression, it is essential that validated instruments for diagnosis are used. In Slovenian cultural environment, only a few psychological questionnaires have been validated. Furthermore, existing questionnaires do not differentiate between different dimensions of depression. The Inventory of Depressive Symptomatology (IDS-30) is a commonly used questionnaire for screening depression that accounts for all symptom dimensions specified by the Diagnostic and Statistical Manual of Mental Disorders. The self-report version of IDS-30 has previously been used in Slovenia, demonstrating its convergent validity. However, to date, its structural validity has not been tested. The present study investigates the factor structure of IDS-30. We replicated the three-factor structure consisting of mood/cognition, anxiety/somatics, and sleep disturbances that is widely reported in the literature. These dimensions of depression are supported by the neurobiological literature.

INTRODUCTION

Depression is a psychiatric disorder that affects the health and well-being of patients and their families (1). The annual prevalence in Europe alone is 16 per 100,000 men and 27 per 100,000 women (2). In Slovenia, the estimated prevalence of depression is 5.1% (3). Between the years 2005 and 2015, the prevalence of depression in Slovenia increased by 18%, making it one of the most pressing public health problems (3). Depression is associated with significant economic losses, with the total economic burden in the United States estimated at $211 billion per year (4) and €118 billion per year in Europe. (5)

The significant burden of depression on society necessitates the development of accurate diagnostic tools capable of reliably diagnosing depression and assessing the severity of symptoms in patients with depression (6,7). There are several self-report instruments and clinician-rated instruments for assessing depressive symptoms. Common self-report instruments include the Beck Depression Inventory (BDI-II) (8), the Zung Depression Rating Scale (9), the Carroll Rating Scale (10), the Patient Health Questionnaire (PHQ-9) (11) and the Mood and Anxiety Symptoms Questionnaire (12). Frequently used clinician-rated instruments are the Hamilton Rating Scale for Depression (HAM-D) (13) and the Montgomery–Åsberg Depression Rating Scale (MADRS) (14), both of which take the form of a semi-structured interview (15).

Depression is a multifaceted illness. In recent years, studies have shown that depression is associated with dysfunction in multiple, often independent systems. Li et al. (16) have shown that depression can be understood in the context of four symptom groups: dysphoria, anhedonia, cognitive dysfunction, and rumination. There are calls for psychiatry to move away from descriptive models of psychiatric nosology (e.g. DSM and ICD) towards dimensional models of psychiatric disorders (17–22). The Research Domain Criteria (RDoC) framework, for example, attempts to understand psychiatric disorders as deviations from otherwise normal dimensions of human functioning (23). Thus, in the RDoC framework, depression is conceptualized as a deviation of the negative valence system (primarily through hypertrophy of feelings of loss) and the positive valence system (maladaptive reward patterns) (24,25). In addition, the cognitive systems are impaired, particularly in the areas of working memory and executive control (26,27). Since it has been demonstrated (16) that the symptom dimensions of depression are independent (e.g., a person might be high on dysphoria, but not on anhedonia, and vice versa), it is essential that we make of us screening instruments that are able to describe these differences.

A major advantage of the IDS-30 over other instruments (e.g. BDI-II or MADRS) is that it covers all symptom clusters for major depressive disorder according to DSM-IV and DSM-V (i.e. vegetative symptoms, cognitive disturbances, somatic symptoms and the presence of anxiety) (7,31). The IDS-30 is frequently used in therapeutic response studies (32,33). The IDS-30 is available in two versions: a clinician-rated questionnaire (IDS-30-C) and a self-report questionnaire (IDS-30-SR). A 16-item short version of the IDS-30, the QIDS, is also available (34). Although IDS has been translated into over thirty languages, psychometric validation has been performed only on a handful of adaptations (35) validated in French (36), German (37), Spanish (38) and Indonesian (39).

IDS-30 was translated into the Slovenian language. It was used by Politakis et al. (44) to assess the severity of depressive symptoms in a cognitive control experiment, and Vidovič et al. (45) have demonstrated its construct validity as it correlates well with the BDI-II and the Hamilton Rating Scale for anxiety (46). However, there are no studies that have analyzed the factor structure of the Slovenian translation of the IDS-30. Considering the importance of validating questionnaires in otherwise poorly resourced settings such as Slovenia and the importance of the dimensional view of psychiatric disorders in contemporary psychiatric research, and the underreporting of structural validity in questionnaires (47) the aim of this paper is to validate the factor structure of the IDS-30-SR questionnaire.

METHOD

DATA COLLECTION

The responses of 250 participants (142 women) to the IDS-30 questionnaire were taken from several existing studies (44,45) and from ongoing patient monitoring at the University Psychiatric Clinic Ljubljana. 218 patients were in-patients, whereas 82 were outpatients. The latter group consists exclusively of patients that had been recruited for other studies. The characteristics of the participants are summarized in Table 1. The mean total IDS-30 score was 24.8 (*SD* = 16.8). The inclusion criteria for both referenced studies were patients with a persistent depressive episode and no history of psychosis or comorbid neurological disorders. Comorbid symptoms of anxiety disorder were allowed in both studies.

The patients are a representative sample of patients with depression that are hospitalized at the University Psychiatric Clinic Ljubljana. The sample of patients were collected both within different departments on university psychiatric clinic in Ljubljana, i.e. unit for crisis intervention, unit for treatment of alcoholic addiction, as well as directly in community. The latter population was invited to the study based on self-reported belief of being depressed. The patients with more severe depression were underrepresented because they appeared to be unable to fill out the questionnaire, mainly due to cognitive symptoms.

Variable	Value
Gender	
Male (N [%])	108 [43.2%]
Female (N [%])	142 [56.8%]
Age (mean [SD])	40 [13.8]
<30 (N [%])	90 (36%)
31-50 (N [%])	70 (28%)
>50 (N [%])	67 (27%)
Patient status	
Inpatient (N [%])	218 (67%)
Outpatient (N [%])	82 (33%)
IDS-30 severity	
None (0-13) (N [%])	70 (28%)
Mild (14-25) (N [%])	60 (24%)
Moderate (26-38) (N [%])	44 (17%)
Severe (39-48) (N [%])	18 (7%)
Very severe (>49) (N [%])	28 (11%)

Table 1. Participant properties. Cutoffs for IDS-30 are 0-13 (no depression), 14-25 (mild depression), 26-38 (moderate depression), 39-48 (severe depression), and above 49 (very severe depression).

INSTRUMENT

The IDS-30-SR was translated into Slovenian by a psychiatrist. It is a 30-item questionnaire. The answers consist of a 4-point scale (ranging from 0 to 3). Item 9 asks about mood swings and in addition to a quantitative response, patients are also asked to indicate whether their mood worsens at a certain time of day and whether they attribute mood swings to external factors. Items 11-14 ask about eating habits. Items 11 and 12 ask about the decrease or increase in appetite. Items 13 and 14 ask about weight loss and weight gain. Only one item is answered for each pair, and the results are summed. Item 10, which asks about the quality of mood, is inverted.

Only the self-report version of the IDS-30 was analyzed. The answers were recorded with pen and paper.

The Slovenian translation of the IDS-30-SR can be found in the supplementary materials.

STATISTICAL ANALYSIS

A custom script was written in R and RStudio for the statistical analysis. The Lavaan library (48) was used for the confirmatory factor analysis and GPARotation (49) for the exploratory factor analysis.

Following Gili et al. (38), the factor analysis was conducted in two phases. First, we conducted an exploratory analysis using principal component analysis (PCA) so as to identify any cultural specificities, typical of the Slovenian population. In the second phase, we conducted a series of confirmatory factor analyses (CFA) to validate the three most frequently reported factor structures of the IDS-30 questionnaire.

In the PCA, the number of components was determined on the basis of three criteria: The Kaiser criterion (in which only principal components with eigenvalues above 1.0 are retained), visual inspection of the scree plot (in which principal components are retained up to the one that starts a linear trend), and Horn's parallel analysis (a Monte Carlo simulation applied in recent factor analyses of the IDS-30 questionnaire) (38,42).

To test whether the data were suitable for factor analysis, we used the Kaiser-Mayer-Olkin (KMO) measure of sampling adequacy. We calculated the deviation of the correlation matrices from orthogonality using Bartlett's test for sphericity. Orthogonal varimax rotation was used to construct the principal components.

In the second phase, six factor models were tested using confirmatory factor analysis: single-factor solution in which all factors load on a common factor of depression (40), two-factor solution in which the two factors are "depression" (consisting of all factors) and "somatic" (consisting of items 25, 26, and 28) (41); three-factor solution from Rush (29) in which the factors are "mood/cognition" (consisting of items 5, 8, 10, 11, 12, 13, 14, 17, 18, 19, 20, 21 and 22), "anxiety/arousal" (consisting of items 6, 7, 23, 24, 25, 26, 27 and 28) and "sleep" (consisting of items 1, 2, 3 and 4); the three-factor solution from Wardenaar et al (42) where factors are "mood/cognition" (consisting of items 5, 6, 7, 8, 10, 15, 16, 17, 18, 19, 20, 21, 22, 23 and 29), "anxiety/somatics" (consisting of items 11, 12, 13, 14, 25, 26, 27 and 28) and "sleep" (consisting of items 1, 2, 3 and 4); and the three-factor solution from Gili et al. (38), where the factors are "mood/cognition" (consisting of items 3, 5, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 29 and 30), "anxiety/somatics" (consisting of items 6, 7, 24, 25, 26, 27, 28 and 29), and "sleep" (consisting of items 1, 2, 3 and 4). Finally, the solution obtained with PCA was tested.

Normally, maximum likelihood estimation is used to test the quality of CFA. However, maximum likelihood estimation requires that the values are at least on the interval scale (50). As the IDS-30-SR uses a 4-point scale, the values should be considered ordinal. Therefore, robust estimation methods, as implemented in the Lavaan package, were used to estimate the quality of the CFA. (48)

We evaluated the factor models with different indices. The Tucker-Lewis Index (TLI) and the Comparative Fit Index (CFI) are values that lie between 0 and 1 and compare the factor model with a baseline model. Values approaching 1 indicate a good fit. The Root Mean Square Error of Approximation (RMSEA) assesses how well the proposed factors match the covariance observed in the empirical data. Values closer to 0 indicate good agreement between the model covariance and the va-

lues observed in the data. The Akaike Information Criterion (AIC) is a value that is used to evaluate factor models and takes into account the goodness of fit and model complexity. Lower AIC values indicate a better balance between goodness of fit and model complexity. Therefore, factor models with a lower AIC value are considered better.

Finally, Cronbach's alpha was calculated for the optimal factor solution. A separate analysis was performed for the total score as well as for each individual subscale.

RESULTS

In the first phase, we conducted an exploratory factor analysis using PCA. The KMO measure of sampling adequacy yielded an overall MSA of 0.93, indicating excellent sampling adequacy. Bartlett's test for sphericity was 3482.763 ($p < 0.000$), indicating suitability for factor analysis. Five factors were constructed after Horn's parallel analysis, the Kaiser criterion and a visual inspection of the scree plot (see Figure 1). In exploratory factor analysis, a questionnaire item forms a factor if its factor loading on this factor is 0.32 and is at least 0.10 higher than its other factor loadings (51). Two items (6 and 23) did not fulfil this criterion but were included in the 5-factor solution because their removal did not change the analysis (i.e. the KMO and the results of the Horn's parallel analysis remained the same.

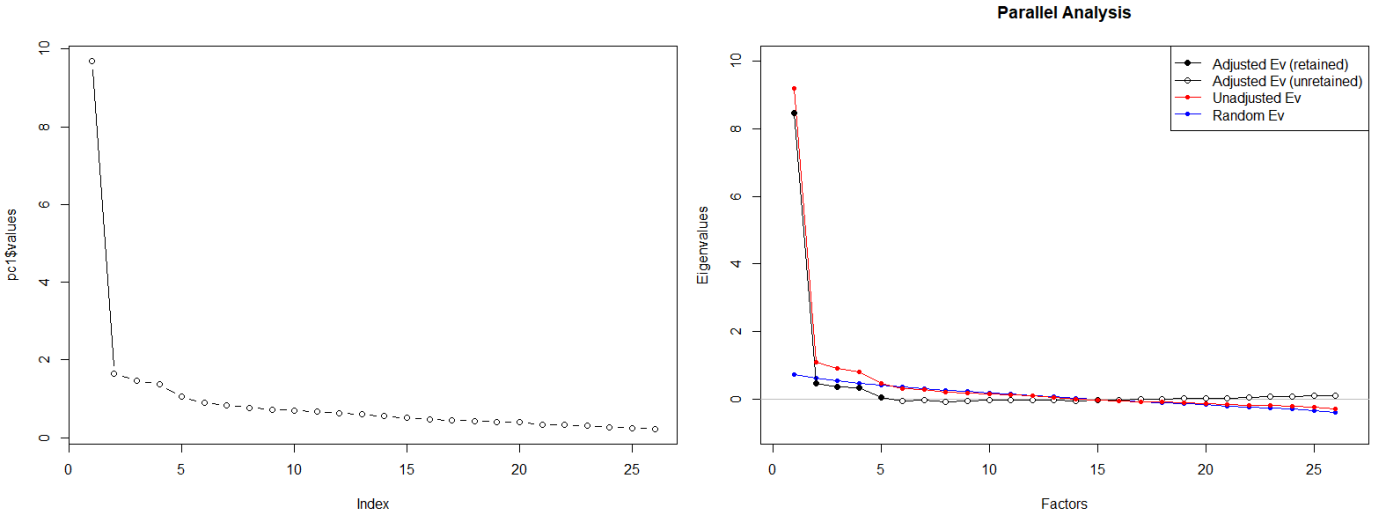

Figure 1. Visualization of the appropriate number of factors for exploratory factor analysis. The scree plot is on the left. The results of Horn's parallel analysis are on the right.

We named the factors in the proposed model: a) dysphoria, anhedonia, and cognition; b) somatic symptoms and irritability; c) sleep; d) phobic anxiety and gastrointestinal problems; and e) mood reactivity. The five-factor solution explained 60% of the variance.

Item	RC1	RC2	RC4	RC5	RC3
IDS01			**0.66**		
IDS02			**0.84**		
IDS03			**0.77**		
IDS04	0.33	**0.52**			
IDS05	**0.72**				
IDS06	0.48	**0.55**			
IDS07	**0.56**	0.36		0.43	
IDS08					**0.88**
IDS09	**0.7**				
IDS10	**0.61**			0.32	
IDS1112		**0.54**			
IDS1314		**0.7**			
IDS15	**0.49**			0.37	
IDS16	**0.7**				
IDS17	**0.7**				
IDS18	**0.65**			0.33	
IDS19	**0.6**				
IDS20	**0.51**	0.37			0.41
IDS21	**0.56**				0.52
IDS22	**0.57**			0.36	
IDS23	**0.56**	0.47			
IDS24	0.42	**0.59**			
IDS25		**0.69**		0.42	
IDS26				**0.73**	
IDS27		0.35		**0.59**	
IDS28				**0.5**	
IDS29	**0.63**				
IDS30	0.45	**0.57**			
Interpretation	Dysphoria, anhedonia, and cognition	Somatic symptoms and irritability	Sleep	Phobic anxiety and gastrointestinal issues	Mood reactivity

Table 2. Factor loadings for PCA. Items that form a part of a given factor are written out in bold.

In the second phase of the analysis, we conducted CFA. The indices used to assess the goodness of fit of the proposed factor models are summarized in Table 3. RMSEA values below 0.08 are usually considered acceptable. Therefore, the one-, two-factor and three-factor solutions proposed by Rush (29) are considered unacceptable. The three-factor solution proposed by Wardeenar et al. (42), the three-factor solution proposed by Gili et al. (38) and our five solutions are all considered acceptable. However, considering the TLI, CFI, RMSEA and AIC values, the three-factor model of Wardeenar et al. (47) seems to be the most appropriate. It was therefore the only model we considered for further analysis. The factors were positively correlated (p = 0.000): the correlation coefficient between mood/cognition and anxiety/somatics was 0.77; the correlation coefficient between mood/cognition and sleep was 0.66; and the correlation coefficient between anxiety/somatics and sleep was 0.67.

Model	Source	Df	x2	TLI	CFI	RMSEA (90% CI)	AIC
1-factor	Trivedi et al. (2004)	350	957.851	0.799	0.814	0.083 (0.077-0.090)	17073.166
2-factor	Bernstein et al. (2006)	346	942.109	0.801	0.818	0.083 (0.077-0.089)	17065.423
3-factor	Rush et al. (1996)	131	386.123	0.841	0.864	0.088 (0.078-0.099)	11561.101
3-factor	**Wardenaar et al. (2010)**	**272**	**596.788**	**0.870**	**0.882**	**0.069 (0.062-0.077)**	**15156.370**
3-factor	Gili et al. (2011)	319	774.639	0.841	0.855	0.076 (0.069-0.082)	16284.694
5-factor	Present study	315	698.474	0.861	0.875	0.070 (0.063-0.077)	16394.745

Table 3. Goodness of fit for the six factor models that were evaluated. The best model is written out in bold.

	Item	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Mood/Cognition						
	IDS05	0.052	15.24	0	0.798	0.788
	IDS06	0.05	11.264	0	0.561	0.631
	IDS07	0.05	13.454	0	0.67	0.722
	IDS08	0.074	0.989	0.323	0.073	0.062
	IDS10	0.064	10.503	0	0.676	0.596
	IDS15	0.05	13.677	0	0.68	0.73
	IDS16	0.058	12.327	0	0.711	0.676
	IDS17	0.055	13.836	0	0.768	0.736
	IDS18	0.047	13.341	0	0.631	0.717
	IDS19	0.056	12.093	0	0.68	0.666
	IDS20	0.049	13.167	0	0.649	0.711
	IDS21	0.055	11.81	0	0.651	0.655
	IDS22	0.064	11.891	0	0.763	0.658
	IDS23	0.05	13.041	0	0.657	0.705
	IDS29	0.056	9.093	0	0.509	0.529
Anxiety/Somatics						
	IDS1112	0.062	10.987	0	0.677	0.652
	IDS1314	0.066	11.177	0	0.739	0.667
	IDS25	0.048	10.144	0	0.489	0.617
	IDS26	0.047	9.06	0	0.429	0.559
	IDS27	0.049	10.048	0	0.493	0.606
	IDS28	0.051	6.108	0	0.31	0.392
Sleep						
	IDS01	0.063	11.397	0	0.721	0.685
	IDS02	0.069	10.833	0	0.744	0.664
	IDS03	0.058	12.89	0	0.749	0.765
	IDS04	0.06	6.756	0	0.404	0.447

Table 4. Latent variable properties for the three-factor solution of Wardenaar et al.

We then checked the properties of latent variables for the best-fitting model (i.e., Wardenaar et al.). Notably, item 8, looking into mood reactivity, and which formed an independent factor in our exploratory analysis, was not statistically significant, meaning that at this sample size and effect size, its factor loading size may have been observed by chance.

The internal consistency of the best-fitting model (i.e. the three-factor solution of Wardenaar et al. (47) was tested with Cronbach's alpha. Cronbach's alpha for the total IDS-30 score was 0.938, indicating excellent internal consistency. The Cronbach's alpha for the mood/cognition factor was α = 0.914, indicating excellent internal consistency. Cronbach's alpha for the anxiety/somatic factor was α = 0.761, indicating acceptable internal consistency. Cronbach's alpha for the sleep factor was α = 0.73, indicating acceptable internal consistency.

DISCUSSION

In this study, we evaluated the structural validity of the Slovene translation of the self-report version of the IDS-30 questionnaire. We replicated the three-factor structure of the IDS-30 questionnaire previously presented by Wardeenar at al. (42) This and previous studies that have shown convergent validity of the Slovenian version of the IDS-30 with other clinical depression assessment instruments (e.g., HAM-A and BDI-II) (45) suggesting that it is a valid questionnaire for use with individuals with depression in Slovenia

We observed a relatively small number of severely depressed patients (IDS-30-SF > 49) who were characterized by symptoms such as extreme motor slowing. In Gili et al. (38), 21.8 % of patients had severe and 17.2 % of participants had very severe symptoms of depression, while the figures in Slovenia were only 7 % and 11 %, respectively. One possible explanation is that the stigmatization of mental health has decreased in Slovenia. From clinical observations, we can conclude that patients with depression, in contrast to patients with psychosis, seek psychiatric help much earlier, which prevents the disease from progressing.

The internal consistency for the mood/cognition factor was excellent and acceptable for the anxiety/somatic and sleep factors (as in 38,39). The internal consistency of the Slovenian translation of the IDS-30 was excellent (α = 0.94) and is comparable with the Spanish (α = 0.94) and German versions (α = 0.93). Despite the three-factor solution fitting well onto the Slovenian sample, the Wald test for item 8 (mood reactivity) was not statistically significant, meaning that it provides no explanatory value for the factor model. As such, item 8 can be removed.

Interestingly, item 8 also loaded onto its own factor (mood reactivity) when we an exploratory factor analysis, using PCA so as to identify potential cultural specificities of the Slovene population.

NEUROBIOLOGICAL BASIS FOR THE THREE-FACTOR SOLUTION

Major depressive disorder is characterized by emotional, behavioral, and cognitive symptoms such as psychomotor agitation or slowness, extreme feelings of guilt or worthlessness, insomnia or hypersomnia, fatigue, significant weight loss, decreased appetite, difficulty concentrating and suicidal thoughts. (56) One of the three identified factors of the IDS-30 questionnaire in a Slovenian sample is mood and cognition. Depressed mood is a central feature of major depression, although persistent low mood is not a component of atypical depression, in which patients experience mood reactivity, meaning that mood can improve in response to positive events. (57) Dysphoric mood appears to be associated with the ventral limbic affective network. (16) Cognitive deficits have been observed in various areas, such as executive functions, memory impairment and a bias in the processing of negative aspects. Patients tend to ruminate about failures and criticism.

Neurobiological correlates for these changes have been proposed, i.e. depressive rumination is associated with increased connectivity in the default mode network, while ineffective top-down control of negative thoughts and emotions is associated with decreased connectivity of the dorsal cognitive control network. The cognitive symptoms of depression, particularly the failure to ignore negative material in working memory as expressed by maladaptive (rumination) and lack of adaptive emotion regulation strategies (reappraisal), contribute to and maintain depres-

sed mood, and patients' attitudes, thoughts, interpretations, and memories of events may trigger depression or its recurrence. (56) Cognition is therefore an important treatment target that can be treated not only with antidepressants, but also with cognitive behavioral therapy, mindfulness, emotion regulation therapy, and others. (58)

While depressive disorders and anxiety disorders have different core features (depressed mood and loss of interest vs. anxiety and worry), patients suffer from overlapping problems such as sleep, concentration, fatigue and psychomotor/arousal symptoms. (59) Anxious and depressive symptoms often occur simultaneously. 45.7% of people with major depressive disorder have already had one or more anxiety disorders in their lives. Lifetime comorbidity with depression is 20-70% in patients with social anxiety, 50% in patients with panic disorder, 48% in patients with PTSD and 43% in patients with generalized anxiety disorder. Depressed patients with anxiety tend to have more severe symptoms and are more likely to have suicidal thoughts. Both depressive and anxiety symptoms are associated with changes in the prefrontal-limbic pathways that mediate emotion regulation processes. (60) Depression is often accompanied by somatic symptoms. Symptoms such as sleep disorders, fatigue, three or more complaints, and non-specific musculoskeletal complaints, have a high positive predictive value for depression. They often occur as functional syndromes, e.g. fibromyalgia, chronic fatigue syndrome and irritable bowel syndrome. Somatic symptoms that remain unexplained despite thorough diagnostic procedures harbor a high risk of psychiatric morbidity. (61) All of these symptoms can be treated with appropriate antidepressants and non-pharmacological strategies such as exercise and physiotherapy.

One of the three factors identified in this study is sleep disturbance, which has a complex bidirectional cause-effect relationship with depression. (62) Sleep is internally coordinated by the homeostatic and circadian rhythms and influenced by several neurotransmitters such as histamine, dopamine, noradrenaline, serotonin, acetylcholine, GABA and orexin. Insomnia occurs as a result of excessive arousal, while hypersomnia is associated with reduced alertness. The disorders lead to a higher risk of cardio-metabolic diseases such as obesity, type 2 diabetes, heart disease and stroke, mental illness and neurological disorders such as Alzheimer's disease, chronic pain as well as immune and endocrine system disorders, a lower quality of life and higher economic costs due to absenteeism, lost productivity and mechanical accidents. (59) Depressed patients often suffer from sleep disorders. Studies have shown that insomnia is not only a prodromal symptom but also an independent risk factor for depression. It is the most common residual symptom and can be a sign of the recurrence of depressive episodes. In addition, patients who experience insomnia along with other depressive symptoms have more severe symptoms, are more prone to suicidal thoughts and have lower remission rates. (62) Sleep quality is therefore an essential part of the treatment of depression. The first choice in the treatment of insomnia or hypersomnia should be non-pharmacological treatment, as it has comparable or even higher efficacy than pharmacotherapy without dangerous side effects. Cognitive behavioral therapy for insomnia, such as the stimulus control technique, paradoxical intention, and other non-pharmacological techniques, e.g. relaxation techniques, progressive muscle relaxation and sleep deprivation, have been shown to be successful. Hypersomnia and insomnia can also be treated with sedative or activating antidepressants. Benzodiazepines are only recommended for a short duration. (63) In Slovenia, atypical antipsychotics are often used for their hypnotic effect. (64)

To summarize once again: In this study, we have shown that the three-factor solution of the IDS-30 questionnaire proposed by Wardenaar et al. (42) - i.e. mood/cognition, anxiety/somatics and sleep disturbance - is well replicated in a Slovenian sample. Furthermore, a brief review of the literature suggests that there is a neurobiological basis for which of the symptoms load on the same factor and which load on different factors.

CLINICAL RELEVANCE

The IDS-30-SR questionnaire is widely used as a screening method for depression, not only in psychiatry, but also in other fields of health care, i.e. at general practitioner. As a short and simple

self-report questionnaire, it is very practical and time efficient, both for the patients, as well as for the clinicians. It requires no additional training. As it assesses the various symptoms of depression and therefore provides quick information about the most prominent symptoms, it can influence the choice of treatment. Because of its practicality, it is also useful in research. This paper further proves its value for clinical use and research in Slovenian population.

PRACTICAL RECOMMENDATIONS

IDS-30 is a cognitively demanding questionnaire. Anecdotally, the patients commonly complained about item 10, wherein their mood is compared to the state of grief. For many patients, this question was too abstract to be readily answerable. Thus, we recommend that IDS-30 only be used with patients with no cognitive dysfunctions. Where cognitive difficulties are observed, we suggest using a clinician-rated version of IDS-30 or a simpler questionnaire. Similarly, items 13 and 14 inquire into objective weight fluctuations. Patients commonly remarked that they have not recently weighed themselves and as such cannot provide responses to these questions. Thus, IDS-30 should be in a clinical setting where relevant objective measurements can be made.

LIMITATIONS

The present study has one major limitation. It is recommended to collect data from 3 to 20 participants per item for the factor analysis, depending on the behavior of the data. Thus, under optimal circumstances, 600 participants would need to be recruited for an adequate factor analysis of the IDS-30 questionnaire. However, given the small number of patients with depression in Slovenia and the difficulty of recruiting people from this population, a study with such a scale is a challenge. In short, the findings presented here may not generalize to the entire population of Slovenian patients with depression.

A general limitation of IDS-30 is that it is a cognitively demanding questionnaire. It requires the patients to have a reasonably intact capacity for insight, as they have to be able to estimate the causal relationship between external events and their mood, as well as the time of day and their mood. As such, IDS-30 may not be suitable for patients with cognitive difficulties.

CONCLUSION

The aim of this study was to validate the factor structure of the IDS-30-SR questionnaire in a Slovenian sample. Six factor models were tested. Five factor models were derived from a literature review: One-factor model (40), two-factor model (41), and three three-factor models (29,38,42). A further model was derived using PCA. The goodness-of-fit test shows that the three-factor structure proposed by Wardenaar et al. (42) is the most suitable for the Slovenian adaptation of the IDS-30-SR. Future studies should consider adapting the IDS-30 for populations with cognitive difficulties, as well as inquiring into culture specific aspects of depression.

AUTHOR CONTRIBUTIONS

(Using CRediT Taxonomy, http://www.cell.com/pb/assets/raw/shared/guidelines/CRediT-taxonomy.pdf). Conceptualization: AO; Methodology: AO; Software: AO; Formal analysis: AO; Investigation: AO, KHG, LKH, RP, ID, VA, AS, NK, TSE & TW; Resources: AO; Data curation: AO; Writing - Original draft: AO, KHG; Writing - Review & editing: AO, KHG, LKH, RP, ID, VA, AS, NK, TSE, & TW; Supervision: AO; Project administration: AO, KHG.

CONFLICT OF INTEREST STATEMENT

The authors declare that the research was conducted in absence of any commercial or financial relationship that could be construed as a potential conflict of interest.

SUPPLEMENTARY MATERIALS: THE SLOVENIAN VERSION OF INVENTORY OF DEPRESSIVE SYMPTOMATOLOGY (IDS-30-SR)

Obkrožite en odgovor pri vsaki postavki, ki vas najbolje opiše v zadnjem tednu.

1. Težave pri uspavanju:
0 Nikoli ne traja več kot 30 minut, da zaspim.
1 Traja vsaj 30 minut, da zaspim v manj kot polovici primerov.
2 Traja vsaj 30 minut, da zaspim v več kot polovici primerov.
3 Traja več kot 60 minut, da zaspim v več kot polovici primerov.

2. Prebujanje med nočjo:
0 Ponoči se ne zbujam.
1 Imam nemiren, lahen spanec z redkim zbujanjem.
2 Zbudim se vsaj enkrat na noč, vendar zaspim nazaj brez težav.
3 Zbujam se več kot enkrat na noč in ostanem buden/-a 20 minut ali več v več kot polovici primerov.

3. Jutranja nespečnost:
0 V manj kot polovici primerov se ne zbudim več kot 30 minut preden bi bilo potrebno.
1 V več kot polovici primerov se zbudim več kot 30 minut preden bi bilo potrebno.
2 Zbudim se vsaj eno uro preden bi bilo potrebno, v več kot polovici primerov.
3 Zbudim se vsaj dve uri preden bi bilo potrebno, v več kot polovici primerov.

4. Pretirano spanje:
0 Ne spim več kot 7-8 ur na noč, ni dremam čez dan.
1 Ne spim več kot 10 ur v 24-ih urah (vključno z dremanjem čez dan).
2 Ne spim več kot 12 ur v 24-ih urah (vključno z dremanjem čez dan).
3 Spim več kot 12 ur v 24-ih urah (vključno z dremanjem čez dan).

5. Razpoloženje (Žalost):
0 Ne počutim se žalostno.
1 Počutim se žalostno manj kot polovico časa.
2 Počutim se žalostno več kot polovico časa.
3 Počutim se intenzivno žalostno praktično ves čas.

6. Razpoloženje (Razdražljivost):
0 Ne počutim se razdražljivo
1 Počutim se razdražljivo manj kot polovico časa.
2 Počutim se razdražljivo več kot polovico časa.
3 Počutim se ekstremno razdražljivo praktično ves čas.

7. Razpoloženje (tesnoba ali napetost):
0 Ne počutim se tesnobno ali napeto.
1 Počutim se tesnobno/napeto manj kot polovico časa.
2 Počutim se tesnobnonapeto več kot polovico časa.
3 Počutim se ekstremno tesnobnonapeto praktično ves čas.

8. Odzivnost razpoloženja na prijetne ali zaželene dogodke:
0 Razpoloženje se izboljša na običajno raven in ostane tako nekaj ur, kadar se mi zgodijo dobri dogodki.
1 Razpoloženje se izboljša, vendar se ne počutim kot običajno, ko se mi zgodijo dobri dogodki.
2 Razpoloženje se izboljša le nekoliko ob redkih izbranih, izrazito pozitivnih dogodkih.
3 Razpoloženje se sploh ne izboljša, tudi ko se mi pripetijo izrazito pozitivni dogodki.

9. Razpoloženje glede na čas dneva:
0 Ne opažam povezanosti med nihanji razpoloženja in obdobji dneva.
1 Moje razpoloženje je pogosto povezano z obdobji dneva, zaradi zunanjih dejavnikov.
2 Večino tedna se mi zdi razpoloženje bolj povezano z obdobji dneva kakor z zunanjimi dogodki.
3 Moje razpoloženje je jasno in predvidljivo boljše ali slabše ob točnem času vsak dan.
9A. Moje razpoloženje je tipično slabše zju-

traj, popoldne ali ponoči (obkrožite eno možnost).
9B. Ali razpoloženjske spremembe pripisujete zunanjim dogodkom? (da ali ne,
obkrožite eno možnost).

10. Kvaliteta razpoloženja:
0 Razpoloženje (notranji občutki), ki ga doživljam je običajno.
1 Razpoloženje je podobno žalosti pri žalovanju, čeprav za to ni razloga, ali je povezano z večjo tesnobo, ali pa je precej bolj intenzivno.
2 Večino časa se počutim žalostno, vendar je moje razpoloženje kvalitativno precej drugačno od žalovanja,
3 Večino časa se počutim žalostno, vendar je moje razpoloženje kvalitativno nekoliko drugačno od žalovanja,

Rešite ali 11 ali 12 (ne obeh postavk)

11. Moj apetit je zmanjšan:
0 Ni spremembe glede na običajni apetit.
1 Jem nekoliko manj pogosto in/ali manjše količine kot ponavadi.
2 Jem mnogo manj kot ponavadi in samo z osebnim trudom.
3 Jem redko znotraj 24-ih ur in samo z ekstremnim osebnim trudom ali prepričevanjem drugih.

12. Moj apetit je povečan:
0 Ni spremembe od običajnega apetita.
1 Bolj pogosto čutim potrebo po hranjenju kot ponavadi.
2 Redno jem bolj pogosto in/ali večje količine kot ponavadi.
3 Čutim se primoranega, da se prenajedam ob in med obroki.

Rešite ali 13 ali 14 (ne obeh postavk)

13. Teža (zmanjšanje) znotraj zadnjih dveh tednov:
0 Nisem doživel/a spremembe teže.
1 Čutim, kot da je prišlo do majhne izgube teže.
2 Izgubil/a sem 1kg ali več.
3 Izgubil/a sem 2,5kg ali več.

14. Teža (povečanje) znotraj zadnjih dveh tednov:
0 Nisem doživel/a spremembe teže.
1 Čutim, kot da je prišlo do majhne pridobitve teže.
2 Pridobil/a sem1kg ali več.
3 Pridobil/a sem 2,5kg ali več.

15. Koncentracija/sprejemanje odločitev:
0 Ni spremembe v običajni zmožnosti koncentracije ali odločanja.
1 Občasno se čutim neodločno ali opažam, da mi pozornost pogosto beži.
2 Večino časa se mučim, da ohranjam pozornost ali sprejema modločitve.
3 Ne morem se skoncentrirati dovolj dobro, da bi bral/a, ne more sprejeti niti manjših odločitev.

16. Pogled (na sebe):
0 Vidim se kot enakovrednega in enako zaslužnega kot drugi.
1 Sem bolj kritičen/a do sebe kot ponavadi.
2 Večinoma verjamem, da povzročam težave drugim.
3 Neprestano premlevam o večjih in manjših pomanjklivostih na sebi.

17. Pogled (na prihodnost):
0 Na prihodnost gledam z običajnim optimizmom.
1 Imam občasno pesimističen pogled, ki ga lahko prekinejo drugi ljudje ali dogodki.
2 Večinoma pesimističen gledam na bližnjo prihodnosti.
3 Ne vidim upanja za sebe ali svojo situacijo kadarkoli v prihodnosti.

18. Samomorilne misli:
0 Ne mislim na samomor ali smrt.
1 Čutim, da je življenje prazno ali da ga ni vredno živeti.
2 Mislim o samomoru/smrti nekajkrat na teden po nekaj minut.

3 Globoko premišljujem o samomoru/smrti nekajkrat na dan oziroma sem ustvaril specifičen načrt ali poskušal izvesti samomor.

19. Vpletenost v aktivnosti:
0 Ni spremembe glede na običajno raven zanimanja za druge ljudi in aktivnosti.
1 Opažam zmanjšanje zanimanja za prejšnje interese/aktivnosti.
2 Opažam, da sta ostala le en ali dva prejšnja interesa.
3 Nimam praktično nobenega interesa za aktivnosti, ki sem jih prej rad/a počel/a.

20. Energija/utrudljivost:
0 Ni spremembe v običajni ravni energije.
1 Utrudim se hitreje kot ponavadi.
2 Vložiti moram izrazit osebni trud, da začnem ali dokončam običajne dnevne aktivnosti.
3 Nezmožen/a sem opraviti večino običajnih dnevnih aktivnosti zaradi pomanjkanja energije.

21. Užitek/zadovoljstvo (brez spolnih aktivnosti):
0 Vključujem se v prijetne aktivnosti in ob njih doživim običajen občutek zadovoljstva.
1 Ne čutim običajnega zadovoljstva ob prijetnih aktivnostih.
2 Redko doživim užitek pri katerikoli aktivnosti.
3 Nisem zmožen/a zaznati kakršenkoli občutek užitka/zadovoljstva ob čemerkoli.

22. Zanimanje za spolno aktivnost:
0 Imam običajno zanimanje za spolno aktivnost oziroma ob njej doživim običajen užitek.
1 Imam skoraj običajno zanimanje za spolno aktivnost oziroma ob njej doživim običajen užitek.
2 Imam malo želje po spolni aktivnosti oziroma ob njej redko doživim užitek.
3 Nimam absolutno nič zanimanja za spolno aktivnost oziroma ob njej ne doživljam užitka.

23. Občutki upočasnjenosti:
0 Mislim, govorim in gibam se z običajno hitrostjo.
1 Opažam upočasnjeno mišljenje, moj glas je zamolkel ali monoton.
2 Traja nekaj sekund, da odgovorim na večino vprašanj; prepričan/a sem, da se je moje mišljenje upočasnilo.
3 Pogosto ne zmore odgovoriti na vprašanja brez skrajnega napora.

24. Občutki nemira:
0 Ne počutim se nemirno.
1 Pogosto sem nemiren/a, manem si roke in menjam položaj sedenja.
2 Čutim notranje impulze, da bi se gibal/a, sem nemiren/a.
3 Nezmožen/a sem sedeti pri miru in moram korakati naokoli.

25. Telesne bolečine:
0 Nimam občutka težkih udov ali bolečin.
1 Včasih me boli glava, trebuh, hrbet ali sklepi, vendar me ta bolečina ne ustavi pri vsakodnevnih aktivnostih..
2 Zgoraj opisane bolečine so prisotne večino časa.
3 Zgoraj opisane bolečine so tako neznosne, da me ustavljajo pri vsakodnevnih aktivnostih.

26. Druge telesne težave:
0 Ne opažam teh simptomov: povečan srčni utrip, tresavica, zamegljen vid, potenje, bolečine v prsnem košu ali piskanje v ušesih.
1 Zgoraj opisani simptomi so blagi in le začasno prisotni.
2 Zgoraj opisani simptomi so zmerni in prisotni več kot polovico časa.
3 Zgoraj opisani simptomi me ustavljajo pri vsakodnevnih aktivnostih.

27. Panični/fobični simptomi:
0 Nimam paničnih epizod niti specifičnih strahov (npr. pred pajki ali višinami).
1 Imam blage panične epizode ali fobije, ki pa običajno ne spremenijo mojega obnašanja niti me ne onesposabljajo.
2 Imam hude panične epizode ali fobije, zaradi katerih se drugače obnašam, vendar me ne

onesposabljajo.
3 Imam panične epizode, ki me onesposobijo vsaj enkrat na teden ali hude fobije, zaradi katerih se popolnoma izogibam določenim situacijam.

28. Težave s prebavo:
0 Ni sprememb v običajnem odvajanju blata.
1 Imam prehodna zaprtja in/ali drisko, ki je blaga.
2 Imam drisko in/ali zaprtje večino časa, vendar ne motijo mojega vsakodnevnega delovanja.
3 Imam prehodno zaprtost in/ali drisko, zaradi katere potrebujem zdravljenje ali mi povzroča motnje v vsakodnevnem delovanju.

29. Občutljivost v medosebnih odnosih:
0 Ne počutim se zavrnjenega, odrinjeno, kritizirano ali prizadeto s strani drugih.
1 Občasno se počutim zavrnjeno, odrinjeno, kritizirano ali prizadeto s strani
drugih.
2 Pogosto se počutim zavrnjeno, odrinjeno, kritizirano ali prizadeto s strani
drugih, vendar ima to le manjši vpliv na moje socialno/delovno funkcioniranje.
3 Pogosto se počutim zavrnjeno, odrinjeno, kritizirano ali prizadeto s strani
drugih, zaradi česar je prizadeto moje socialno/delovno funkcioniranje.

30. Fizična energija (občutek težkih udov):
0 Ne doživljam fizičnega občutka obteženosti, niti se ne počutim brez fizične energije.
1 Občasno doživljam občutek fizične obteženosti in se počutim brez fizične energije, vendar brez
negativnega učinka na vsakdanjo aktivnost.
2 Počutim se fizično obteženega (brez fizične energije) več kot polovico časa.
3 Počutim se fizično obteženega (brez fizične energije) večino časa, nekaj ur na dan, nekaj dni na teden.

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