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ORIGINAL PAPER

Polish version of the Hypomania Checklist (HCL-32) scale: the results in treatment-resistant depression

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Abstract We performed the factor analysis of the Polish version of the Hypomania Check List (HCL-32) scale and assessed the utility of HCL-32 in discriminating patients with treatment-resistant and treatment non-resistant depression. The study included 1,051 patients with single or recurrent depressive episode among which 569 met the criteria for treatment-resistant depression. The Polish version of HCL-32 was employed to all patients. The Cronbach's alpha for entire scale was 0.93 which indicates high degree of consistency. The factor analysis of the scale yielded three factors with item loadings of 0.4 or more. Factor 1, comprising ten items connected with elevated mood and increased activity explained more than half of total variance, Factor 2 (two items) was connected with sexual activity, and factor 3 (three items) with irritability. The mean score of HCL-32 was significantly higher in treatment-resistant versus non-resistant depression (11.9 ± 8.3 vs. 8.5 ± 7.7, respectively, $P < 0.001$). Also, the percentage of patients having positive response to 14 or more items of the scale was significantly higher in treatment-resistant than in non-resistant depression (43.9 vs. 30.0%, respectively, $P < 0.001$). Therefore, using Polish version of HCL-32 we have confirmed the association between bipolarity and worse response to antidepressant drugs in patients with mood disorders.

Keywords Hypomania Checklist -32 · Polish version · Treatment-resistant depression · Bipolarity

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Introduction

Angst et al. [3] developed a screening self-report tool (Hypomania Checklist scale with 32 items, HCL-32) that is aimed primarily at the identification of bipolarity in the general population and in patients with unipolar depression. Several different language versions of the HCL-32 have been validated in psychiatric and general populations [5, 13, 19, 21]. In this research, the HCL-32 proved useful in detecting features of bipolarity in affective patients [3, 5, 7, 19] and in patients with obesity [1]. The features of bipolarity were connected with such clinical factors as, among others, indices of functional impairment [13].

The association between bipolarity and refractoriness of depression to treatment with antidepressant drugs has been a subject of numerous studies. Ghaemi et al. [8] analyzed clinical records of antidepressant trials in 41 patients with bipolar depression and 37 with unipolar depression similar in age and sex distribution and found that the short-term non-response was significantly more frequent in bipolar (51.3%) than in unipolar (31,6%) depression. The results of Polish DEP-BI study showed that a percentage of patients with treatment-resistant (TR) depression was significantly higher in bipolar than in unipolar patients. Especially high

was the percentage in bipolar spectrum patients defined as clinical condition between bipolar II and unipolar, what may suggest that the reason for a resistance was an unrecognized bipolarity [14, 15]. Increased indices of bipolarity in TR depression were also found by Hantouche and Angst [9]. In the paper of Calabrese et al. [4], about 20% of patients with depression non-responsive to antidepressant treatment screened positive for bipolarity as assessed with Mood Disorder Questionnaire. In a long-term follow-up of antidepressant refractory Japanese patients, 5 out of 21 (24%) formerly diagnosed as unipolar depression were changed during mean 6 years of observation into bipolar disorder [11]. Sharma et al. [18] performed a 1-year follow-up of 61 patients formerly diagnosed as "unipolar" TR depression. The most important finding was that 80% of patients were found to show evidence of bipolarity.

The objective of the study was the factor analysis of the Polish version of HCL-32 scale and to assess the utility of HCL-32 in discriminating patients with TR and treatment non-resistant depression.

Methods

Patients

This was all-Poland multicenter study performed in the year 2007 having the acronym TRES-DEP (treatment-resistant depression). One-hundred and fifty outpatient psychiatric clinics participated, representing all 16 regions of Poland. All psychiatrists had previously taken part in the training session on the psychometric tools used in the study, organized by main researchers.

The population studied included patients who had a diagnosis of first or recurrent major depressive episode (ICD-10: F32 or F33) [20]. The depressive episode could be current or recently past. Each centre included five consecutive patients where depressive episode was assessed as TR and five consecutive patients with treatment non-resistant episode. TR episode was defined as lack of remission ($\leq$7 points in 17-item Hamilton Depression Scale) after minimum two courses of adequate antidepressant treatment ($\geq$4 weeks in adequate dose). All patients were above 18 years of age.

Exclusion criteria were current diagnosis of bipolar mood disorder, treatment with mood-stabilizing drugs of first or second generation [16], intensity of depression >18 in Hamilton Depression Scale (which could influence the recall of hypomanic symptoms in the past), mental retardation, drug dependence (except for nicotine), or severe medical or neurological diseases as, for example, cardiovascular or renal insufficiency, severe diabetes or other endocrine disorders, head trauma in the past, epilepsy, and other neurological illness.

The psychiatrist, using information from illness history, psychiatric examination and available documentation, assessed each eligible patient by means of semi-structured questionnaire. The assessment of current depressive symptoms was done by means of Hamilton Depression Scale. The symptoms of bipolarity were assessed by the Polish version of the Mood Disorder Questionnaire [10] and the Polish version of the Hypomania Check List (HDL-32) [3].

One thousand and fifty-one patients (299 male and 752 female), aged 18–77 years (mean 46 $\pm$ 11) entered the study. They were classified into non-treatment-resistant (NTR) depression (482 patients) and TR depression (569 patients). Both groups did not differ as to age (46 $\pm$ 11 vs. 47 $\pm$ 11 years), percentage of women (72.5 vs. 71.0%) and years of education (13 $\pm$ 4 vs. 13 $\pm$ 3 years, respectively).

The study was approved by Bioethics Committee, Poznan University of Medical Sciences where country coordinator (JKR) came from.

Polish version of the HCL-32 scale

The HCL-32 scale is a self-administered questionnaire comprising a list of 32 yes/no items used to identify possible hypomanic symptoms. It also has additional questions evaluating severity and specifying duration as well as possible positive and negative subjective consequences in different areas.

The main author of this paper translated the English version of the HCL-32 into Polish. It was then independently translated back into English by a professional translator, and then a subsequent Polish version was re-edited by another senior psychiatrist. Following this, the final version was created, and the approval for this was obtained from the main author of the original version (J.A.).

Statistics

Tetrachoric correlation matrix of HCL-32 items was estimated. Exploratory Factor Analysis was then performed to investigate the factor structure of the correlation matrix. Oblique rotation was applied to simplify the interpretation of factors. Subscale scores for each factor were obtained by summing all items that loaded higher than 0.4 on the corresponding factor. The reliability of the Polish version of the HCL-32 and its subscales were examined using Cronbach's coefficient alpha [6].

Total HCL-32 score was compared between groups using Kruskal–Wallis test with 0.05 level of significance. Fraction of positive answers for each item was compared between groups and between genders using χ^2-test. Due to

multiple comparisons, Bonferroni correction was applied and 0.0016 level of significance was chosen for each item comparison.

Calculations were done in Stata Statistical Software (Release 10, College Station, TX, Stata Corporation LP 2007).

Results

Psychometric properties of the scale

After the tetrachoric correlation matrix of HCL-32 items was estimated, exploratory factor analysis revealed four factors with eigenvalues >1 explaining 72.2% of total variance.

Factor loadings of individual items of HCL-32 scale are presented in Table 1.

The analysis revealed that only three factors contained at least two items with loadings of 0.4 or higher. The most significant was factor 1, explaining 52.1% of total variance, comprising items 2–5, 11–12, 15, 20, 24 and 29. These items were connected with elevated mood and increased activity. Factor 2, explaining 11.8% of total variance included items 16–17, was connected with sexual activity. Factor 3, explaining 3% of total variance contained three items (25–27) all connected with irritability.

The Cronbach's alpha for entire scale was 0.93 which indicates high degree of consistency and for the subscale of factor 1 containing ten items that loaded higher than 0.4 the Cronbach's alpha was 0.92. Item-rest correlations ranged from 0.18 to 0.68. Correlation coefficients were higher than 0.3 in all others except for item 32-rest correlation. The Cronbach's alpha for all but the one item ranged from 0.93 to 0.94.

Polish version of the HCL-32 in TR and treatment non-resistant depression

In the group of TR depression, the total HCL-32 score was significantly higher than in NTR depression (11.9 ± 8.3 vs. 8.5 ± 7.7, mean ± SD, respectively, $P < 0.001$).

The comparison of positive responses in both groups on the individual items is shown in Table 2.

For 23 items, the differences between TR and NTR depression reached the level of significance or borderline significance after Bonferroni correction for multiple measures. More than 10% difference in the percentage of positive responses was observed for 7 out of 10 items of factor 1 and for all three items of factor 5.

Three-hundred and ninety-four patients of the whole group (37.5%) scored 14 or higher in HCL-32 scale, the

Table 1 Factor loadings of the HCL-32 items after rotation

Item	Factor 1	Factor 2	Factor 3
1. I need less sleep	0.1304	0.0071	0.0136
2. I feel more energetic and more active	0.6942	0.0207	0.0723
3. I am more self-confident	0.6585	−0.0065	30.0245
4. I enjoy my work more	1.0536	0.0052	−0.0223
5. I am more sociable (make more phone calls, go out more)	0.6402	0.0237	0.0307
6. I want to travel and/or do travel more	0.2338	−0.0043	0.0051
7. I tend to drive faster or take more risks when driving	0.0259	0.0078	0.0217
8. I spend more money/too much money	0.0587	0.0024	−0.0017
9. I take more risks in my daily life (in my work and/or other activities)	0.0652	0.0274	0.0525
10. I am physically more active (sport etc.)	0.2926	−0.0002	−0.0325
11. I plan more activities or projects.	0.5188	0.0076	0.0072
12. I have more ideas, I am more creative	0.5357	0.0011	−0.0065
13. I am less shy or inhibited	0.1018	0.0136	0.0059
14. I wear more colorful and more extravagant clothes/make-up	0.1443	0.0061	0.0082
15. I want to meet or actually do meet more people	0.5004	0.034	0.012
16. I am more interested in sex, and/or have increased sexual desire	0.1596	0.9327	0.0027
17. I am more flirtatious and/or am more sexually active	0.0324	0.9133	−0.0009
18. I talk more	0.1574	0.0701	0.1502
19. I think faster	0.33	−0.005	−0.0073
20. I make more jokes or puns when I am talking	0.4165	0.0319	0.0427
21. I am more easily distracted	0.0163	−0.0093	0.225
22. I engage in lots of new things	0.2908	0.0077	−0.0004
23. My thoughts jump from topic to topic	0.0236	−0.0096	0.1754
24. I do things more quickly and/or more easily	0.6897	0.001	−0.0629
25. I am more impatient and/or get irritable more easily	0.0054	0.0169	0.8306
26. I can be exhausting or irritating for others	0.0184	0.0019	0.9907
27. I get into more quarrels	0.0065	−0.0141	1.1444
28. My mood is higher, more optimistic	0.8436	0.0179	0.0429
29. I drink more coffee	0.0243	−0.0048	−0.0055
30. I smoke more cigarettes	0.0189	−0.0032	0.0497
31. I drink more alcohol	−0.0208	0.0577	0.0317
32. I take more drugs (sedatives, anti-anxiety pills, stimulants)	−0.0336	0.0237	0.1494

Table 2 Comparison of positive responses on individual items of HCL-32 scale in patients with non-treatment-resistant (NTR) and treatment-resistant (TR) depression

Item	NTR depression $N = 482$ (%)	TR depression $N = 569$ (%)	P
I need less sleep	147 (30.5)	283 (49.7)	<0.001*
I feel more energetic and more active	261 (54.2)	382 (67.1)	<0.001*
I am more self-confident	209 (43.4)	324 (57)	<0.001*
I enjoy my work more	235 (48.8)	328 (57.6)	0.004
I am more sociable (make more phone calls, go out more)	189 (39.2)	285 (50.1)	<0.001*
I want to travel and/or do travel more	92 (19.1)	127 (22.3)	>0.1
I tend to drive faster or take more risks when driving	47 (9.8)	71 (12.5)	>0.1
I spend more money/too much money	54 (11.2)	129 (22.7)	<0.001*
I take more risks in my daily life (in my work and/or other activities)	73 (15.2)	127 (22.3)	0.003
I am physically more active (sport etc.)	155 (32.2)	238 (41.8)	0.001*
I plan more activities or projects.	199 (41.2)	305 (53.6)	<0.001*
I have more ideas, I am more creative	192 (39.8)	281 (49.4)	0.002*
I am less shy or inhibited	150 (31.1)	255 (44.8)	<0.001*
I wear more colorful and more extravagant clothes/make-up	81 (16.8)	139 (24.4)	0.002
I want to meet or actually do meet more people	166 (34.4)	256 (45)	0.001*
I am more interested in sex, and/or have increased sexual desire	111 (23.0)	177 (31.1)	0.003
I am more flirtatious and/or am more sexually active	81 (16.8)	151 (26.5)	<0.001*
I talk more	166 (34.4)	296 (52)	<0.001*
I think faster	159 (33)	278 (48.9)	<0.001*
I make more jokes or puns when I am talking	190 (39.4)	267 (46.9)	0.014
I am more easily distracted	88 (18.3)	184 (32.3)	<0.001*
I engage in lots of new things	126 (26.1)	173 (30.4)	>0.1
My thoughts jump from topic to topic	65 (13.5)	148 (26)	<0.001*
I do things more quickly and/or more easily	204 (42.3)	298 (52.4)	0.001*
I am more impatient and/or get irritable more easily	112 (23.2)	212 (37.3)	<0.001*
I can be exhausting or irritating for others	74 (15.3)	170 (29.9)	<0.001*
I ge into more quarrels	67 (14)	149 (26.2)	<0.001*
My mood is higher, more optimistic	251 (52.1)	372 (65.4)	<0.001*
I drink more coffee	71 (14.7)	145 (25.5)	<0.001*
I smoke more cigarettes	42 (8.7)	106 (18.6)	<0.001*
I drink more alcohol	36 (7.5)	74 (13.0)	0.003
I take more drugs (sedatives, anti-anxiety pills, stimulants)	13 (2.7)	50 (8.8)	<0.001*

* Significant or border-significant at 0.0016 level of significance

cut-off point regarded as showing the features of bipolarity. In Fig. 1, a percentage of patients from TR and NTR groups showing given number of positive responses are presented.

The percentage of patients having positive responses to 14 or more symptoms was significantly higher in TR than in treatment non-resistant group (43.9 vs. 30.0%, respectively, $P < 0.001$).

Discussion

This is the first report on the Polish version of the HCL-32 scale. The aim of the present study was the factor analysis of the scale and to assess the utility of HCL-32 in discriminating patients with TR and treatment non-resistant depression.

The analysis performed in our study show a good reliability of the scale as assessed by Cronbach's alpha scores. The coefficient of internal consistency expressed as Cronbach's alpha score was 0.93, for the total scale, indicating a high level of homogeneity. The results are quite similar to those of other studies verifying, e.g., Spanish version [19] or Chinese version [21] of the scale.

The factor analysis of the scale yielded three factors with item loadings of 0.4 or more. Factor 1, being the biggest one and explaining more than half of total variance, comprised ten items connected with elevated mood and

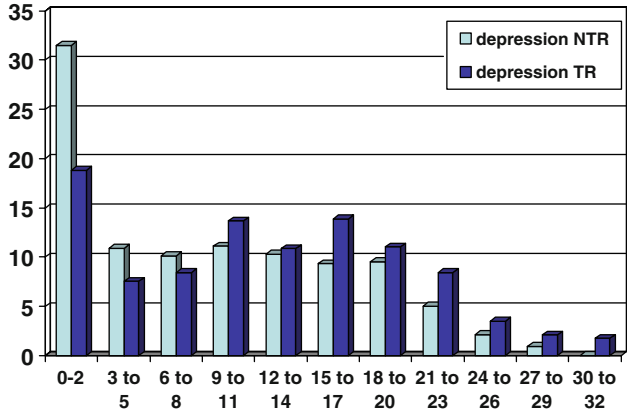

Fig. 1 Comparison of treatment-resistant (*TR*, $n = 569$) and non-treatment-resistant (*NTR*, $n = 482$) depression as to the percentage of patients showing given number of positive responses on the Polish version of HCL-32

increased activity. Factor 2, included two items connected with sexual activity, and factor 3, contained three items connected with irritability. However, factor 2 explained 11.8% of total variance while factor 3 only 3%. Nevertheless, apart from the separate factor for sexual activity obtained in our studies, our results are in some agreement with those of previous studies of HCL-32, showing two-factor solution as "active-elated" and "risk-taking-irritable" factor [3, 13, 19, 21].

The main finding of our study is showing higher indexes of bipolarity in patients with TR compared with treatment non-resistant depression using the Polish version of HCL-32 scale. The total HCL-32 score was significantly higher in TR versus NTR depression (11.9 vs. 8.5 points) and the percentage of patients having the score 14 or higher was significantly higher in TR than NTR depression (43.9 vs. 30.0%). Therefore, the results of our study confirm an association between refractoriness of depression to treatment with antidepressant drugs and indexes of bipolarity found both by other researchers [9, 18] as well as in our previous studies [14, 15]. In the context of this, it should be mentioned that the use of antidepressant drugs in bipolar depression is now by many authors not considered as the first line choice and some papers even question the efficacy of these drugs in such condition [17].

The findings of the study may also bear on the issue of detecting the bipolarity in patients with previous diagnosis of unipolar depression. In our sample, more than one-third of patients studied had the results on HCL-32 scales exceeding the cut-off for bipolarity. Again, this may concur with the results of other studies showing better detection of bipolarity with the use of more sensitive tools with substantial percentage of newly detected bipolar cases [2, 12].

In conclusion, our results demonstrate that using the Polish version of the HCL-32 scale we confirmed the association between bipolarity and worse response to antidepressant drugs in patients with mood disorders.

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References

1. Alciati A, D'Ambrosio A, Foschi D, Corsi F, Mellado C, Angst J (2007) Bipolar spectrum disorders in severely obese patients seeking surgical treatment. J Affect Disord 101:131–138
2. Allilaire JF, Hantouche EG, Sechter D, Bourgeois ML, Azorin JM, Lancrenon S, Chatenet-Duchene L, Akiskal H (2001) Fréquence et aspects cliniques du trouble bipolaire II dans une étude multicentrique française: EPIDEP. L'Encéphale 27:149–158
3. Angst J, Adolfsson R, Benazzi F, Gamma A, Hantouche E, Meyer TD, Skeppar P, Vieta E, Scott J (2005) The HCL-32: towards a self-assessment tool for hypomanic symptoms in outpatients. J Affect Disord 88:217–233
4. Calabrese JR, Muzina DJ, Kemp DE, Sachs GS, Frye MA, Thomson TR, Klingman D, Reed ML, Hirschfeld RMA (2006) Predictors of bipolar disorder risk among patients currently treated for major depression. MedGenMed 8:38
5. Carta MG, Hardoy MC, Cadeddu M, Murru A, Campus A, Morosini PL, Gamma A, Angst J (2006) The accuracy of the Italian version of the Hypomania Checklist (HCL-32) for the screening of bipolar disorders and comparison with the Mood Disorder Questionnaire (MDQ) in a clinical sample. Clin Pract Epidemiol Ment Health 2:2
6. Cronbach LJ (1951) Coefficient alpha and the internal structure of tests. Psychometrika 16:297–334
7. Forty L, Smith D, Jones L, Jones I, Caesar S, Fraser C, Gordon-Smith K, Craddock N (2008) Identifying hypomanic features in major depressive disorder using the Hypomania Checklist (HCL-32). J Affect Disord, 28 Aug [Epub ahead of print]
8. Ghaemi SR, Rosenquist KJ, Ko JY, Baldassano CF, Kontos NJ, Baldessarini RJ (2004) Antidepressant treatment in bipolar versus unipolar depression. Am J Psychiatry 161:163–165
9. Hantouche E, Angst J (2007) Rate and risk factors of hypomania in recurrent and treatment resistant depression. 3rd International Congress on Brain and Behaviour, 28.11.-02.12.2007, Theassaloniki, Greece. Annals Gen Psychiatry 7(Suppl 1):S211
10. Hirschfeld RMA, Williams JBW, Spitzer RL, Calabrese JR, Flynn L, Keck PE, Lewis L, McElroy SL, Post RM, Rapport DJ, Russel JM, Sachs GS, Zajecka J (2008) Development and validation of a screening instrument for bipolar spectrum disorder: The Mood Disorder Questionnaire. Am J Psychiatry 157:1873–1875
11. Inoue T, Nakagawa S, Kitaichi Y, Izumi T, Tanaka T, Masui T, Kusumi I, Denda K, Koyama T (2006) Long-term outcome of antidepressant-refractory depression: the relevance of unrecognized bipolarity. J Affect Disord 95:61–67
12. Kiejna A, Rymaszewska J, Hadrys T, Suwalska A, Lojko D, Rybakowski JK (2006) Bipolar or unipolar? The question for clinicians and researchers. J Affect Disord 93:177–183
13. Meyer TD, Hammelstein P, Nilsson GP, Skeppar P, Adolfsson R, Angst J (2007) The Hypomania Checklist (HCL-32): its factorial structure and association to indices of impairment in German and Swedish nonclinical samples. Compr Psychiatry 48:79–87
14. Rybakowski JK, Suwalska A, Lojko D, Rymaszewska J, Kiejna A (2005) Bipolar mood disorders among Polish psychiatric outpatients treated for major depression. J Affect Disord 84:141–147

15. Rybakowski JK, Suwalska A, Lojko D, Rymaszewska J, Kiejna A (2007) Types of depression more frequent in bipolar than in unipolar affective illness: results of the Polish DEP-BI study. Psychopathology 40:153–158
16. Rybakowski JR (2007) Two generations of mood stabilizers. Int J Neuropsychopharmacol 10:709–711
17. Sachs GS, Nierenberg AA, Calabrese JR, Marangell LB, Wisniewski SR, Gyulai L, Friedman ES, Bowden CL, Fossey MD, Ostacher MJ, Ketter TA, Patel J, Hauser P, Rapport D, Martinez JM, Allen MH, Miklowitz DJ, Otto MW, Dennehy EB, Thase ME (2007) Effectiveness of adjunctive antidepressant treatment for bipolar depression. N Eng J Med 356:1711–1722
18. Sharma V, Khan M, Snith A (2005) A closer look at treatment resistant depression: is it due to a bipolar diathesis? J Affect Disord 84:251–257
19. Vieta E, Sanchez-Moreno J, Hulbena A, Chamorro L, Ramos JL, Artal J, Perez F, Oliveras MA, Valle J, Lahuerta J, Angst J, for the EDHIPO (hypomania detection study) group (2007) Cross validation with the mood disorder questionnaire (MDQ) of an instrument for the detection of hypomania in Spanish: The 32 item hypomania symptom check list (HCL-32). J Affect Disord 101:43–55
20. World Health Organization (1992) The ICD-10 Classification of Mental and Behavioural Disorders, Clinical Descriptions and Diagnostic Guidelines. World Health Organization, Geneva
21. Wu Y-S, Angst J, Ou C-S, Chen H-C, Lu R-B (2008) Validation of the Chinese version of the Hypomania Checklist (HCL-32) as an instrument for detecting hypo(mania) in patients with mood disorders. J Affect Disord 106:133–143