

Psychometric properties and validity of Beck Depression Inventory-II in Multiple Sclerosis

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Introduction

Depression is the most common psychiatric disorder in Multiple Sclerosis (MS) with annual prevalence rates of 20% and lifetime prevalence ranging 40%-60% across studies.[1,2]

Self-report depression scales are frequently used as screening, diagnostic and grading instruments of depression.[3]

The aim of the present study was to explore the psychometric characteristics and the validity of Beck Depression Inventory-II (BDI-II) in a sample of Italian MS patients. We also aimed at identification of an optimal cut-off to provide physicians with a rapid screening tool for detecting clinically relevant depressive symptoms in MS.

Methods

A sample of 141 consecutive non-demented MS patients was recruited from the MS Center of the Second University of Naples. All patients underwent a clinical interview, a neurological and neuropsychological evaluation, including the Brief RAO Battery (BRB), the assessment of disability by the Expanded Disability Status Scale (EDSS) and Fatigue Severity Score (FSS) questionnaire.[10] The presence of clinically relevant depressive symptoms was evaluated by Chicago Multiscale Depression Inventory (CMDI) and BDI-II questionnaires.

Table 1. Demographic and clinical characteristics of MS sample

N=141	Mean(SD) /Median	Range (Min-Max)
Age. y	39.3 (11.2)	15-63
Education. y	12.6 (3.9)	5-22
Disease duration. y	11.1 (9.2)	1-42.5
EDSS score	2.0	1.0-8.0
LTS-total score	39.82 (15.83)	4-67
CLTR -total score	28.76 (15.82)	0-66
10/36 SPART total score	18.32 (5.94)	2-30
SDMT -total score	35.54 (15.05)	7-77
PASAT 3"-total score	36.42 (13.87)	3-60
PASAT 2"-total score	28.78 (10.85)	8-58
D-SRT -total score	7.59 (2.66)	1-12
WLG -total score	19.89 (5.18)	9-36
SCWIT-T/2 (sec)	81.74 (53.70)	37-494
Vocabulary-WAIS-R	39.93 (15.95)	6-68
FSS	34.37 (15.96)	9-63
CMDI-MOOD	26.25 (10.53)	14-67
CMDI-EVALUATIVE	19.86 (7.95)	14-60
CMDI-VEGETATIVE	29.91 (10.34)	14-62
CMDI-total score	76.01 (26.40)	42-189

Table 3. Factor analysis of BDI-II

BDI-II	Factor 1	Factor 2
Item 7. Self-dislike	.775	.364
Item 14. Feelings of worthlessness	.738	.348
Item 3. Past failure	.736	.402
Item 13. Indecisiveness	.685	.405
Item 4. Loss of pleasure	.656	.552
Item 6. Punishment feelings	.650	.404
Item 1. Feeling sad	.640	.484
Item 9 Suicidal ideation	.614	.410
Item 5. Guilty feelings	.613	.389
Item 2. Pessimism	.612	.459
Item 15. Loss of energy	.602	.601
Item 21. Loss of interest in sex	.584	.223
Item 8. Self-criticalness	.563	.187
Item 12. Loss of interest	.476	.394
Item 18. Change in appetite	.272	.250
Item 17. Irritability	.325	.712
Item 16. Change in sleeping pattern	.308	.711
Item 10. Crying	.429	.681
Item 20. Tiredness or fatigue	.496	.660
Item 11. Agitation	.380	.652
Item 19. Concentration difficulty	.319	.468

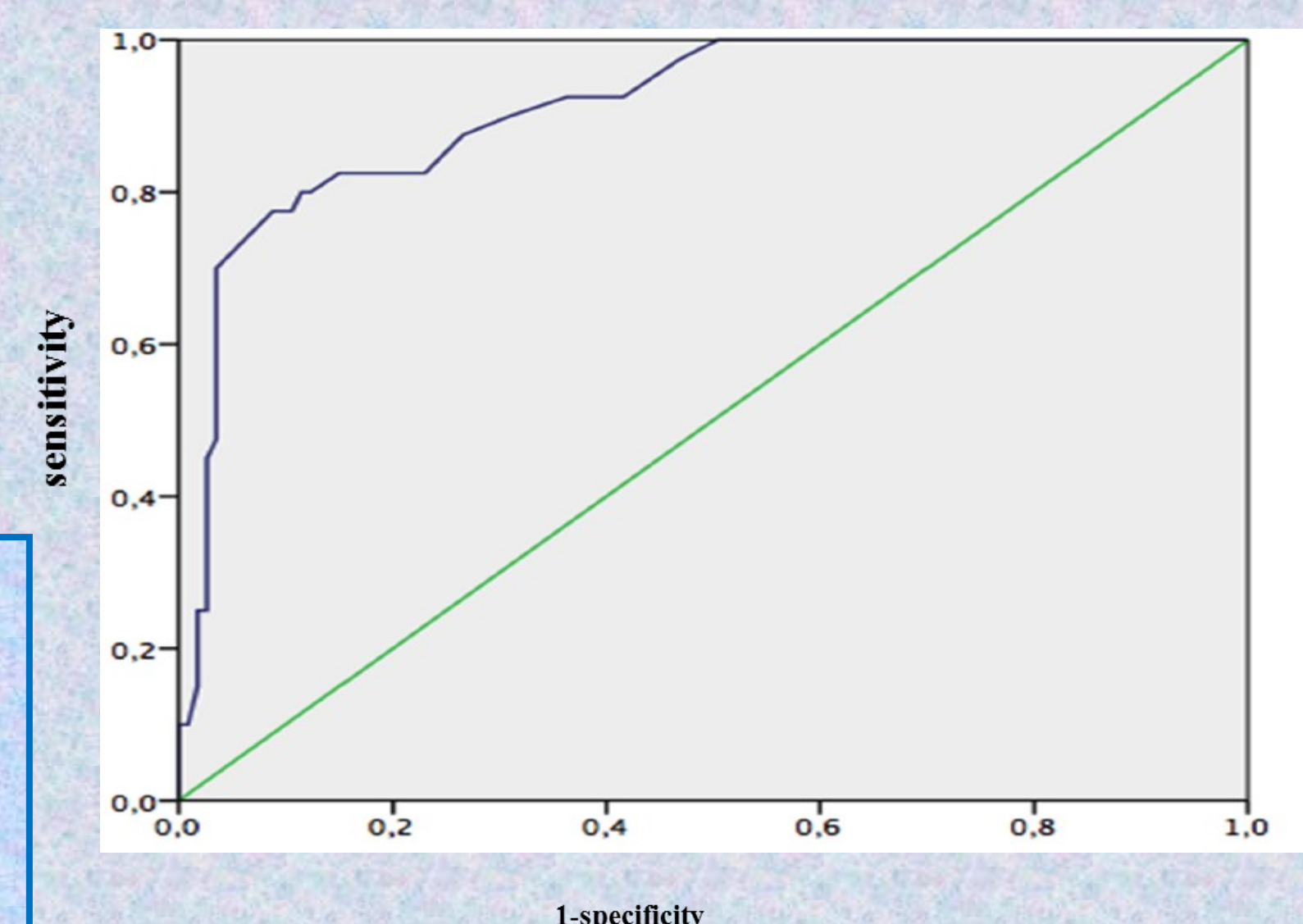
Salient coefficients (>.35) are bolded; Factor 1 = Cognitive-Affective symptoms; Somatic-Depressive symptoms

Results.

The sample included 42M and 99F with different MS phenotype (4 CIS, 113RR, 18SP and 6 PP). Clinical and demographic characteristics of the sample are summarized in table 1.

The BDI-II mean (SD) and median values were 11.94 (9.87) and 10.00, respectively. Cronbach's alpha value was 0.89.

All Item Total Corrected Correlation (ITCC) between individual items and BDI-II total score were ≥ 0.30 except for item 18 (change in appetite), but removal of this item did not increase internal consistency (Cronbach's alpha value 0.90). A principal components analysis revealed a two-factor structure assessing cognitive-affective and somatic-depressive symptoms, respectively (Table 3). BDI-II also showed good convergent and divergent validity in our MS population. With respect to CMDI serving as the "gold standard", the receiver operating characteristic curve revealed that BDI-II is an adequate diagnostic measure and that the optimum total cut-off score was 18.5. Such score identified clinically relevant depressive symptoms in 25.5% of our MS sample.



Conclusion

BDI-II is a reliable and valid tool for detecting, grading and monitoring depressive symptoms in Italian MS patients. This scale is simple and requires less time than other validated questionnaires for depressive symptoms (e.g., CMDI).

References

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