BNSS scale: relation to extrapyramidal, depressive and biological measures

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INTRODUCTION

Negative symptoms have long been recognized as core symptoms of schizophrenia and are associated with poor outcome [1]. To date, no current pharmacological treatment has the indication for treating negative symptoms. In order to advance treatments of schizophrenia, the National Institute of Mental Health (NIMH), an agency of the United States government responsible for mental health related research, organized the NIMH-MATRICS Consensus Development Conference on Negative Symptoms [2]. Five domains of negative symptoms were defined, including blunted affect, alogia, asociality, anhedonia and avolition. Crucially, the need for developing new instruments was highlighted, as the first step to identify new treatments that would target negative symptoms. The Brief Negative Symptoms Scale (BNSS) is one of two scales derived from this initiative, along with the Clinical Assessment Interview for Negative Symptoms (CAINS). Both measures have shown strong interrater, test–retest and internal consistency properties in English and in its validation to Spanish [3–5].
However, there are still many unknown aspects of this scale, such as primary–secondary negative symptoms distinction, correlation with depression, extrapiramidal symptoms and deficit syndrome scales.

MATERIAL AND METHODS

Twenty patients with a diagnosis of schizophrenia (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition; DSM-5) from outpatient units of Parc de Salut Mar Barcelona were recruited. Patients with IQ below 80, neurological disorders or substance dependence except tobacco and cannabis, were excluded. All subjects gave written informed consent in accordance with the respective clinical ethical committees.
The evaluation included: sociodemographic data, physical evaluation, treatment, substance use (ASI scale), extrapyramidal symptoms (SAS and AIMS scales), PANSS scale, BNSS scale, depressive symptoms (Calgary scale), PSP scale and Neurological Evaluation Scale.
We studied the correlation between BNSS (and subscales) and PANSS scale, depressive symptoms, PSP scale, extrapyramidal symptoms and biological measurements using Pearson Correlation.

RESULTS

In our sample, the mean age was 36,5 ± 10,35 and most of the subjects were male (65%). The most used antipsychotic was clozapine (35%) followed by olanzapine, aripiprazole, ziprasidone and risperidone, and the medium equivalent chlorpromazine dose was 486,55 ± 244,32 mg/day. Regarding substance use, the 95% were tobacco users, the 90% were alcohol users, the 70% were cannabis users and the 25% were cocaine users.
The mean PANSS score was 72,02 ± 10,34 (14,7 ± 5,11 positive subscale, 21,9 ± 3,99 negative subscale, 35,95 ± 5,77 general pathology subscale) and the median BNSS scores was 31,65 ± 12,08.
On the other hand, BNSS total scores were significantly correlated with PANSS total score, PANSS negative subscale, PANSS general pathology subscale and PSP scale. Nevertheless, correlation between BNSS total scores and depression symptoms, extrapiramidal symptoms and biological measurements was not significative.

Table 1. Pearson correlation between BNSS scale (and subscales) and Calgary scale, NES scale, SAS scale and AIMS scale.

	Calgary	NES	SAS	AIMS
BNSS total	r = 0,171 p = 0,471	r = 0,083 p =0,728	r = 0,055 p =0,819	r = 0,026 p =0,912
Subescala anhedónia	r = 0,134 p =0,573	r = 0,154 p =0,518	r = 0,011 p =0,965	r = 0,091 p =0,704
Subescala malestar	r = 0,216 p =0,359	r = 0,239 p =0,310	r = 0,255 p =0,278	r = 0,137 p =0,564
Subescala deterioramiento de la interacción social	r = 0,176 p =0,457	r = 0,088 p =0,713	r = 0,032 p =0,893	r = 0,102 p =0,669
Subescala abulia	r = 0,374 p =0,104	r = 0,042 p =0,861	r = 0,101 p =0,692	r = 0,241 p =0,305
Subescala embotamiento afectivo	r = 0,090 p =0,705	r = 0,128 p =0,591	r = 0,096 p =0,687	r = 0,142 p =0,550
Subescala alogia	r = 0,065 p =0,787	r = 0,273 p =0,244	r = 0,105 p =0,659	r = 0,241 p =0,306

Table 2. Pearson correlation between BNSS scale (and subscales) and PSP scale and PANSS scale (and subscales).

	PSP	PANSS T	PANSS P	PANSS N	PANSS PG
BNSS total	r = 0,583 p = 0,007*	r = 0,664 p = 0,001*	r = 0,043 p = 0,856	r = 0,811 p < 0,001*	r = 0,577 p = 0,008*
Subescala anhedónia	r = 0,672 p = 0,001*	r = 0,643 p = 0,002*	r = 0,173 p = 0,466	r = 0,628 p = 0,003*	r = 0,587 p = 0,006*
Subescala malestar	r = 0,369 p = 0,109	r = 0,474 p = 0,035*	r = 0,064 p = 0,790	r = 0,603 p = 0,005*	r = 0,461 p = 0,041*
Subescala deterioramiento de la interacción social	r = 0,536 p = 0,015*	r = 0,518 p = 0,019*	r = 0,061 p = 0,798	r = 0,618 p = 0,004*	r = 0,583 p = 0,007*
Subescala abulia	r = 0,648 p = 0,002*	r = 0,466 p = 0,039*	r = 0,049 p = 0,843	r = 0,723 p < 0,001*	r = 0,372 p = 0,106
Subescala embotamiento afectivo	r = 0,296 p = 0,205	r = 0,516 p = 0,020*	r = 0,082 p = 0,731	r = 0,691 p = 0,001*	r = 0,372 p = 0,107
Subescala alogia	r = 0,011 p = 0,963	r = 0,273 p = 0,244	r = 0,129 p = 0,558	r = 0,370 p = 0,108	r = 0,160 p = 0,501

DISCUSSION

As we hypothesize, BNSS did not have a significant correlation with depressive and extrapyramidal symptoms. These results show the BNSS capacity to discriminate between primary and secondary negative symptoms. Moreover, BNSS did not have a significant correlation with the PANSS positive subscale, suggesting a more specific evaluation of negative symptomatology than the present standardized scales that measure negative symptoms. Besides, BNSS did have a significant correlation with patient's functionality. We did not find any association between NES and BNSS as a biological marker of cerebral dysfunction. The small sample size could influence the lack of findings.
Finally, the study has some limitations. We did not use data from informants and all the included subjects were outpatients. Moreover, the small sample size could have decreased the power of the study. But, it is important to highlight that, in the present study, the inclusion criteria were not too restrictive, which may support the external validation of these results.

CONCLUSIONS

BNSS could be a useful instrument to evaluate negative symptoms of schizophrenia more specifically, so it has demonstrated its capacity to discriminate between primary and secondary negative symptoms and its relation with a poorer patient functioning. Nevertheless, more studies should be done to confirm these results.

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