



Reliability and Validity of the Turkish Version of the Barnes Akathisia Rating Scale

Barnes Akatizi Değerleme Ölçeği'nin Türkçe Sürümünün Geçerlik ve Güvenirliği

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Abstract

Objective: Akathisia, characterized by a sense of inner restlessness and a constant need for motion is a condition that relies on subjective symptoms. Thus, physicians can easily overlook akathisia due to the lack of objective findings. In this study, we aimed to investigate the validity and reliability of the Turkish version of the Barnes Akathisia Rating Scale (BARS) to help with the diagnosis and to provide an objective tool for research studies.

Materials and Methods: The BARS was translated and back-translated by a group of five doctors. Forty patients with schizophrenia who were taking antipsychotic drugs were evaluated using the Turkish version of the BARS by two raters independently. Cronbach's alpha for internal consistency and Cohen's kappa for inter-rater reliability was calculated.

Results: In terms of internal consistency, Cronbach's alpha values for each rater were above 0.8 (0.820 and 0.836), which show high reliability for the scale. In terms of inter-rater reliability, all Cohen's kappa values were above 0.7 (0.706, 0.804, 0.864, 0.881), showing high agreement between the raters.

Conclusion: High values of inter-rater reliability for all items in the scale and high internal consistency values indicate that the Turkish version of the BARS can be used reliably.

Keywords: Akathisia, reliability, validity

Öz

Amaç: İçsel huzursuzluk hissi ve sürekli hareket ihtiyacıyla karakterize olan akatizi subjektif şikayetlere dayanan bir durumdur. Bu nedenle klinisyenler, objektif bulguların yokluğundan dolayı akatiziyi kolaylıkla gözden kaçırabilmektedir. Biz bu çalışmada tanıya yardımcı olması ve araştırmalara nesnel bir araç sağlaması amacıyla Barnes Akatizi Değerleme Ölçeği'nin 'Barnes Akathisia Rating Scale' (BARS) Türkçe sürümünün geçerlik ve güvenirliğini araştırmayı amaçladık.

Gereç ve Yöntem: BARS'nin beş doktoru kapsayan bir grup tarafından çeviri ve geri-çevirisi yapıldı. Antipsikotik ilaç kullanan kırk şizofreni hastası iki değerlendirici tarafından bağımsız olarak BARS'nin Türkçe sürümü ile değerlendirildi. İçsel tutarlılık için Cronbach alfa ve değerlendiriciler arası güvenirlilik için Cohen'in kappa katsayısı hesaplandı.

Bulgular: İçsel tutarlılık açısından, her değerlendirici için Cronbach alfa değerleri ölçeğin güvenirliliğinin yüksek olduğunu gösteren 0,8'in üzerindeydi (0,820 ve 0,836). Değerleyiciler arası güvenirlilik açısından, Cohen'in kappa katsayılarının tüm değerlendiriciler arasında yüksek bir uyum olduğunu gösteren 0,7'nin üzerindeydi (0,706, 0,804, 0,864 ve 0,881).

Sonuç: Ölçekteki bütün maddeler için değerlendiriciler arası güvenirlilik değerlerinin ve içsel tutarlılık değerlerinin yüksek olması BARS'nin Türkçe'de güvenilir bir şekilde kullanılabilceğini göstermektedir.

Anahtar Kelimeler: Akatizi, güvenirlilik, geçerlik

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Introduction

Akathisia, meaning “inability to sit” in Greek, is a movement disorder characterized by the sense of inner restlessness and a need for constant motion (1). Akathisia is primarily associated with traditional antipsychotic drugs; however, new-generation antipsychotic drugs and antidepressants including tricyclic and selective serotonin-reuptake inhibitors (SSRIs) have also been shown to cause akathisia (2). It has also been described in parkinsonism including Parkinson’s disease (PD), corticobasal degeneration, multiple system atrophy, and post-encephalitic parkinsonism (3).

In a sample of psychiatric inpatients, prevalence of akathisia was reported as 11%, whereas prevalence in a community-based population with schizophrenia was 15% (4,5). In addition to subjective unease and dysphoria, akathisia also leads to aggression, suicidality, insomnia, and exacerbation of the psychiatric disorder (6). Its presence is associated with a poor response to pharmacotherapy and it is identified as a risk factor for tardive dyskinesia (7). Hence, adherence to treatment is severely affected and it requires early identification and treatment (8,9).

Diagnosing akathisia may be rather challenging because it is primarily defined as a subjective state. The observable signs of motor restlessness, including shifting positions while standing and rocking or moving the feet while sitting, may not be present in milder cases and are highly variable (1,10). The objective signs are predominantly observable in the lower extremities, which helps differentiate the condition from other antipsychotic-induced adverse effects. Nevertheless, as severity increases it may also be observed in the entire body. Due to the lack and variability of objective signs and patients having difficulties in explaining the subjective symptoms, it can easily be overlooked or misdiagnosed. Thus, a rating scale may significantly help physicians recognize and evaluate this condition in a clinical setting.

In 1989, Barnes developed the Barnes Akathisia Rating Scale (BARS) to help the physicians identify this easily overlooked condition. Before this scale, physicians had to base their diagnosis on subjective reports by the patients, which were hardly reliable (9). The instructions on BARS state that the examination should be performed while the patient is sitting and standing. Patients should be observed in each position for at least two minutes. It consists of one objective and two subjective items rated on a 4-point scale and a global clinical assessment item rated on a 6-point scale. Subjective items include awareness of restlessness and distress related to restlessness.

Although studies with experienced physicians using the scale have been conducted in Turkish, normative data for the BARS in Turkish are lacking. Thus, this study aimed to provide normative data for the BARS in a Turkish population.

Materials and Methods

Participants and Procedure

Forty patients with schizophrenia who were taking antipsychotic drugs were recruited for the study. Inclusion criteria included patients being diagnosed as having schizophrenia by a psychiatrist before the time of the study,

having developed akathisia after the use of antipsychotics if akathisia was present, and not being treated for akathisia induced by antipsychotic treatment. Exclusion criteria were having movement disorders or any other psychiatric disorders, and taking any other medications that may lead to akathisia. The mean age was 43.27 years (range, 19-69 years) (standard deviation=13.89). Eleven (27.5%) of the participants were female.

The scale was translated from English to Turkish and then back-translated to English by two professors of neurology, two professors of psychiatry, and a professor of physical medicine and therapy. Two raters individually assessed each patient with the BARS during the same examination period. The raters were senior neurology residents experienced in movement disorders. Participants were observed during spontaneous speech while standing and sitting for at least two minutes. They were asked questions about feelings of inner restlessness and the awareness of akathisia features.

Statistical Analysis

All data were analyzed using the SPSS for Windows 22.0 statistical package. To evaluate inter-rater reliability, linearly-weighted Cohen’s kappa was calculated for each item on BARS. For internal consistency, Cronbach’s alpha was calculated for each rater.

Standard Protocol Approvals, Registrations, and Patient Consents

All participants signed an informed consent form before being included in the study. The study was approved by the local ethics committee in Ankara University Faculty of Medicine (protocol number: 10-433-16) and was conducted in accordance with the Declaration of Helsinki.

Results

For inter-rater reliability Cohen’s Kappa values for all four items are given in Table 1. The internal consistency according to the ratings of the first rater was 0.836, and 0.820 according to the second rater.

There was complete agreement between the two raters on akathisia presence, and severity when akathisia was present. There was only disagreement between the raters on the scores of eight patients (20%). The scores differed by one for all cases. All eight of

Table 1. Inter-rater reliability values

BARS Item	Cohen’s kappa
Objective	0.864 (p<0.001), 95% CI (0.741-0.987)
Subjective	
- Awareness of restlessness	0.706 (p<0.001), 95% CI (0.520-0.892)
- Distress related to restlessness	0.881 (p<0.001), 95% CI (0.773-0.989)
Global clinical assessment	0.804 (p<0.001), 95% CI (0.656-0.952)

BARS: Barnes Akathisia Rating Scale. Linearly-weighted Cohen’s Kappa values are reported as kappa (p value), 95% confidence interval, CI: Confidence interval

these patients were rated with questionable akathisia by the first rater, and absent by the second rater.

According to the global clinical assessment item, eight (20%) patients had akathisia. Five (12.5%) patients were rated as having questionable akathisia, six (15%) as mild, one (2.5%) as moderate, and one (2.5%) patient as having severe akathisia by both raters.

Neither rater had complete agreement on pseudo akathisia. Only two (5%) patients were rated as having pseudo akathisia by both raters. One more patient was rated as having pseudo akathisia by the first rater, whereas two different patients were rated as having pseudo akathisia by the second rater.

Discussion

In this study, we aimed to provide normative data of the Turkish version of BARS. The Turkish version of the scale can be sent on request. For both raters, internal consistency of the total score had a Cronbach's alpha over 0.8, showing a high reliability (0.820 and 0.836). Inter-rater reliability analyses also revealed a high agreement on all items because all Cohen's kappa values were above 0.7 (Cohen's kappa ranging from 0.706 to 0.881).

Akathisia is a common adverse effect of antipsychotics. Antiemetics (metoclopramide, prochlorperazine), antidepressants (SSRIs, tricyclics), and calcium-channel blockers (cinnarizine, diltiazem, flunarizine) are also known to cause akathisia (2,8). In addition to these medications, parkinsonism is also known to induce akathisia (3). Comella and Goetz (11) evaluated akathisia in patients with PD using clinical assessment and a questionnaire. They reported that out of 56 patients included in the study, 45% had akathisia and the presence was correlated with age of onset and severity of PD. Akathisia requires the attention of physicians from various specialties in addition to psychiatry and neurology departments, because it is related to many medications that are frequently used and other neurologic disorders. Leaving this rather subjective condition untreated leads to more problems including suicidality. Therefore, a short objective scale to evaluate this condition would be very helpful for physicians.

In the original article regarding the reliability of BARS, 42 inpatients with schizophrenia receiving antipsychotic drugs were evaluated by two raters during the same examination period (9). A high level of inter-rater reliability was achieved (Cohen's kappa ranging from 0.738 to 0.955) and the scale was found reliable. Several studies have addressed the reliability, validity, and clinical utility of the scale, and supported the validity and practicality of BARS (8). The scale has been standardized in many languages and also used to examine concurrent validity of other akathisia rating scales (8,12,13,14,15). It has also been used to establish concurrent validity of objective methods to assess akathisia including actigraphic monitoring (16,17).

In our study, we found a high level of inter-rater reliability and a high internal consistency. The raters only had incomplete agreement with the pseudo akathisia item. Pseudo akathisia presents similar to akathisia, but without subjective awareness. Pseudo akathisia assessments of the two raters only differed for three patients (7.5%). It is determined by the global assessment item on the scale. If characteristic movements of akathisia are

observed but the patient does not report any sense of restlessness, this condition is regarded as pseudo akathisia (9). It is likely that the raters had minor troubles classifying involuntary movements of the patients without subjective restlessness as pseudo akathisia. This disagreement, however, only appeared in a small number of patients and might be overlooked. Other than this, there was complete agreement on akathisia presence and severity. Overall, our results indicate that BARS can be reliably used in the Turkish language.

Conclusion

Cronbach's alpha values over 0.7 and Cohen's kappa values over 0.8 indicate the high internal consistency and high inter-rater reliability for this scale. Therefore, BARS can be reliably used in the Turkish language.

Ethics

Ethics Committee Approval: The study was approved by the Ankara University Local Ethics Committee (Protocol number: 10-433-16), Informed Consent: Consent form was filled out by all participants.

Peer-reviewed: Externally peer-reviewed.

Authorship Contributions

Concept: E.B., M.C.A., Design: E.B., H.Ç.L., M.C.A., Data Collection or Processing: H.Ç.L., S.T., M.K., E.B., Analysis or Interpretation: E.B., Literature Search: E.B., Writing: E.B., M.C.A.

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