Clinical Research

Reliability and validity of the Indonesian version of the aging males' symptoms

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ABSTRACT

BACKGROUND Aging males' symptoms (AMS) scale was developed to study the problems of aging males, especially related to the quality of life. Currently, there is no valid and reliable Indonesian version of the AMS scale. This study was aimed to translate and evaluate the validity and reliability of the Indonesian version of the AMS scale.

METHODS This cross-sectional study translated the existing AMS scale into Indonesian, which was tested in 40 years old males from May to August 2020. Cross-cultural validation of the AMS scale was conducted by translating the questionnaire from English to Indonesian by two independent-certified translators. The validity of the Indonesian version of the AMS scale was measured by conducting a Pearson correlation (r) analysis. The reliability of this questionnaire was tested and retested in 118 participants with a 2-week interval. In addition, Cronbach's alpha value was measured and used as a reference. The first test was conducted in a corporate blood donor event in Matraman, East Jakarta, and the retest was conducted in Cipto Mangunkusumo Hospital.

RESULTS The Indonesian version of the AMS scale was valid and had a good internal consistency with a Cronbach's alpha value of 0.74. The test-retest reliability showed good reliability with an r-value of 0.981. Pearson correlation test showed that all questions in the questionnaire were valid ($p<0.05$) and correlated positively.

CONCLUSIONS The Indonesian version of the AMS scale derived from this study is valid and has good reliability.

KEYWORDS aging males' symptoms scale, Indonesian, reliability and validity

Currently, the interest in male aging studies, including research related to the quality of life (QoL) and aging symptoms, has increased.[1] Aging males' symptoms (AMS) scale was developed to resolve the lack of standardized scales of the QoL and symptoms in aging males. Initially developed in Germany in 1999 and translated to English in 2001,[2,3] AMS scale was designed to assess aging symptoms, evaluate the severity of symptoms over time, and measure the androgen replacement therapy effects in aging males. It was not intended as a screening instrument for androgen deficiency in aging males.

AMS scale has been internationally accepted and translated into various languages, including Italian, Russian, Dutch, Korean, Malay, and many more languages in European and Asian countries.[3] However, the Indonesian version of the questionnaire has not been developed. Therefore, this study was aimed to translate and assess the validity and reliability of the Indonesian version of the AMS scale in the Indonesian population.

METHODS

Study design

This cross-sectional study translated the AMS scale into Indonesian and tested it in the study population. The translation process was done following the translation progress by Heinemann et al[4] in 2003. The answers from all subjects were collected and tested for their validity and reliability. The first test was conducted in a corporate blood donor event in Matraman, East Jakarta in September 2020, and the retest was conducted in Cipto Mangunkusumo Hospital, Central Jakarta, Indonesia in October 2020.

Study population

A total of 118 Indonesian male adults aged >40 years with various financial and educational backgrounds in the surrounding community, hospital, and community health service program (blood donors) held by our institution were recruited consecutively. The subjects had to be literate, speak in Indonesian, and had no history of urological problems. This study had been approved by the Ethics Committee of the Faculty of Medicine Universitas Indonesia (No: KET-1294/UN2.F1/ETIK/PPM.00.02/2020).

AMS scale

AMS scale is a questionnaire tool developed to evaluate the symptoms in aging males and the severity of symptoms over time.[1] As women develop the symptoms of aging during their menopausal transition, men may also develop similar complaints. Moreover, AMS scale can also be used to evaluate androgen replacement therapy. Initially developed in Germany in 1999 and translated to English in 2001, it was started with a comparison of more than 200 variables in more than 100 medically well-characterized males (aged over 40 years). A factorial analysis was applied to establish the raw scale of complaints or symptoms related to aging. The questionnaire consisted of 17 questions with 5-point Likert scales from non to extremely severe.

Translation and data collection process

The forward-backward translation method (English-Indonesian-English) was done by two independent bilingual-certified translators. The experts in the urology field (DP and WA) then critically reviewed all translations to produce the final Indonesian translation. This process was performed to ensure that the translated version has achieved good and formal conceptual translation rather than linguistic translation.

The translated AMS scale was then given to the subjects individually and separately to prevent any bias. Subjects answered the translated AMS scale twice with an interval of 2 weeks following the test-retest method to validate the questionnaire. The responses were then evaluated and analyzed for their validity and reliability. Responses with one or more unanswered questions were further identified and evaluated for their language usage.

Data analysis

The minimum number of subjects for this study was 105, calculated according to the cross-sectional study sample size formula. OpenEpi application was used to measure the sample size. A 95% confidence interval and 80% power were used to determine the sample. This study evaluated the validity and reliability of the translated AMS using SPSS software version 23 (IBM Corp., USA). Questions with a *p*-value of 0.05 and *r* higher than the table's r-value (0.174) were considered valid. The *r* was analyzed using the Pearson correlation coefficient (r). Reliability test was done using Cronbach's alpha to estimate the consistency among items in the instrument and using the test-retest reliability comparing the pre-and post-test with an interval of 2 weeks. An alpha value >0.6 was considered strong and had a good internal consistency.[5]

RESULTS

The translated AMS scale was tested in 118 participants. All subjects were married. The subjects' characteristics are shown in Table 1. A response rate of

Table 1. Baseline characteristics of the subjects

Characteristics	N = 118
Age (years), median (min–max)	55 (41–78)
Active workers, n (%)	89 (75.4)
Active smokers, n (%)	49 (41.5)
Comorbidities, n (%)	
Diabetes	4 (3.4)
Hypertension	19 (16.1)
Heart disease	3 (2.5)

100% was obtained for all questions in this study. The translated Indonesian version of the AMS received no critics, and all the subjects could understand both the semantic and pragmatic meanings.

All translated questions from the AMS scale were valid with r = 0.219 to 0.799 and p<0.001 to 0.017. The Pearson correlation test of the Indonesian version of the AMS scale is shown in Table 2.

Furthermore, the correlation between the pre- and post-test was high, with an r-value of 0.981. The test-retest reliability result is shown in Figure 1.

Table 2. Pearson correlation value of the Indonesian version of the aging males' symptoms scale

Question	*r*	*p*
General health decline	0.384	**<0.001**
Join and muscular aches	0.682	**<0.001**
Excessive sweating	0.428	**<0.001**
Sleep problems	0.517	**<0.001**
Sleep hygiene	0.746	**<0.001**
Irritability	0.565	**<0.001**
Nervousness	0.313	**0.001**
Anxiety	0.244	**0.008**
Physical exhaustion	0.799	**<0.001**
Decreased muscular strength	0.692	**<0.001**
Depressive mood	0.219	**0.017**
Feeling that patients have passed their peak	0.740	**<0.001**
Feeling burned out	0.425	**<0.001**
Decreased beard growth	0.622	**<0.001**
Decreased sexual ability	0.737	**<0.001**
Decreased number of morning erections	0.723	**<0.001**
Decreased libido	0.693	**<0.001**

DISCUSSION

The evaluation of AMS is simple and has been widely accepted. AMS scale has been adapted into various languages, and its interpretation depends on the local languages. Therefore, the validation of the questions in certain local languages is important. We found that the Indonesian version of the AMS scale has good validity and reliability. The p-value of the Pearson correlation test was <0.05, which reflected its validity. The reliability also showed an excellent result with an r-value of 0.981 (>0.7) for the test-retest analysis and Cronbach's alpha value of 0.74 (>0.6). To the best of our knowledge, this is the first study that translates and evaluates the validity and reliability of the Indonesian version of the AMS scale. Heinemann et al[4] stated that the AMS scale had been validated in Dutch, Spanish, Portuguese, Italian, Swedish, Japanese, Finnish, Flemish, and Russian. Meanwhile, the translation process of the AMS scale in Korean and Thai is still in process.

A study of translation and validation of the Arabic AMS scale by Rabah et al[6] showed a Cronbach's alpha value of 0.91, which indicated a good data consistency of the AMS questionnaire score. The corresponding alpha levels for the subscales were 0.83, 0.84, and 0.73. Moreover, significant improvement in the mean level of testosterone and 31–35% changes in the mean differences of the Arabic AMS scale and subscales scores after hormonal treatment indicated a good adaption of the original AMS scale.[6] In addition, Kong et al[7] showed the same Cronbach's alpha result of 0.91 for the Chinese version of the AMS questionnaire score. The current study in the Indonesian population produced a Cronbach's alpha result of 0.74, which

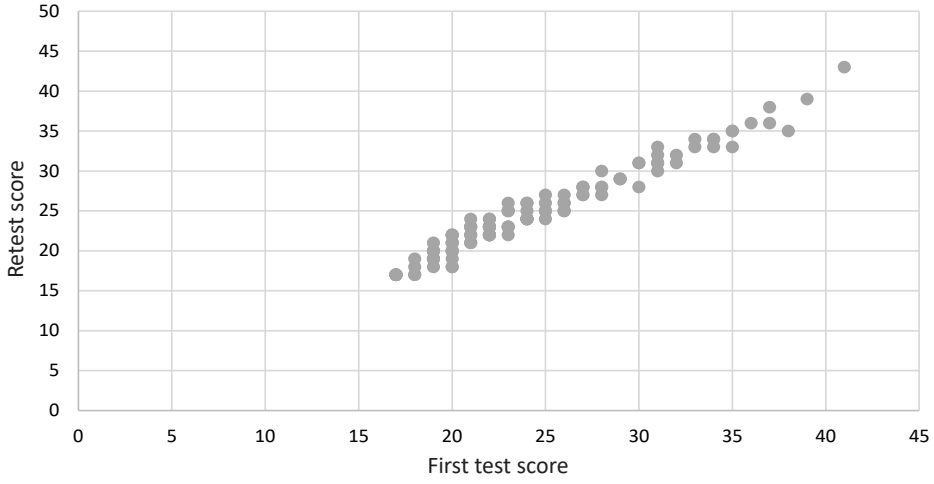

Figure 1. Test-retest reliability of the Indonesian version of the aging males' symptoms scale

indicated proper internal consistency validation. This result depicted the same trend with Rabah et al[6] and Kong et al[7] studies. Our study provided a reliable number of Cronbach's alpha, although it was not as significant as the other two previous studies. This might be caused by the various educational backgrounds of the subjects that were not standardized or analyzed. Therefore, there was a probability that the subject did not completely understand the questions. This hypothesis was supported by a study from Rabah et al[6] that most of the sample came from a similar higher education level. Second, the quality of translation in the other two studies might include explanatory and comprehensible questions. In contrast, various cultural backgrounds of the subjects in this study affect their understanding of some confusing words or sentences. In some questions, complicated words such as irritability were irreplaceable, and the researchers were required to explain the question or add annotations below the questionnaire.

From those three studies, proper translation in the Arabic, Chinese, and Indonesian versions produced constructive AMS questionnaire scores. Kong et al[7] analyzed the specificity of the study that produced a relatively low number. Tan et al[3] concluded that the *Bahasa Melayu* (BM) AMS scale was successfully translated and adapted (weighted Kappa and Spearman rank coefficients, 0.72–1.00). A further validation study is needed to assess the reliability and validity of the translated AMS scale.[3] Therefore, adaptation or translation are different from the validation study. Despite adapted in the same period, the BM questionnaire has not been validated, compared with the Chinese version of the AMS scale.

AMS scale assessment is important because a decline in QoL, which is common in aging males, could be detected easily. AMS can be used as screening (early detection) and treatment evaluation for testosterone deficiency syndrome (TDS) patients.[8,9] This study is expected to improve the QoL of the aging males for early symptom detection. Future studies, such as descriptive studies, analytical studies correlating age with urological problems, diagnostic and prognostics studies, may also be conducted using the AMS questionnaire. This study has some limitations. The translation process of the AMS scale did not follow the six steps of the translation process as recommended internationally.[4] The cognitive debriefing was not conducted because there were no appropriate, valid, and usable tools in the community for a proper TDS patient evaluation. However, the questionnaire is quite understandable and lack of ambiguity.

In conclusion, the Indonesian version of the AMS scale derived from this study is valid and reliable. Therefore, it can be used for further study of aging males in the Indonesian population.

Conflict of Interest

The authors affirm no conflict of interest in this study.

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