

# Validity and reliability of male andropause symptoms self-assessment questionnaire among elderly males in Khuzestan province of Iran

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## ABSTRACT

**Background:** Andropause is a condition of decreasing testosterone in men that usually begins to occur at about 40 years of age. Many men find it difficult to acknowledge there may be a problem by refusing to even talk about the symptoms.

**Aims:** The study was conducted to the standards of MASSQ (2012) within male older adults to introduce a relevant criterion.

**Materials and Methods:** About 382 men with age range of 50-80 and with the mean age of  $65.3 \pm 2.32$  were sampled with the cluster-ratio sampling method from the eight cities of Khuzestan province in southwestern Iran. The aged samples replied to the 25 items of MASSQ.

**Results:** Coefficients of Cronbach's alpha ( $\alpha = 0.89$ ), split-half (0.91), convergent validity (0.72), divergent validity (-0.32), and criterion validity (0.67) were estimated, which were significant at  $P < 0.01$ . The exploratory factor analysis demonstrated that the 25-items of MASSQ for aged samples are organized into four factors (sexual, somatic, psychic, and behavioral) which clarify 79% of the scale's variance. Second-order confirmatory factor analysis pointed out that the factors are well-matched up onto a principal factor. Consequently, the four-factor model was well appropriate for the data by the fit index techniques for adjusting the scale [adjusted goodness of fit index = 0.92, goodness-of-fit statistic = 0.91, root mean square error of approximation = 0.006, incremental fit index = 0.94, normed fit index = 0.91, comparative fit index = 0.97].

**Conclusions:** The results pointed to the well-adjusted reliability and validity of MASSQ and its usefulness for the relevant studies as well.

**Key Words:** Ahwaz metropolis, andropause, elderly men, Iran, male andropause symptoms self-assessment questionnaire, validity and reliability

## INTRODUCTION

Andropause is a condition of decreasing testosterone in men that usually begins to occur at about 40 years of age. Many men also find it difficult to acknowledge there may be a problem by refusing to even talk about the symptoms. Ignorance and fear of the andropause condition abounds in the general public<sup>[1,2]</sup> and even among health professionals.<sup>[3-7]</sup> Over 10,000 articles on climacteric (or menopause) for women can be found but relatively

less has been conducted on the male equivalent.<sup>[8-10]</sup> The ratio of published studies of menopausal men to menopausal women is approximately 1:100.<sup>[2,4,11,12]</sup> Attaining knowledge regarding andropause will help the caregivers and gerontologists to achieve the ultimate goal of a dignified healthy ageing<sup>[13-15]</sup> and maintain the highest quality of life.<sup>[2,16-20]</sup> Thus, it's adding life to years and not simply years to life<sup>[20-30]</sup> While ignorance about

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andropause persists, having an instrument turns out to be a necessity.<sup>[9,23-26]</sup> It's helpful even in the clinical treatment as well.<sup>[27-33]</sup> The study was investigated to the standards of MASSQ (2012) within male older adults to introduce a relevant criterion.

## MATERIALS AND METHODS

About 382 men with age range of 50-80 and with the mean age of  $65.3 \pm 2.32$  were sampled with the cluster-ratio sampling method from the eight cities of Khuzestan province in southwestern Iran ( $N = 228784$  aged persons in the province) [Appendix 1]. The aged samples replied to the 25 items of MASSQ. The MASSQ questionnaire mainly consists of a 25-item disability/symptom scale regarding andropause that was investigated by authors and literature reviews.<sup>[2,4,7,12,19,21,23,26,28,34]</sup> Each item in the disability/symptom scale has five response options from 1 = none to 5 = extremely severe. If the 25 items are completed, a scale score ranging from 25 (no symptoms) to 125 (most severe symptoms) can be calculated.

## Translating the instrument

The questionnaire was translated into Persian from its English version<sup>[2,4,34]</sup> by three instructors and an English language expert. The four translated versions were compared by the authors, and the researchers developed a common Persian text from them. Afterward, the Persian version of the MASSQ was translated back into English by an English language expert who had not seen the original English text and by a linguist. The English statements of the questionnaire that had been translated from Persian into English were compared with the original version, and any necessary revisions were made as well.

## Setting and participants

From the eight cities of Khuzestan province in southwestern Iran, that is, Ahwaz, Behbahan, Dezful, Shoushtar, Abadan, Mah-Shahr, Masjid Soleiman, and Ramhormoz, about 400 aged men responded to the Iranian version of the MASSQ. Of the 400 responders, 382 had responded

**Table 1: Varimax-rotated factors matrix of the MASSQ†**

No. of item	Item	Mean	SD	Components (Factor)			
				1	2	3	4
19	I have decreased sex drive (libido)	0.40	0.49	0.89			
22	I notice a decrease in my ability to play sports	0.29	0.46	0.84			
23	I am sadder and/or more grumpy than usual	0.31	0.47	0.85			
24	I notice a lack of energy	0.31	0.47	0.88			
25	Decrease in ability/frequency to perform sexually	0.16	0.47	0.91			
2	Joint pain and muscular ache (lower back pain, joint pain, pain in a limb, general back ache)	0.29	0.37		0.88		
3	Excessive sweating (unexpected/sudden episodes of sweating, hot flushes independent of strain)	0.40	0.46		0.79		
9	Physical exhaustion/lacking vitality (general decrease in performance, reduced activity, lacking interest in leisure activities, feeling of getting less done, of achieving less; of having to force oneself to undertake activities)	0.24	0.40		0.78		
13	Feeling burnt out, having hit rock-bottom	0.33	0.49		0.92		
14	Decrease in beard growth	0.36	0.43		0.92		
17	I feel like I'm losing height	0.09	0.47		0.89		
18	I notice a decrease in strength and endurance	0.33	0.48		0.89		
20	I notice a decrease in my ability to play sports	0.24	0.24		0.90		
1	Decline in feeling of general well-being (general state of health, subjective feeling)	0.28	0.47			0.87	
6	Irritability (feeling aggressive, easily upset about little things, moody)	0.17	0.43			0.87	
7	Nervousness (inner tension, restlessness, feeling fidgety)	0.09	0.38			0.88	
8	Anxiety (feeling panicky)	0.09	0.28			0.89	
11	Depressive mood (feeling down, sad, on the verge of tears, lack of drive, mood swings, feeling nothing is of any use)	0.24	0.28			0.88	
12	Feeling that you have passed your peak	0.26	0.43			0.86	
4	Sleep problems (difficulty in falling asleep, difficulty in sleeping through, waking up early and feeling tired, poor sleep, sleeplessness)	0.24	0.44				0.87
5	Increased need for sleep, often feeling tired	0.27	0.38				0.88
15	I fall asleep after dinner	0.31	0.46				0.90
21	I am sadder and/or more grumpy than usual	0.33	0.31				0.89

†Item responses were coded as 1 "none," 2 "mild," 3 "moderate," 4 "severe," and 5 "extremely severe," reflecting the presence or absence of a symptom over the past year. SD: standard deviation

**Table 2: The goodness of fit indexes model**

Indexes	$\chi^2$	df	$\chi^2/df$	AGFI	GFI	RMSEA	IFI	NFI	CFI
Value	321.94	284	1.13	0.92	0.91	0.006	0.94	0.91	0.97

AGFI: Adjusted goodness of fit index, GFI: Goodness-of-fit statistic, RMSEA: Root mean square error of approximation, IFI: Incremental fit index, NFI: Normed fit index, CFI: Comparative fit index

to all of the 25 items used in the MASSQ and were included in the analysis. The mean age of the samples was  $65.3 \pm 2.32$  (range: 54-86) years.

## RESULTS

Coefficients of Cronbach's alpha ( $\alpha = 0.89$ ), split-half (0.91), convergent validity (0.72), divergent validity (-0.32) criterion validity (0.67) were estimated, which were significant at  $P < 0.01$ . The exploratory factor analysis demonstrated that the 25-items of MASSQ for aged samples are organized into four factors (Factor 1: Sexual, Factor 2: Somatic, Factor 3: Psychic, and Factor 4: Behavioral) which clarify 83% of the scale's variance. Second-order confirmatory factor analysis pointed out that the factors were well matched up onto a principal factor. According to the Table 1, the rotated factor matrix pattern of varimax for the MASSQ's subscale questions was considered. Those questions with factor loadings above 0.75 were selected.

Consequently, the four-factor model was appropriate for the data and the fit index techniques for adjusting the scale. The indexes of the model's goodness of fit refer to the integrity of the four-factor model with data. The  $\chi^2$  to degrees of freedom is less than 2 in efficient models. It's closer to 0 and will be closer. The root mean square error of approximation (RMSEA) and standardized root mean residual (SRMR) must be less than 0.05 that indicate to good models. The model pointed out the goodness of fit of the model in the study (AGFI = 0.92, GFI = 0.91, RMSEA = 0.006, IFI = 0.94, NFI = 0.91, CFI = 0.97).

As closer measure to 1 in the normed fit index (NFI), the comparative fit index (CFI), goodness-of-fit statistic (GFI), the incremental fit index (IFI), and the adjusted goodness of fit index (AGFI), they refer to the goodness and fit of model. They were more than 0.90 [Table 2].

## DISCUSSION AND CONCLUSION

The aim of the study is to look for the relevant instrument regarding common symptoms of an aged-related issue called andropause within aged males in the Iranian social context,<sup>[35-36]</sup> even the issue still is challengeable.<sup>[3,4,9,12,19,20,26]</sup> So, the andropause symptoms

self-assessment questionnaire (MASSQ, 2012) was used and evaluated. The results stated to the well-adjusted reliability and validity of MASSQ and usefulness of it in the relevant studies as well. Therefore, future researchers should not limit themselves to the western scales<sup>[7,20]</sup> but should also consider specific cultural factors. Additionally, it is suggested that in future studies, the female menopause symptoms self-assessment questionnaire, which are compatible with Iran's native culture, be conducted and evaluated as well.

Regarding the findings of the study, the MASSQ is appropriate for? Validity and reliability in the aged male community of the Iranian society and it can be employed to measure andropause symptoms. It is applicable by gerontologists for the future studies as well as to the geriatrics in their diagnostics.

### Ethical considerations

Ethical matters, for example, plagiarism, uninformed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, and so on, have been totally observed by the authors.

## APPENDIX

### Male andropause symptoms self-assessment questionnaire

In all men, their levels of testosterone begin to decline from the age of about 25 and continue to decline throughout their lives. For many men, this dramatic but gradual decline in testosterone levels does not seem to have any effect on them whatsoever and they sail along unconcerned and unperturbed by any decline in their sexual drive or performance. But for some men hormonal decline can have quite profound negative effects. The most usual manifestation of this is a fall in sexual inclinations or libido. Andropause is a condition of low testosterone in men that usually begins to occur at about 40 years of age. Andropause is often misdiagnosed or not diagnosed at all for several reasons. The primary reason is the severity and frequency of symptoms can vary dramatically from man to man. Many men also find it difficult to acknowledge there may be a problem by even talking about symptoms. Finally, healthcare providers often conclude symptoms are related to aging or a medical condition such as depression rather than to low testosterone. Take our simple assessment to identify the most common symptoms of andropause and rate the severity of your symptoms. Simply check one box for each symptom in the assessment below. The following form will help you determine if you suffer from the male menopause and whether to consider testosterone therapy method as a treatment option.<sup>[2,12]</sup>

	1	2	3	4	5
1. Decline in feeling of general well-being (general state of health, subjective feeling)					
2. Joint pain and muscular ache (lower back pain, joint pain, pain in a limb, general back ache)					
3. Excessive sweating (unexpected/sudden episodes of sweating, hot flushes independent of strain)					
4. Sleep problems (difficulty in falling asleep, difficulty in sleeping through, waking up early and feeling tired, poor sleep, sleeplessness)					
5. Increased need for sleep, often feeling tired					
6. Irritability (feeling aggressive, easily upset about little things, moody)					
7. Nervousness (inner tension, restlessness, feeling fidgety)					
8. Anxiety (feeling panicky)					
9. Physical exhaustion/lacking vitality (general decrease in performance, reduced activity, lacking interest in leisure activities, feeling of getting less done, of achieving less; of having to force oneself to undertake activities)					
10. Decrease in muscular strength (feeling of weakness)					
11. Depressive mood (feeling down, sad, on the verge of tears, lack of drive, mood swings, feeling nothing is of any use)					
12. Feeling that you have passed your peak					
13. Feeling burnt out, having hit rock-bottom					
14. Decrease in beard growth					
15. I fall asleep after dinner					
16. I notice a decreased enjoyment of life					
17. I feel like I'm losing height					
18. I notice a decrease in strength and endurance					
19. I have decreased sex drive (libido)					
20. I notice a decrease in my ability to play sports					
21. I am sadder and/or more grumpy than usual					
22. I notice a lack of energy					
23. Decrease in ability/frequency to perform sexually					
24. Decrease in the number of morning erections					
25. Decrease in sexual desire/libido (lacking pleasure in sex, lacking desire for sexual intercourse)					

Scale: 1: None, 2: Mild, 3: Moderate, 4: Severe, 5: Extremely severe

### INTERPRETING THE RESULTS

How did you score? Cross reference your score with the table below.

Final score	Likelihood of male menopause
Less than 40	You probably don't need testosterone therapy
40-84	You might benefit from testosterone therapy
Greater than 85	You almost certainly would benefit from testosterone replacement therapy

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