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A new 'aging males' symptoms' rating scale

L. A. J. Heinemann, T. Zimmermann*, A. Vermeulen†, C. Thiel and W. Hummel*

*ZEG – Center for Epidemiology and Health Research Berlin, Zepernick, Germany; *Departments of Medical Affairs and Clinical Research, Jenapharm GmbH and Co. KG, Jena, Germany; †Department of Internal Medicine: Endocrinology and Rheumatology, University Hospital Ghent, Ghent, Belgium*

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ABSTRACT

Unlike in women, where instruments are available to measure the severity of symptoms, standardized instruments are lacking for aging males. However, a new 'aging males' symptoms' (AMS) rating scale has been developed in the present study, as well as reference values.

A total of 116 medically well-characterized males (aged over 40 years) were recruited to complete a questionnaire of symptoms, the prevalence of which commonly changes with increasing age. Factor analysis was used to establish the raw scale and to identify the dimensions of the scale. This raw scale was applied to a large representative population sample of 992 German males, to establish reference values for the severity of symptoms in males over 40 years.

Three dimensions of symptoms were identified in the patient group: a psychological, a somatovegetative and a sexual factor, that explained 51.6% of the total variance. Reference values of the three dimensions were defined to be used in daily practice. The severity of symptoms assessed using the AMS scale was found to be related to the clinically defined 'male climacteric' in the patient group.

The AMS scale is a new and valuable tool for assessing aging males' symptomsc and can be easily used in practice.

INTRODUCTION

Unlike in women, where menopausal or climacteric symptoms are widely accepted under the heading 'menopause', complaints in aging males are rarely put into the perspective of hormonal involution, although Werner[1] had already reported in the 1940s the similarity of male complaints to those of women in this age group. Arguments for and against a male climacteric, as well as compatibility with the female situation, have been put forward ever since[2–4].

In this context we use the term 'aging males' symptoms' for symptoms occurring in the age range where women develop their 'menopause', and the term 'male climacteric' if symptoms/complaints are suggestive of hormonal deficiency. Although the term 'symptoms' is often used in association with diseases or other conditions, we also use it for complaints that develop in the course of aging which are not obviously caused by a certain disease (symptoms of aging). However, it cannot be excluded that some of the symptoms are partly associated with emerging disease (also basically true for women's symptoms occurring in this age group), which might be considered as a semantic problem associated with multicausality.

The first instrument to measure the severity of menopausal symptoms in women was the Kupperman Index[5]. Recently, a new 'menopause rating scale' (MRS) was validated[6]. There is no such instrument for males that attempts to estimate the degree of severity of aging males' symptoms, to our knowledge.

Correspondence: Dr L. A. J. Heinemann, ZEG – Center for Epidemiology and Health Research Berlin, Invalidenstrasse 115, 10115 Berlin, Germany

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We developed a new symptoms inventory based on, first, a short check-list of complaints suggested by Vermeulen (unpublished), which was not formally standardized, but considered by physicians in medical practice in Germany to document complaints of men with hormonal deficiency, and, second, additional symptoms that were considered worthwhile to include. In a pre-phase of this publication, the Vermeulen check-list was applied to patients, to learn if they understood the meaning and wording, initially by interview and in an advanced stage as a self-administered form. We obtained feedback and changed the wording as long as there was reason to assume that the content of the questions remained unclear, despite examples in parentheses. Thus, a point was reached where the check-list converted from a 'physicians' view' to a 'patients' or respondents' view'. We also added questions that were identified from extreme group comparisons of respondents from large representative population health surveys. For this purpose, comparisons were made of complaints of apparently healthy males (age groups < 40 years and > 55 years), i.e. persons with serious conditions were excluded. This led to a draft check-list of complaints that could be completed by patients, without great problems in understanding. The objective of this first phase of the project was to develop and test a scale that measures the symptoms associated with aging as experienced in the daily practice of health care, the scale for 'aging males' symptoms' (AMS), which is easy to apply to patients and other lay persons. To achieve this goal, we decided to take a sample of medically well-characterized aging males in the first instance, i.e. to use GP practices for the sampling scheme rather than a population random sample. In a second step, we tested the raw scale in a large and representative population random sample of German males to obtain reference values for the scale.

This paper describes the psychometric analyses, i.e. dimensions of the new scale, the scoring scheme, some first results of the validation process, and the reference (norm) values in the male population in Germany. The scale was not standardized in other countries/cultures, i.e. the questions in the English translation of the scale as given in the Appendix to this paper might be interpreted slightly differently. It was decided to limit this paper to subjectively perceived symptoms, and to touch only superficially on the endocrine correlation in the context of the ongoing validation of the rating scale 'AMS'.

METHODS

Patients

One hundred and sixteen medically well-defined male patients aged over 40 years without serious acute or chronic disease or known hormonal problems were recruited in seven practices of the ambulatory medical service in Berlin, to gather information about 'aging males' symptoms' and background parameters. Patients with minor diseases or early stages of medical conditions were included, but banal infections preferred.

Symptom inventory and patient characteristics

As a first task, all patients completed the draft symptom inventory of 21 suspected 'aging males' symptoms'. In addition to these specific symptoms, we also asked for information about background parameters such as health-care utilization, attitudes towards a healthy life-style or disease prevention, use of certain drugs, and some socioeconomic characteristics, which might partly explain the so-called specific symptoms in males of this age group. Moreover, other complaints such as chest pain after exercise/stress or other health disorders/disease indicators were recorded. Almost 200 parameters were available with which to characterize each patient.

Blood samples were also taken and deep frozen, and will be analyzed at a later date.

Dimensions of aging males' symptoms

To put the various complaints or symptoms into categories associated with aging, health problems or any stressful situation to which the patient is exposed, we analyzed the entire dataset using statistical methods that allow meaningful clustering of parameters/symptoms. The type of dataset suggested 'factor analysis' (with varimax rotation and Kaiser normalization; Statistical Package for Social Sciences -PC (SPSS-PC) software) as the most appropriate tool to separate dimensions of symptoms and to construct the 'aging males' symptoms' rating scale, i.e. the raw AMS.

Population sample

A representative sample of the German male population aged 40–69 years was taken, to obtain reference values for the raw AMS, i.e. norm values for the severity of symptoms in each of the dimensions of the scale for the age range under consideration.

A sample size of 1000 males in this age group was planned in 310 sampling points across all Federal States of Germany. Within each sampling point, random number dialling was used as the method of contacting households where males were living. A total of 992 interviews with males were performed by trained interviewers, who read the exact wording of the 21 items of the raw AMS scale to the respondents (without additional explanation) and ticked the box corresponding to the answer (see Appendix). Although the questionnaire was self-administered in the initial patient group, an adapted telephone interview had to be chosen for the population sample for financial reasons.

Reference values for dimensions

Based on the dimensions found with factor analysis in the small but well-characterized patient group, we calculated norm values of the scores for each of the dimensions from the answers of the population sample. Each dimension consists of an intensity profile of a number of specific questions.

Each item of the raw AMS scale (see Appendix) was rated according to five intensity grades for symptoms or complaints: no, mild, moderate, severe, very severe. Following our general intention to develop a simple instrument for use in daily practice, we decided to allocate a number of scoring points to each intensity grade, i.e. the number of scoring points for an individual question ranges between 1 (no symptom) and 5 (very severe symptoms). So, if one question can result in 1–5 points, one dimension with five questions can result in a score of between 5 and 25 points.

For each dimension, the severity of symptoms was calculated by summing up the points obtained for the relevant questions. Only four intensity grades (no, mild, moderate and severe symptoms) were determined to have sufficient numbers, because of the small sample size of the initial patient group. The cut-off points between the categories of the three dimensions were arbitrarily defined using the sum-scores, to allow an acceptable frequency distribution (much more persons with no or mild complaints than with severe complaints). For interests other than our envisaged instrument for medical practice, the total number of scoring points may be used, but this was not standardized.

Preliminary validation of 'aging males' symptoms' scale in patient group

A medical expert (member of the research team) assessed for each individual patient the likelihood that the 'male climacteric' might have started to develop. This was entirely based on the individual profile of symptoms, presence or absence of documented health problems, stress situations, or other life-style problems, i.e. a man could be classified as 'climacteric' but have a normal testicular function. (Blood test results were not available to the clinical expert.) It might be debated that this is already an early form of validation.

The assessment process went through two phases: first, the expert read carefully all patients' files to develop and adjust an 'internal measurement scale'; thereafter, each patient was classified into one of three groups of probability of the 'male climacteric': likely, equivocal and unlikely. No scheme was provided to the expert regarding how to assess the probability of 'climacteric'; it was left to clinical experience ('internal measurement scale'). The two extreme categories (likely and unlikely) were used as external criteria of comparison with the three dimensions of the AMS scale.

Statistical analysis was conducted using the statistical packages SPSS-PC and STATA. Frequency tabulations (χ^2 test) and factor analysis (principal component method, varimax rotation and Kaiser normalization) were used as the main statistical tools. Missing information was replaced by values computed using linear regression analysis, wherever necessary. We also used other methods of treating missing information[7], but report only computed values with imputation if results did not significantly differ.

RESULTS

Patient group

Table 1 describes briefly the characteristics of the patient group by age (frequency tabulation and a global statistical test for differences among

Table 1 Description of initial patient sample (n = 116): frequency distribution of selected characteristics of patients by age group. Differences among categories of each variable and age groups were tested with χ^2 test (p value); Kruskal–Wallis test did not materially change the result. Numbers vary due to missing values

	Age group (years)				
Variable	*< 50* (n = 8)	*50–64* (n = 69)	*65+* (n = 39)	*Total*	*p Value*
Schooling					
less than 'Abitur'*	7	39	23	69	
'Abitur' or more	1	28	16	45	0.084
Employment					
working (full- or part-time)	6	29	1	36	
unemployed	1	10	0	11	
pensioner	1	28	37	66	0.0001
Smoking†					
yes (current and occasional)	5	22	8	35	
no (never and ex-smoker)	3	46	31	80	0.054
Alcoholic beverages†					
daily or several times/week	2	26	8	36	
more than several times/week	6	42	30	78	0.173
Sporting activity†					
≥ once per week	7	39	17	63	
less than regularly once a week	1	29	20	50	0.092
Subjective health					
very good or good	2	16	9	27	
sufficient, less than good or poor	6	53	29	88	0.992
High blood pressure (self-reported)					
yes	2	31	22	55	
no	6	38	17	61	0.218
Chest pain after exercise/stress					
yes	1	14	14	29	
no	5	52	21	78	0.109
Life events‡					
yes (one or more events)	4	32	13	49	
no (no event)	3	33	25	61	0.263

*'Abitur' is university level; †frequency irrespective of quantity; ‡number of threatening events during past year (such as death, divorce, loss of job, financial disaster)

age groups: χ^2 test). For the purpose of this basic description, all variables were dichotomized (also to obtain larger numbers for analysis). Most patients did not reach an educational level that permits university studies ('Abitur'), were current non-smokers, consumed alcoholic beverages more than once a week (unspecified amount), and estimated their health status as sufficient, less than good or poor. All but one of the variables listed in Table 1 did not significantly differ across the three age groups; only employment declined significantly with age. Although patients with serious acute and chronic disease were not included, many persons reported signs of elevated blood pressure or chest pain after exercise or stress, similar to the general population of this age range.

Dimensions of 'aging males' symptoms' rating scale

To obtain characteristic profiles of males aged 45–69, we investigated the dataset using factor analysis (principal component method). Symptoms or complexes of intercorrelating symptoms formed 'dimensions', i.e. it was intended to aggregate all relevant symptoms into a few 'dimensions' of symptoms.

Table 2 summarizes the findings. The solution contained the following dimensions: psychologi-

Table 2 Factor weights of three most important factors ('dimensions') of 'aging males' symptoms' (AMS) scale derived from factor analysis of patient group ($n = 116$). Weights lower than 0.5 are not depicted. Percentage of total variance explained by: factor 1, 31.9%; factor 2, 13.0%; factor 3, 6.7%; giving total of 51.6%

Symptoms	*Factor 1: psychological symptoms*	*Factor 2: somatovegetative symptoms*	*Factor 3: sexual symptoms*
Discouraged	0.80	—	—
Depressed	0.75	—	—
Irritable	0.72	—	—
Anxious	0.69	—	—
Nervous	0.59	—	—
Joint complaints	—	0.77	—
Sweating	—	0.66	—
Increased need for sleep	—	0.64	—
Impaired well-being	—	0.56	—
Sleep disturbances	—	0.56	—
Weakness	—	0.53	—
Exhaustion		0.50	—
Potency, impaired	—	—	0.88
Erectility, impaired	—	—	0.86
Libido, disturbed	—	—	0.84
'Passed zenith of life'	—	—	0.59
Decrease in beard growth*	—	—	0.20*

*Listed as exception to '0.5' rule because it is a relevant symptom in severe hormone deficiency

cal, somatovegetative and sexual symptoms cluster together. These three factors explain 51.6% of the total variance of the raw AMS scale (21 items); two other factors were found to be related to diseases or conditions (additionally explaining together 11% of the total variance) but are not further discussed here. For easy recognition, only factor weights over 0.5 are displayed in Table 2 with one exception (decrease of beard growth). The factor weights explain the magnitude of correlation with each of the three dimensions.

Factor 1: psychological symptoms

This factor aggregates symptoms or complaints of a psychological nature in aging males. The five symptoms with the highest factor weights were discouragement, depression, irritability, anxiety and nervousness.

Factor 2: somatovegetative symptoms

This dimension describes a complex of somatic and vegetative symptoms. The seven most important symptoms of this complex are pain in muscles or joints, sweating ('hot flushes'), increased need for sleep and sleep disturbances, impaired general well-being, decrease in muscular strength and decreased energy (exhaustion).

Factor 3: sexual complaints

This dimension consists basically of five symptoms: disturbances of potency, decrease of morning erections, decrease of libido and sexual activity, decrease in beard growth and 'the impression of having passed the zenith of life'. The last is a global paraphrase which, for many German patients, is linked to changes in sex life, according to patients in the pre-phase of this study. The variable 'decrease in beard growth' was kept in the raw AMS scale, because experienced physicians claimed that this is a symptom of severe hormonal changes which were so rare in our group of patients that the effect was 'diluted' (i.e. a low factor loading of 0.20). For the sake of medical practice, this symptom was retained despite the low loading.

Population sample: reference values

Table 3 indicates some characteristics of the representative sample of German men aged 40–69 years. A total of 992 respondents were interviewed, but

Table 3 Overview of selected characteristics of representative population sample of 992 German males, used to generate reference values for final 'aging males' symptoms' (AMS) scale. Differences among categories of each variable and age groups were tested with χ^2 test (p value); Kruskal–Wallis test did not materially change result

	Age group (years)				
Variable	*< 50*	*50–64*	*65+*	*Total*	*p Value*
Schooling (n = 992)					
less than 'Abitur'*	239	313	110	662	
'Abitur' or more	149	144	37	330	0.008
Subjective health (n = 978)†					
very good or good	150	117	28	295	
sufficient, less than good or poor	233	333	117	683	0.000

*'Abitur' is university level; †total different because of missing information

Table 4 Description of scoring points in three dimensions of 'aging males' symptoms' (AMS) scale. Numbers in parentheses indicate minimum and maximum values of scoring points that can be achieved

Dimension	*Symptoms*
Psychological symptoms (minimum 5, maximum 25 points)	discouraged, depressed, irritable, anxious, nervous
Somatovegetative symptoms (minimum 7, maximum 35 points)	joint and muscle complaints, sweating, need for more sleep, sleep disturbances, weakness, exhaustion, impaired well-being
Sexual symptoms (minimum 5, maximum 25 points)	disturbed potency, impaired erectility, problems with libido, decrease in beard growth, feeling of 'having passed zenith of life'

only 959 answered all 21 questions of the raw AMS scale. Most of the participants had an education below university level ('Abitur'), as in the patient group, and perceived their subjective health as 'sufficient' or 'poor', i.e. similar to the small but well-characterized patient group (from which seriously ill persons were excluded).

Reference values of three dimensions in population sample

Table 4 gives the three dimensions of the AMS scale, reviews the symptoms that form the dimensions, and provides the minimal and maximal scores that can be obtained.

Table 5 Reference scores derived from the population sample of 959 males; classification of men according to four categories of severity of symptoms in the three dimensions. Cut-off points for severity were defined using initial factor analysis of the patient group (n = 116). Missing information in individual questions was replaced by values computed using regression analysis

Points	*Impairment*	*n*	*Percentage of patient group*
Psychological factor			
≤ 5	no	417	43.6
6–8	mild	400	41.8
9–12	moderate	104	10.9
≥ 12	severe	35	3.7
Somatovegetative factor			
≤ 8	no	319	33.3
9–12	mild	377	39.3
13–18	moderate	201	21.0
≥ 19	severe	62	6.4
Sexual factor			
≤ 5	no	427	44.5
6–7	mild	266	27.7
8–10	moderate	208	21.7
≥ 11	severe	58	6.1

Table 5 depicts the frequency distribution over the four categories for the three dimensions. These categories can be used as 'reference values' according to the German population sample, distinguishing severity of symptoms as no, mild, moderate or severe in each of the three dimensions. Arbitrary cut-off points were used for the four categories.

Preliminary validation of 'aging males' symptoms' results

To obtain a first impression of the relationship between the scoring results of the AMS scale and a potential measure suggestive of the 'male

climacteric', we performed a comparison with one external criterion: judgement of the clinical likelihood of 'male climacteric' according to an expert opinion, itself a construct and arrived at as follows.

One expert (member of the research team) assessed all clinical information relating to the 116 patients and defined a probability that some of the symptoms are 'likely' or 'unlikely' to be suggestive of the 'male climacteric'. This judgement was entirely based on clinical grounds (blinded to hormonal data), i.e. using only the data of the questionnaire. Results for the two extreme groups, i.e. where the presence of at least an early form of 'male climacteric' is clinically 'likely' or 'unlikely' were compared with the scores of the standardized AMS scale. The middle group, where an allocation to one of the extreme groups was equivocal for the expert, was excluded from this analysis (about 35% of the 116 patients). Results for the excluded 'equivocal group' did not clearly vary from the severity score in any of the three dimensions (data not given).

Table 6 gives the frequencies of the sum-scores in the three dimensions, compared with results for the two extreme groups of clinical probability of the 'male climacteric' (likely and unlikely). The scores for the dimensions 'psychological' (five questions), 'somatic' (seven questions) and 'sexual' (five questions) symptoms differed significantly between the two extreme groups of clinical likelihood of the 'male climacteric' (χ^2 test), being most pronounced in the dimension 'sexual symptoms' and less for 'psychological symptoms'. We found an obvious tendency in each of the AMS dimensions for the proportion of patients with 'likely male climacteric' to be increased with increasing severity of score, whereas it declined in the group where 'male climacteric' was unlikely according to the clinical judgement.

DISCUSSION

The hormonal involution in males is not as clear cut as it is in women in the frame of the gradual cessation of ovarian function[1,2,8,9]. Whereas the term 'menopause' and the principal symptoms of menopause have been well accepted for decades, the research interest in similar hormonal phenomena in males (climacterium virile, andropause) or regarding the key symptoms of aging in males seems to have increased markedly within recent years.

The symptoms or complaints that males over the age of 40 years, particularly over 50, increasingly experience were often interpreted in the context of impaired health or disease emerging in this age group. Little or contradictory information is

Table 6 Severity of symptoms in the three 'aging males' symptoms' (AMS) dimensions and probability of the clinical diagnosis 'male climacteric'. Only the two extreme groups were used for this tabulation, i.e. where the clinical judgement was unequivocal, either 'likely' or 'unlikely' (of 116 patients, 76 could be classified; in 40, the expert arrived at no clear decision). Numbers available for analysis differ among dimensions because of missing information; χ^2 test was applied to test for significant differences of severity of symptoms between the two extreme groups of probability of 'male climacteric' (*p* values)

		Male climacteric (clinical judgement)		
Dimension	*n*	*Likely n (%)*	*Unlikely n (%)*	*p Value*
Psychological symptoms				
no	12	6 (50)	6 (50)	
mild	32	16 (50)	16 (50)	
moderate	14	13 (93)	1 (7)	
severe	9	7 (78)	2 (22)	0.02
Somatovegetative symptoms				
no or mild*	35	15 (43)	20 (57)	
moderate	27	23 (85)	4 (15)	
severe	14	12 (86)	2 (14)	0.0005
Sexual symptoms				
no or mild*	29	5 (17)	24 (83)	
moderate	21	20 (95)	1 (5)	
severe	25	24 (96)	1 (4)	0.0000

*Two categories were lumped together because one cell was zero

available in the literature about specific changes of the hormonal profile, and even less regarding inter-relations between hormones and symptoms. There is obviously no simple, clear or linear relationship between levels of individual hormones and complaints of aging males[4,8–11], which is – to some extent – also true for women in this age group. Another problem, still unresolved in medical practice, is the definition of a clinical 'key symptom' for aging males, i.e. comparable to 'hot flushes' for women in the phase of menopause.

It was the objective of this paper to introduce a newly developed 'aging males' symptoms' (AMS) scale, based on clinical experience gathered using an earlier complaints check-list of Vermeulen. We followed the underlying concept of developing a scale that measures the symptoms associated with aging as experienced in daily life, to assist in the classification of aging patients. The ultimate aim, however, is to arrive, after steps of validation, at a point where a fully standardized AMS scale is available and operational in gradually defining the construct 'male climacteric'. This may need many years of further research. In the meantime, a simple instrument is required which can be used in clinical practice to classify patients and to measure effects of intervention. In other words, the intention is to 'catch up' with similar instruments in women, such as the menopause rating scale (MRS II)[6]. With the results of this paper, the first step has been completed: the presentation of a standardized 'aging males' symptoms' (AMS) rating scale. There is, however, the problem that one cannot definitively separate complaints of the physiological aging process and those due to early forms of pathological conditions (severe forms of self-reported diseases were excluded from the initial group of patients). We decided to use the term 'aging males' symptoms', although there is room for semantic debate and further research to clarify this construct.

We found three dimensions to explain most of the variance of symptoms or complaints that occur in the age range 40–70 years: psychological, somatovegetative and sexual symptoms. Degenhardt and Schmidt[11] reported, from their analysis of symptoms of 240 males, two factors similar to those found in the present study: 'psychological syndrome of energy loss' and 'vegetative and vasomotor dysfunction', and mentioned that sexual symptoms had no clear association with the above two factors. It is astonishing that very similar dimensions were also described for the menopause rating scale (MRS) for women[6].

Using a large population random sample of German males in this age group, we were able to define reference values for the classification of severity of symptoms in each of the three dimensions, and prepare the final AMS scale. In other words, investigations of patients using the AMS scale can be put into the perspective of a normal 'reference population'. If a summary score of the AMS scale is available for an individual patient, it can be decided whether his complaints are severe, moderate, mild or not different from those of the normal population over 40 years of age, and also specified in three dimensions. The comparative classification of patients depends no longer on the experience of the physician but on reference values obtained from the population, and, thereby, complaints can be compared among patients treated in different medical settings. As the scale is currently standardized for use only in Germany, its application in other countries or cultural conditions should be carefully considered. Basically, a new standardization will be needed, because the translation of the items of the scale (see Appendix) might be misinterpreted in another language, and the final measure might not be the same. A transcultural validation is anticipated once more experience is gathered using the AMS scale in Germany.

We were also able to show that the symptoms of the AMS scale correlate to some extent with the clinical diagnosis of a 'male climacteric', defined according to expert opinion. This is particularly true for the dimension 'sexual symptoms', but also for 'somatovegetative' and 'psychological symptoms'. However, the obvious problems, besides the small numbers of patients in the two extreme groups, are that the validation criterion 'clinical probability of male climacteric' cannot be ratified and that clinical climacteric symptoms do not necessarily find their expression in hormone values (based on knowledge of menopausal symptoms and hormone levels). In other words, the importance of this information should not be overestimated, i.e. it is necessary to accumulate further evidence that the AMS scale really measures a 'male climacteric'-related phenomenon (construct validation). There is currently no simple gold standard for clinically defining 'male climacteric'.

It is a general problem of our analysis that an unknown proportion of the patients might have some degree of 'hormone deficiency'. Thus, specific correlations were diluted by the majority of persons with still 'normal hormone levels'. The hormonal part of the analysis needs further research, which will contribute to the construct validation process. At present, it cannot be concluded to what extent each of the three dimensions of the AMS scale has relevance for the hormonal entity 'andropause'. It is still unclear which symptoms are specific for which type of hormonal imbalance and which are results of secondary adaptation or maladaptation of the organism. It would be helpful for a better understanding of the AMS scale to demonstrate whether a relevant hormonal intervention, treatment with testosterone for instance, is indicated also by changes in the AMS scores. Such analyses are planned, and would definitely contribute to the construct validity (stepwise construct validation of the term 'male climacteric' and the AMS scale) and to the development of the AMS scale as a screening and follow-up instrument for clinical practice.

For the time being, we conclude that the AMS scale is a valuable tool for the determination of severity of aging males' symptoms, i.e. in comparison with the normal population. This scale can be easily applied in medical practice (with and without drug intervention) to gather more experience regarding the behavior of this instrument, which will add data for further construct validation.

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APPENDIX: Final version of 'Aging males' symptoms' (AMS) scale*

Which of the following symptoms do you have currently? Between brackets you will find examples that explain the symptoms. Please check each symptom and given an intensity (mark one appropriate box for each symptom). If you do not have the respective symptom, please mark 'no'

	Intensity of symptom (points)				
Symptom	*No* 1	*Mild* 2	*Moderate* 3	*Severe* 4	*Very severe* 5
1. Deterioration of general well-being (health status, and perceived general situation)	☐	☐	☐	☐	☐
2. Complaints in joints or muscles (pain in lower back, joints or legs)	☐	☐	☐	☐	☐
3. Sweating (eruptions of sweat, hot flushes)	☐	☐	☐	☐	☐
4. Sleep disturbances (falling asleep, continuing to sleep, waking too early or tired, sleeplessness)	☐	☐	☐	☐	☐
5. Increased need for sleep (often tired)	☐	☐	☐	☐	☐
6. Irritability (ill-humored, irritated by minor causes, become angry or cross easily)	☐	☐	☐	☐	☐
7. Nervousness (inner tension, unrest, unable to stay calm and relaxed)	☐	☐	☐	☐	☐
8. Anxiety (panic)	☐	☐	☐	☐	☐
9. Exhaustion/decreased energy (general limitation of performance, reduced activity, less interest to do something, perceived low achievement, need for unusual stimulation to be active)	☐	☐	☐	☐	☐

Continued

Continued

Symptom	*Intensity of symptom (points)*				
	No 1	*Mild* 2	*Moderate* 3	*Severe* 4	*Very severe* 5
10. Decrease in muscular strength (weakness)	☐	☐	☐	☐	☐
11. Depressed mood (discouraged, sad, tearful, less drive, frequent changes of mood, feeling of senselessness)	☐	☐	☐	☐	☐
12. Feeling to have passed zenith of life	■	■	☐	☐	☐
13. Wish to be dead, arrived at dead point, totally discouraged	■	☐	☐	☐	☐
14. Decrease in beard growth	■	☐	☐	☐	☐
15. Decrease in potency	■	■	☐	☐	☐
16. Decrease in frequency of morning erections	☐	■	☐	☐	☐
17. Decrease in libido and sexual activity (desire for sex, interest in sex)	■	☐	☐	☐	☐
(end of final version)					
(preliminary version, dropped during process of standardization)					
Pain in chest (during physical exercise or emotional stress)	■	☐	☐	☐	☐
Hypersensitivity to cold and heat (feeling chilly, intolerance to heat)	☐	■	☐	☐	☐
Chest problems during rest (palpitation, tachycardia, arrhythmia)	☐	☐	■	☐	■
Dizziness, feeling of imbalance	☐	☐	☐	☐	☐

*Original in German; for reference values see Table 5

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