Nepali Translation and Reliability Analysis of Quantitative Androgen Deficiency in the Aging Male Questionnaire

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ABSTRACT

Background

Androgen deficiency is diagnosed on the basis of clinical symptoms and laboratory assessment of testosterone level. Different screening tools have been developed to evaluate the sign and symptoms.

Objective

In this study, we examine the validity and reliability of the Nepali version of the quantitative Androgen Deficiency in Aging Male (qADAM) questionnaire to screen androgen deficiency in Nepali male.

Method

English dialectal quantitative Androgen Deficiency in Aging Male questionnaire was forward translated to Nepali version and backward translated. This version was reviewed by a panel of an endocrinologist, a clinical psychiatrist, a physician, and a clinical biochemist. A final Nepali version of qADAM was developed. Thirty-one healthy male aged 31-70 years were administered with the questionnaire in two separate occasions two weeks apart. Cronbach's alpha and test-retest reliability were calculated to identify validity and reliability, respectively.

Result

In the Nepali translated questionnaire, Cronbach's alpha for internal consistency from ten items is good (0.68). The Cronbach's alpha for internal consistency from nine items without item 7 is 0.706. Seven out of ten items had an R-value of > 0.7. In the total sample, Standard Error Mean (SEM) ranged from 0.00-0.44 for qADAM. SEM% are low for all variables (0.00-11.20%). MDC_{95} ranged 0.00-1.234. MDC_{95}% ranged 0.00 – 31.05% and was < 30% for majority of variables (90%).

Conclusion

The final translated Nepali questionnaire seems reliable and valid. A future study measuring the Nepali questionnaire with testosterone level and another biochemical test in control and androgen deficiency patients will help validate the questionnaire.

KEY WORDS

Nepali translation, qADAM, Reliability analysis

INTRODUCTION

Androgen deficiency is a prominent example of clinical conditions considered rare or insignificant that have become increasingly important.[1,2] Both cross-sectional and longitudinal studies have shown that testosterone level progressively decreases as a process of aging.[3-5] However, the evolving role of decreased androgen level in increasing metabolic syndrome, diabetes,and cardiovascular risk factors and its adverse effect on the quality of life has made a study of androgen deficiency of paramount importance.[6-11]

Diagnosis of androgen deficiency "Hypogonadism" is established from the consistent sign and symptoms with low serum testosterone.[3,5,11-13] In support, interventional studies of testosterone replacement have reported decreasing symptoms associated with age-related decline in libido, body mass,and muscle strength and cognition.[5,14] Nevertheless, testosterone level is not routinely measured in clinical practice.[10] And economic constraints preclude individual assumed a decrease in testicular function from any laboratory measurement.[15] For this reason, a non-invasive tool that would identify (andropause) men based on their clinical presentation is necessary to persuade men for diagnosis.

A variety of self-administered questionnaires have been developed, including Saint Louis University Androgen Deficiency in the Aging Male (ADAM), Aging Male Symptoms (AMS) rating scale, Massachusetts Male Aging Study (MMAS), and New England Research Institutes (NERI).[16-19] Among these, Morley et al. ADAM has been widely used as a screening tool because of its high sensitivity.[20] This questionnaire addressesthe decline in libido, loss of muscle mass and strength, functional reduction, and a decrease in some cognitive abilities associated with an age-related drop in testosterone.

Due to variability in sensitivity and specificity, a graded response alternative of the ADAM questionnaire (qADAM questionnaire) was developed by Mohamed et al.[21] This improved version shows a strong correlation between the answers on the questionnaires and serum testosterone levels. And it also complements scores on the Expanded Prostate Cancer Index Composite (EPIC) sexual and hormonal domain and the sexual health Inventory for Men (SHIM). This tool measures a latentconstruct: characteristics of people such as attitudes, feelings, opinions, etc., and provides more variability in responses upon for statistical analyses.

From the literature review, neither ADAM nor the qADAM questionnaire has been used in the Nepali language. Due to the increasing burden of androgen deficiency in public health, a screening tool for assessing the symptoms is vital for clinicians and the general population. Especially, qADAM, revised to incorporate a broader variable, is rational in larger respondents.

This study aimed to translate the qADAM questionnaire to the Nepali language and analyze its reliability. The final translated questionnaire can be used in Nepali language populations for screening for androgen deficiency.

METHODS

Translation and Back-Translation of the Nepali version of the qADAM questionnaire

WHO guideline for the process of translation of instrument was followed.[22] The quantitative Saint Louis University questionnaire was translated from English to Nepali by two bilingual professional translators independently. This Nepali version's content validity was assessed by a panel of an endocrinologist, Psychiatrist, physician, clinical biochemist, and changes were made as indicated. This draft of the Nepali qADAM questionnaire was then back-translated to English independently by one bilingual professional and four bilinguals. The five back-translated English versions were then assessed and compared with the original English version by a clinician and a professional, who commented that the back-translated English versions were very similar in meaning to the original English version except the question 2. Hence, three physicians consulted to suggest a newer version that matched with the original translation. All the questionnaire was then compiled in a final document.

Questionnaire

It has ten questions. Respondents rate each item in a five-point response category (1-5: terrible = 1; poor = 2; average = 3; good = 4; Excellent = 5), so the possible scores ranges from 10 to 50 for the qADAM scale. Its ten items include decreased libido; lack of energy; reduced strength and/or endurance; loss of height; decreased enjoyment of life; sadness/grumpiness; erectile dysfunction; deterioration of performance in sports and work; and falling asleep after dinner. A positive ADAM is defined as a score of '1' or '2' to decreased libido or erectile dysfunction, or to any three other symptoms.

This study was part of a cross-sectional study to measure the prevalence of androgen deficiency in T2DM. Ethical approval for the study was acquired from the Institutional Review Committee of Kathmandu University School of Medical Sciences. Verbal consent was obtained from participants for their involvement.

The sample consisted of thirty-one healthy participants (faculty and staff) from Kathmandu University. The age limitation of the participants was to be above 30 years.

The main study was conducted from December 2015 to January 2016. The questionnaire was administered on two occasions, fourteen days apart. Participants took approximately 5-10 min complete the questionnaire.

Face validity and content validity were used to verify the validity of the Nepali version of the qADAM questionnaire. Aquestionnaire was provided for a panel of experts (physicians and bilingual translators) to obtain face validity. The board rephrased the items in their own words.

Reliability is the degree to which an assessment tool produces stable and consistent results.[23] It refers to the reproducibility of measurements.[24] Test-retest reliability and minimum detectable change were used to obtain the reliability of the questionnaire.

Cronbach's alpha analysis is determining how each item individually contributes to the reliability of the questionnaire (field, 2009).

Test-retest of qADAM score was assessed by interclass correlation (ICC). The finalized questionnaire was given in 2 weeks to the same men to evaluate test-retest stability. Two necessary assumptions in test-retest reliability are; the first is that the actual score does not change between administrations, the second is that the time period between administration is long enough to prevent learning, carry-over effects, or recall.[25]

In order to describe within-subject variability, absolute reliability was obtained using standard error of the mean (SEM) the formula.

$SEM=SD\sqrt{(1-ICC)}$

Measurement error also was expressed as a percentage of the mean, which was defined as;

$SEM\%=SEM/mean\times100$

The mean is the mean for all of the measures for test and retest. The SEM% indicates measurement error independent of the units of measurement and represents the limit of the smallest change that shows a real improvement for a group of subjects.

The minimal detectable change (MDC), representing the magnitude of change necessary to exceed the measurement error of two repeated measures at a specified confidence interval (CI), was calculated for the 95% CI as;

$MDC=SEM \times z_{95}\times 2$

1.96 is the two-sided tabled z value for 95% CI and (2) is used to account for the variance of two measurements.

Minimum detectable change with 95% confidence (MDC_{95}) was also expressed as a percentage, which was defined as;

$MDC_{95}\%=(MDC_{95}/mean)\times100$

The mean is the mean for all the measures for test and retest.

The SEM quantifies the within-subject variability and reflects the amount of error in measurements (wold 16,25).

Statistical procedures were performed on SPSS 22.0 for Windows. The means and standard deviation (SD) were calculated for the age. Reliability analysis was also obtained. SEM and MDC were calculated separately.

RESULTS

The mean ± SD age of the participants was 44.23 ± 8.64, with ages ranging from 31 to 70 years.

Test-retest reliability and minimum detectable change (95% CI) are shown in table 1. Cronbach's alpha for internal consistency from ten items is 0.682. The Cronbach's alpha for internal consistency from nine items without item 7 is 0.706.

The interclass coefficient of each item is shown in Table 1. Seven out of ten items had an r-value of > 0.7. In the total sample, SEM ranged from 0.00-0.44 for qADAM. SEM% are low for all variables (0.00-11.20%). MDC_{95} ranged 0.00-1.234. MDC_{95}% ranged 0.00-31.05% and was < 30% for majority of variables (90%).

Table 1. Reliability analysis of Nepali translated qADAM

Items		ICC	SEM (%)	MDC_{95} (%)
1	9	0.691(.446-.840)	0.345(9.58)	0.956(26.57)
2	1	0.801(.627-899)	.254(7.22)	0.704(20.02)
3	2	0.729(.529-.859)	.358(9.32)	0.992(25.85)
4	3	.558(.254-.762)	.444(11.20)	1.234(31.05)
5	4	.738(.523-.864)	.390(10.09)	1.082(27.97)
6	10	.912(.820-.958)	0.247(6.946)	0.687(19.25)
7	5	.598(.315-.784)	.400(10.69)	1.108(29.65)
8	7	.753(.543-.874)	.427(9.50)	1.186(26.35)
9	6	.772(.579-.883)	.258(7.78)	0.716(21.56)
10	8	1(1.000-1.000)	1(0.00)	0(0.00)

DISCUSSION

The validity and reliability test result indicate that the Nepali qADAM questionnaire is consistent with that of the original version. The ICC score suggests that this questionnaire is in the substantial agreement between test and retest results. The less than 30% score of the minimum detectable change (MDC_{95}) percentage is 90% showing that the response does not change over time.

Previous studies validated the ADAM questionnaire in different languages showing high sensitivity and specificity with other alternative questionnaires that also measured androgen deficiency.[26-29] These studies did not indicate a reliable analysis to detect the stability of the questionnaire. Mohamed et al. suggest that using a Likert scale will help recognize androgen deficiency and monitor treatment response accurately.[21] Latent construct is generally thought of as unobservable individual characteristics believed to

exist and cause variations in behavior. The Likert gives variability in responses. Variability and variance are mainly the attributes upon which many statistical analyses are built. So for that reason, where there are no right or wrong answers, Likert scales are often preferred. Test-retest reliability supports the consistency of a variable being measured. Using this test, the researcher can confirm that the meaning of the same questionnaire item will not change over time. All previous studies using this questionnaire provide positive the validity assay. Hence, based on this confirmation, it was important that the questionnaire were correctly translated.

Forward and Backward Translation

Question 1

"Furtilo" makes a better mark in addressing the energy level issue. "Matra" will help identify the use of level. Since the problem require based on 'experience, "Mahasus" has to be removed as it means 'feel.' A negative word such as "Thakai" will mean tired, deviating from the object of question.

The inclusion of the same pronoun in two places could be attributed to the use of "Tapai afno" that exactly meets the goal of qADAM.

Question 2

There is no literal one-word translation for endurance. Therefore, "Nirantar Kaam Garna Sakne Kshyamata" is suggested for endurance. Strength is used for "Tagat". As "Sahanshakti" is more psychologically oriented, which is not the case here.

In backward translation, the primary reason for this absence of the keyword 'endurance' is the lack of a literal word that gives exact meaning in Nepali literature.

Question 3

Especially "Ramailopan" will mean enjoyment in its entirety. The use of "Ramailopan" is indirect and less object oriented, hence "Ramailo" is used. "Ramailo" means pleasant in the Nepali dictionary. However, the meaning varies as 'amount of fun', 'pleasure', 'satisfaction'.

On final review, it was agreed upon that because fun also was synonymous to enjoyment, the translation is acceptable.

Question 4

Happiness means "Khusi". 'Level' in literal meaning with Nepali (not found) does not suit happiness in Nepal and also "Shtar" may provide meaning for the situation of happiness; hence, "Shtar" is removed.

In back translation, "Khusi" has perfectly translated the keyword 'Happiness'. However, there is no 'level' which is because there is word "Matra" used. If it is used, there will be back translation version that gives a level, but overall meaning might not be original in the general sense as discussed in the original revision.

Question 5

The two keyword 'work' and 'performance' need to be identified. 'Work' means "Kaamko". However, there is no literal translation for 'performance'. Because original version asks to evaluate the level of commitment, desire, an efficiency of work done, "Garai" is added. "Kshyamata" means capacity (the extreme of ability) hence it is more physically deviated signifying strength.

In the back translation version, the time frame of four weeks has been adequately highlighted. Yet, the performance does not appear. Performance - "Sampadan" or "Nispadan" might be responsible for giving work performance

Question 6

In the original version, the question asks about the deterioration or decrease in the ability to play sports which identify both stamina and skill. However, sports can mean more than one kind of activity that is mental and physical. This could be responsible due to the cultural barrier in representing different questions. Hence, an empty answer is expected. Because any higher level of functioning example such as agriculture is similar to sports, if patients are hesitant to answer, that is expected.

This performance can be in terms of skill and stamina. 'Stamina in sports,' 'athleticism' and 'stamina' only provide partial objective as the keyword 'ability' is missing. "Kshyamata" means as ability, but "Dakshyata"also means ability is suggested.

Question 7

The question conveys that it is not about the dinner but falling sound asleep after dinner. "Bittikai" is translated as "immediately," which is not the case in the question. Although "Ratri ko Khana" also gives meaning for dinner, "Beluki Khana" is more commonly used. But arguments have been that "Jhupukka" means to have a sound sleep, which is not the meaning that the question is trying to convey.

The translation is complete to express the keyword that is "fall asleep after dinner." 'Sleep well at night,' 'sleep after dinner' gives the same intent.' The addition of the word "Praya" could increase the inclusion of often.

Question 8

Although 'lost,' in normal circumstance, imply as losing any object after its stolen, but, here, 'lost' means the decrease in this question. The first translation is not proper. In the second translation, "Tapai" is used to bring universality of the pronoun for 'you' as in previous questions.

'Height decreased,' 'decline in height' and 'short of preferred height' does not provide the keyword 'lost.' The literal translation for 'lost' would be "Harayo" which is not the aim of the question in the original version but rather

as a 'loss' of height in past tense. To provide the meaning of 'loss' also a synonym for 'decrease', it is understandable that 'lost' will not be used in the back translation most often.

Question 9

The question intends to ask the psychological aspect of sexuality. "Youn Kriyakalap Maa Ruchi" gives literal meaning as the interest in sexual activity. This is an indirect and longer version of the original question. Hence, the inclusion of "Chahana" which is a literal translation of desire is concluded. "Daro Sanga" is not included

The keyword 'sex-drive (libido)' and also the question in its entirety matches the original version.

Question 10

There is no literal meaning of erection in Nepali literature. "Younanga"means genital organ. This is a more conservative style. "Tapaiko afno" is not a direct approach. So, "Tapaiko" is just enough. There is no difference from the first revision.

The translation version does not specify the gender, making confusion if the organbeing mentioned is female's breast or male's penis. In back translation, two out of three-person will understand it as being an erection. 'Strong' word can be replaced as 'hard', since both give the same meaning for erection.

A systematic process to develop the translated questionnaire help maintain the precision of the original document. Following WHO guideline to translate the original English version to new Nepali version of questionnaire help achieve better linguistic and cultural equivalence while maintaining the clinical significance. This method helps improve all minor details for final revision.

Even though, it is ideal to obtain a perfect arrangement in a translated version with the original version, due to limitation linguistically, this is not possible 30. Hence, changes were made to preserve the meaning and accuracy of the questionnaire.

For this translation, construct validity was not conducted which limited measurement of specificity and sensitivity of the questionnaire. However, the reliability analysis indicates that subjects do not demonstrate any major change to the same questionnaire. A small subject number limited for the factor analysis of the questionnaire.

CONCLUSION

The final translated Nepali questionnaire seems reliable and valid. A future study measuring the Nepali questionnaire with testosterone level and another biochemical test in control and androgen deficiency patient will help validate the questionnaire.

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