ORIGINAL ARTICLE

Design and Psychometric Properties of Male Adolescent Health Needs-Assessment Scale

Elham Zare[1], PhD; Masoumeh Simbar[2], PhD; Zohreh Shahhosseini[3], PhD; Hamid Alavi Majd[4], PhD

[1]Department of Midwifery and Reproductive Health, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran;
[2]Department of Midwifery and Reproductive Health, School of Nursing and Midwifery, Reproductive Endocrinology Research Center, Research Institute for Endocrine Sciences, Shahid Beheshti University of Medical Science, Tehran, Iran;
[3]Department of Reproductive Health and Midwifery,Sexual and Reproductive Health Research Center, Mazandaran University of Medical Sciences, Sari, Iran;
[4]Department of Biostatic, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Corresponding author:
Masoumeh Simbar, PhD; Department of Midwifery and Reproductive Health, School of Nursing and Midwifery, Opposite to Rajaee Heart Hospital, Cross of Vali-Asr and Neiaiesh Highway, Vali-Asr Avenue, Postal Code: 1996835119, Tehran, Iran
Tel\Fax: +98 21 88655378; **Emails:** msimbar@sbmu.ac.ir, msimbar@yahoo.com

Received: 31 August 2015 **Revised:** 2 January 2016 **Accepted:** 9 January 2016

Abstract

Background: Given the importance of adolescents' health in establishing health in the newly thriving generation of every society, the first step for adolescents' health promotion is health needs assessment. The present study was, therefore, conducted to design a valid and reliable scale for health needs assessment of male adolescents.

Methods: This is an exploratory sequential mixed method study (2014-2015). The qualitative part was performed using content analysis approach and aimed to generate items pool. Data collection was performed by 7 focus group discussions with 51 male adolescents, and 10 semi-structured in-depth interviews with 10 other adolescents. Nine further in-depth interviews were also performed with 9 key informants. Purposive sampling was used and continued until data saturation. In the quantitative part, the designed scale was psychometrically assessed through the examination of the face and content validities using qualitative and quantitative methods and also the construct validity using the exploratory factor analysis along with the tool's internal consistency and stability.

Results: The content analysis of the data from the qualitative part led to the extraction of 4 main themes and 103 items, which moved to the quantitative stage. The mean content validity index of the scale was estimated 0.91 and content validity ratio was 0.89. The exploratory factor analysis showed 4 factors for the designed scale (49 items), including physical, psychological, social and sexual health needs. The internal consistency and the stability assessment of the scale showed 0.79 and 0.89, respectively. ($P<0.001$)

Conclusion: According to the psychometric assessment, MAHNAS is a valid and reliable scale compatible with the Iranian culture that can be used in the health needs assessment of male adolescents.

Keywords: Health; Needs assessment; Adolescents; Scale

Please cite this article as: Zare E, Simbar M, Shahhosseini Z, Alavi Majd H. Design and Psychometric Properties of Male Adolescent Health Needs-Assessment Scale. IJCBNM. 2016;4(4):297-308.

Introduction

Adolescence is considered a key stage in human development. Rapid biological and psycho-social changes occurring during this period turn adolescence into a unique period in life; in fact, health during adolescence ensures health in adulthood, and ultimately health in the future generation of every society. World Health Organization introduces adolescents as 10-19 year old individuals whose population has reached to 1.8 billion in the world, and 90% of them are living in developing countries. Ensuring that countries pay sufficient attention to the adequacy of adolescents' health services has therefore been on the agenda of the WHO since 2015.[1]

Given the importance of health during this critical period, promoting every aspect of the adolescents' health is subjected to understanding their needs. Understanding the adolescents' health needs is important in improving the care services provided to them and ultimately leads to a healthy state among the adolescents and across the society. Investing on adolescents' health will prevent 1.4 million deaths each year.[2] The first step in the promotion of the communities' health is needs assessment of the target group.[3] Needs assessment entails the realistic identification of the current health status of the target group and their needs and problems using their own contributions, identification and prioritization of the main risk factors threatening that population, and finally identification of the essential measures for eliminating those risk factors and maintaining health in the group.[4] At the global level, adolescents' health needs have become the center of attention more than ever before at the International Conference on Population and Development as a turning point in reproductive health services. The declaration of the conference emphasizes the unique needs of adolescents compared to adults and request its member countries to identify and meet these needs.[5]

Although the physical and health problems of male adolescents might have been less emphasized compared to female adolescents, the fact remains that male adolescents also face several physical, psychological, behavioral, and social problems during this period of transition. High-risk health and sexual behaviors, accidents and drug and alcohol abuse are but a few examples of the problems commonly faced by male adolescents.[6] According to 2014 WHO statistics, mortality rates are higher in boys than in girls. Assessing and meeting the health needs of boys for a safe transition from this period is therefore highly crucial.[1] A quarter of our population are adolescents,[6] and considering the importance of health in this group, there are few studies in various countries on the concept of health needs in male adolescents and there is no specialized and standard scale for assessing the health needs in this group. Most studies on health needs assessment in our country are descriptive and there is no comprehensive assessment scale to measure all aspects of adolescents' health needs. Besides, health needs assessment scales should be culture sensitive, valid and reliable. Health needs assessment is the first step in promoting health status; however, there is not any valid scale which assesses the male adolescents' health. There is just one study on the Iranian female adolescent health needs, which is not rationally appropriate for boys, considering sex differences. Therefore, this study aimed to design and evaluate the psychometric properties of a tool to assess the health needs of male adolescents in Iran.

The present study was, therefore, conducted to design a valid scale for the health needs assessment of male adolescents based on the dominant socio-cultural context and the mentalities of the target group so that it may be of use in the assessment of the current status, the planning of health measures interventions, and the promotion of adolescents' health.

Materials and Methods

This exploratory sequential mixed method study was conducted in two stages. In the first stage,

a qualitative content analysis was performed to determine the concept and the dimensions of the health needs. Data collection was performed by 7 focus group discussions with 51 male adolescents, and 10 semi-structured in-depth interviews with 10 other adolescents. Moreover, to obtain a wider range of information about male adolescents' health needs, individual in-depth interviews were conducted with key informants, including the parents of 13-18 year old boys, teachers, psychologists, reproductive health specialists, and pediatricians.

The inclusion criteria in this study for the adolescents were being a male adolescent aged 13 to 18, being single and residing in Tehran. The inclusion criteria for the Key informants included: for parents having at least one male adolescent in this age; and for teachers, psychologists, reproductive health specialists and pediatricians having at least two years of job experience in adolescent health field. The key informants included two mothers, two fathers, a teacher, two psychologists, a reproductive health specialist, and a pediatrician. Anyone who was not willing to continue cooperation was excluded.

The sampling was purposive and continued until data saturation, which means more sampling adds no additional codes. The focus group discussions and in-depth interviews were conducted from February 2014 to June 2015 after obtaining informed consent form.

In accordance with qualitative studies, the study setting was a real context and the accessibility for the adolescents (school, mosques, parks, and culture houses and sports clubs in different geographical areas of Tehran) was taken into account. The interviews with the key informants were held in places such as the schools, counseling clinics, doctor's offices and the Ministry of Health and Medical Education.

Based on the guidelines for exploratory interviews, the focus group discussions and interviews with male adolescents and key informants began with a general question about health, such as "What does health mean to you (male adolescents)?", and "What exactly do you (male adolescents) need to be a healthy person?". Each interview lasted between 30 and 45 minutes.

Qualitative data were analyzed using the conventional content analysis according to Graneheim and Laundman's method, for which all the interviews were recorded first and promptly transcribed, including non-verbal gestures, as well. The transcribed text was broken down into meaning units and then into the smallest meaningful units possible (i.e. codes). These codes were then categorized and subcategorized according to their centrality and semantic similarity. The researcher and participants finally reached a consensus about the meaning of the data, the content and the category names. For ensuring the accuracy of qualitative data, based on Lincoln and Guba's criteria, we considered the credibility, transferability, conformability, and dependability.[7] The scale items were completed using an inductive-deductive method. Using qualitative data collection, we first extracted the items from the interviews (84 items). Through an extensive review of available literature on the subject, other items associated with adolescents' health which were not included in the present study were added to the main items (19 items). Totally in the first draft of the scale, there were 103 items. The scale was scored based on a 5-point Likert scale, from the "totally disagree" option with a score of 1 to the "totally agree" option with a score of 5. The second stage involved a psychometric assessment of the scale. To assess the validity of the scale, face, content and construct validities were assessed. To assess the reliability of the scale, the internal consistency and stability of the scale were measured.

To determine the qualitative face validity of the scale, face-to-face interviews were conducted with 10 male adolescents to examine such issues as the level of difficulty, appropriateness and ambiguity of the items, and then modifications were made. Next, to evaluate the quantitative face validity to determine the significance of each item, the item-impact was calculated. Items scoring 1.5

or higher were kept for further analysis. 1.5 was chosen as the criterion based on the mean score of 3 and the mean frequency of 50%.[8] At this stage, to improve the face validity of the scale, 10 experts stated their comments on the scale,[9] including faculty members of Shahid Beheshti University of Medical Sciences, experts in scale design, reproductive health, sociology, public health, psychology, and psychiatry. The researcher paid particular attention to choosing the correct writing style and making logical sentences in writing the scale items.

In determining the content validity of the scale, the necessity of an item is addressed from the experts' points of view. The content validity ratio was, therefore, assessed by 15 experts and scored based on a 3-point Likert scale. According to Lawshe's table, content validity ratio scores higher than 0.49 for 15 individuals indicate the relevance of the item at a statistically significant level (P=0.05) and demonstrate its necessity for the scale.[10] These items entered the next stage of the content validity index measurement. The views of 15 faculty members and experts in scale design, reproductive health, health education, nursing, public health and psychiatry were used in order to determine the relevance, clarity and simplicity of each item on a 4-point Likert scale based on Waltz & Bausell's content validity index.[11] The scores obtained for all the items were assessed against this index, and the item was accepted if the index value was 0.79 or higher.[12]

To determine the construct validity of the scale, the exploratory factor analysis was used to assess the internal relationship between the variables. A sample size of 100-200 is normally sufficient for factor analysis due to its dependence on correlation.[13] Data collection was conducted by multi-stage randomized sampling. Due to the geographical map of Tehran, four parts were determined as North, South, East and West. In each geographic part, an area was selected for sampling by using table of random numbers. After that, schools in each area were randomly selected, so simple and available sampling was done in randomly selected classes. It is obvious that the number of sampling in each area was a proportion of the total samples required. A total of 200 eligible male adolescents aged 13-18 were, therefore, randomly selected; they completed the health needs-assessment questionnaire and were given scores based on a 5-point Likert scale. Data were analyzed using SPSS-22.

The internal consistency and the test-retest methods were used to determine the reliability of the scale. The internal consistency was assessed before and after construct validity assessment. Cronbach's alpha was calculated for each factor and also for the scale as a whole in a sample of 25 male adolescents. Cronbach's alpha values between 0.7 and 0.8 denote an adequate internal consistency.[14] The stability of the scale is ensured when the same scores are obtained by a group of individuals on two distinct occasions. To determine its stability, the scale was completed by a sample of 25 male adolescents on two different occasions within an interval of two weeks, and the scores for the two tests were compared against each other using an Intra-class Correlation Coefficient (ICC) test. The stability of the test is confirmed when the ICC is higher than 80%.[8]

Results

The first part of the study aimed to determine the concept and the dimensions of adolescents' health needs using content analysis. Demographic charachteristics of Adolescents and key informants who participated in this part are shown in Tables 1 and 2. It resulted in the emergence of 4 main themes including physical, psychological, social and sexual health needs. Each main theme has some sub-themes as follows: physical health needs (proper medical and health services and self-care), psychological health need (self-esteem, being in peace and comfort), social health need (healthy family, healthy society, educational needs and relationship with peers), and sexual health needs

Table 1: Demographic characteristics of the adolescents in qualitative part

Demographic Characteristics		Number(%)
Mean age		15.5±1.2
Grade	First high school	24 (39.4)
	Second high school	31 (50.8)
	Technical school	6 (9.8)
Father's education	Illiterate/high school diploma	20 (32.9)
	Diploma	31 (50.8)
	Academic education	10 (16.3)
Mother's education	Illiterate/high school diploma	17 (27.8)
	Diploma	31 (50.8)
	Academic education	13 (21.4)
Father's job	Jobless	11 (18.0)
	Self-employment	21 (34.2)
	Worker	15 (24.9)
	Employee	14 (22.9)
Mother's job	House wife	39 (63.9)
	Self-employment	11 (18.0)
	Employee	11 (18.1)

Table 2: Demographic characteristics of key informant in the qualitative part

Key informant	Age	Educational degree
Mother	45	Bachelor in art
Mother	39	Diploma
Father	51	High school diploma
Father	47	Diploma
Teacher	53	Bachelor in biology
Psychologist	49	Bachelor in psychology
Psychologist	37	Master in psychology
Reproductive health specialist	54	PhD in reproductive health
Pediatrician	58	M.D, Specialist

(sexual education, sexual health care). In this part of the study, the results showed that the concept of "health needs of male adolescents" is multi-dimensional and includes needs for proper medical and health services and self-care in physical health dimension; needs for self-esteem and being in a state of peace and comfort in psychological dimension; needs for healthy family, healthy society, the educational needs and relationship with peers in social dimension; and needs for sexual education, sexual health care in sexual health dimension.

According to the concepts explained, review of the literature and available sources on the health needs of male adolescents, a series of items were then arranged based on the themes derived from the interviews. The items selected were assessed by a research team, and some were combined if applicable and the initial scale was designed with 103 items scored based on a 5-point Likert scale (totally agree, agree, no comments, disagree and totally disagree).

For assessing the face validity of the scale, the male adolescents were interviewed and modifications were then made accordingly; then, calculation of the impact scores revealed that 21 items did not have the score 1.5 or higher; therefore, the items were reduced from 103 to 82.

In assessment of the content validity of the scale, the Content Validity Ratio (CVR) was calculated, and items scoring 0.49 or higher were kept (69 items) and moved along to the content validity index assessment stage. At this stage, items with a content validity ratio

of 0.79 or higher were kept (based on Waltz and Bausell's Content Validity Index). It is worth noting that no items were eliminated at this stage, and the scale entered the construct validity assessment stage with 69 items. Demoghraphic charachterestics of adolescent who participated in construct validity are shown in Table 3. The mean content validity index (S-CVI) was 0.91, which fell in the acceptable range of 0.9 or higher.[15] Data reduction process in development and psychometric assessment process is shown in Figure 1.

Kaiser-Myer-Olkin's test was calculated to assess the sample adequacy for construct validity of the scale (Table 4); Kaiser-Myer-Olkin's values varied from 0 to 1, and values above 0.8 were considered appropriate.[13] Bartlett's Sphericity test was used to show whether the correlation matrix obtained departs significantly from 0, based on which performing an exploratory factor analysis could be justified, producing a value of 6172 ($P<0.001$).

The factors' contribution to explaining the variance of each item was then determined through an analysis of the main components using a varimax rotation. The variance of each item ranged from 0 to 1. Values less than 50% indicate the item's inappropriateness for factor analysis, and show that it should be excluded. A total of 11 items were excluded at this stage and the rest entered the factor analysis stage. The factors were extracted after the correlation

Table 3: Demographic characteristics of the participants in construct validity

Demographic characteristics		Number (%)
Grade	First high school	74 (37)
	Second high school	83 (41.5)
	Technical school	43 (21.5)
Father's education	Illiterate/high school diploma	42 (21)
	Diploma	63 (31.5)
	Associate	27 (13.5)
	Bachelor	59 (29.5)
	Master/ doctor	9 (4.5)
Father's job	Jobless	12 (6)
	Self-employment	81 (40.5)
	Worker	41 (20.5)
	Employee	59 (29.5)
	Retired	7 (3.5)
	Illiterate/high school diploma	36 (18)
Mother's education degree	Diploma	79 (39.5)
	Associate	33 (16,5)
	Bachelor	49 (24.5)
	Master/ doctor	3 (1.5)
Mother's job	House wife	95 (47.5)
	Self employment	31 (15.5)
	Worker	30 (15)
	Employee	44 (22)

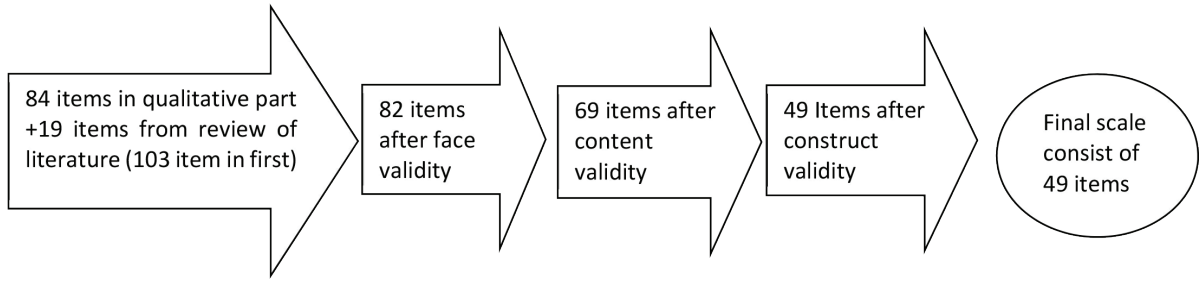

Figure 1: Data reduction process in development and psychometric assessment process.

Table 4: Sample Adequacy for Factor Analysis

Kaiser- Myer-Olkin's test		806
Bartlett's Sphericity test	X^2	6172.798
	Freedom degree	1378
	Significance	P<0.001

matrix of the variables was calculated. There are various rules for determining the number of factors in exploratory factor analysis.[13] The inflection point of 0.4 was taken as the minimum factor loading required for keeping the item in the factors extracted from the factor analysis. 12 factors with an Eigenvalue higher than 1 were initially identified, which expressed 67.84% of the variance collectively. For the simplification and interpretability of the factor constructs of the designed scale, and given the low explanatory power of the terminal factors and also considering the agreement of the extracted factors with the concept and the dimensions of the health needs of male adolescents explained in this study, the exploratory factor analysis was repeated by limiting the extraction of the factors to 4 using the varimax rotation. 4 factors eventually expressed 43.22% of the variance. 9 items were unable to obtain the right factor loading at this stage and were therefore eliminated. The remaining 49 items were placed in 4 constructs and given specific names (Table 5). According to the results, items common in more than one factor were placed in the relevant factor according to their distinct nature and based on consultations with the research team. With the agreement of the research team, these constructs were given their old names back; that is, social health needs (13 items), psychological health needs (20 items), sexual health needs (4 items) and physical health needs (12 items), which accounted for 15.22%, 11.26%, 9.83% and 6.9% of the variance, respectively. The scale was scored based on a 5-point Likert scale, from the "totally disagree" option given a

Table 5: Factor loading of each item in four components based on matrix rotation

Item	**Factor Loading**			
To be healthy, I need….	**Social Health Need**	**Psychological Health Need**	**Sexual Health Need**	**Physical Health Need**
Families to receive health education	0.834			
Families able to support my financial needs	0.812			
Teachers feeling responsible for providing education to the adolescents	0.797			
Standard equipment and facilities at schools	0.751			
My parents to receive child raising education	0.745			
To choose decent friends for myself	0.737			
The mass media to offer health education through its programs	0.717			
Parents to control and oversee my behaviors	0.665			
Schools to have youth advisors	0.612			
Parents to give me conditional freedom	0.591			
Others to respect my rights in the society	0.586			
To include the 5 main food groups in my daily diet	0.572			0.424
To shower twice per week	0.560			0.423
Parents to have a good relationship with each other	0.538			
To use the free services of my health insurance	0.536			
To get 7 to 8 hours of sleep per day	0.531			0.401

Table 5: Factor loading of each item in four components based on matrix rotation

Item	Factor Loading			
To be healthy, I need….	**Social Health Need**	**Psychological Health Need**	**Sexual Health Need**	**Physical Health Need**
Parents to treat me properly given that I'm going through puberty		0.791		
Not to be bullied by the other boys		0.783		
Not to be a victim of verbal abuse from the family		0.754		
Not to be a victim of physical violence at home		0.747		
Family to be affectionate toward me		0.741		
To believe in my own abilities		0.706		
Not being subject to discrimination between the children at home		0.694		
To have a goal in life		0.694		
To respect and value myself		0.624		
The family to respect me		0.623		
To be given responsibility for things I can handle		0.601		
Not to worry about my job prospects		0.577		
To have hope in the future		0.520		
To have faith in God		0.501		
To spend my weekly leisure time as I wish		0.489		
To have access to facilities that allow me to have a productive leisure time		0.461		
To have access to affordable facilities enabling me to have a productive leisure time		0.441		
To receive life skill training		0.420		
Parents to treat me properly given our generation gap		0.412		
To be able to connect with my God		0.402		
Parents to be able to teach me about sexual health			0.463	
To receive training about the prevention of HIV and STDs			0.407	
To be able to control my sexual instincts			0.402	
The society to provide me with easy access to sexual and reproductive services			0.401	
To receive education about tobacco, drug, alcohol and psychoactive substance abuse				0.499
To get dental check-ups twice every year				0.487
To take three meals per day				0.465
To have easy access to health and medical services				0.461
The school to provide me with sports facilities				0.441
To keep my environment clean				0.432
To take health precautions when the air is too polluted				0.411
To eat out as little as possible				0.407
To brush my teeth and floss at least once a day				0.405

score of 1 to the "totally agree" option given a score of 5. The score of each construct was computed by calculating the mean score of its items, and the overall score of the scale was measured by calculating the mean score of the entire items. The percentage of the total score and factor scores under or equal to 33 was considered as poor health status, between 34 and under or equal to 66 was moderate health status, and finally scores higher than 66 were considered as proper health status.

The reliability assessment of the scale is shown in Table 6 The Cronbach's alpha before construct validity was 0.73 and 0.77 after construct validation. The scale stability was calculated as 0.89 through the test-retest method and the intra-class correlation index.

Table 6: Scale Reliability

Factors	Cronbach's alpha
Social Health Need	0.79
Psychological Health Need	0.73
Sexual Health Need	0.88
Physical Health Need	0.77
Whole Questionnaire	0.79

Discussion

The ultimate goal of the health system in every country is promoting the public health and establishing health equity among its community. Conducting a health needs assessment is considered the first step toward the development of health in a country. Studies on health can, therefore, play a substantial role by providing information and guidelines about the planning of strategies for the identification of the needs and implementation of health policies and programs intending to meet these needs.[16] The present study was designed and conducted to realize these goals.

In addition to meeting part of the research needs in the area of male adolescents' health, which is considered a unique point of strength for the country, the present study was conducted in accordance with the real needs of adolescents and the views of key informants on this subject, and neglecting this crucial issue in needs assessment reduces the reliability of the results. The results of the present study suggest favorable psychometric features, including favorable face, content and construct validities as well as a favorable reliability for the scale. The scale can, therefore, be considered a valid and reliable one for the health needs assessment of Iranian male adolescents.

The face and content validities of the scale were assessed based on the views of male adolescents and experts. Content validity based on the experts' views is one of the best ways for collecting evidence to support the content of a scale.[17] There are several studies in line with the present one that have used the views of a group of experts to assess the content validity of their proposed scales. In a study entitled "the psychometric features of adolescents' health concerns' assessment scale", the views of adolescents were used to assess their scale's face validity and the views of experts for the CVI and the CVR to assess its content validity. In their study, more than half of the items had proper impact scores. In the assessment of the content validity ratio, more than half of the items scored above acceptable score (score for the items assessed based on Lawshe's table), and in the assessment of the content validity index, most of the items scored appropriate and one third of the items underwent the necessary modifications. The mean content validity index for the scale as a whole was calculated and acceptable.[18] In another study entitled "the design and application of a scale to determine the predicting factors of breakfast consumption in adolescents based on the health promotion model", the views of experts on nutrition, psychology, health, sociology and psychiatry were used to assess their scale's content validity. This scale was ultimately reported to be a valid and reliable one for finding the factors affecting breakfast consumption in school-aged adolescents.[19]

The construct validity of the MAHNAS measured using the factor analysis method summarized the adolescents' needs within four factors, including physical, psychological,

sexual and social health needs. A similar study was conducted to design a valid and reliable scale for the health needs assessment of female adolescents. This methodological study used content analysis of qualitative data to extract five main themes, including psychological-emotional, social, physical, educational and beliefs needs. The factor analysis conducted showed the same factors for the scale. As in the present study, the internal consistency method (calculating Cronbach's alpha) was used to assess the scale's reliability and ICC index to assess its stability. The results obtained showed a favorable validity and reliability for the female adolescents' health needs assessment scale.[20] To compare the two studies, both were similar in design, but had different target groups (and the importance of gender differences is self-evident). Although similarities were found in the health needs of male and female adolescents, the differences emerging were related to their structural gender differences. In expressing the mentalities shaping their lifestyle, male adolescents highlighted sexual issues, which is due to the personality features manifested boldly in puberty. The exclusivity of each study based on the specific needs of each gender (male or female) led to results with a high level of accuracy and specificity which supports the wide application of the studies among all adolescents.

Similar to the present study, a study conducted to develop a valid and reliable instrument to assess reproductive health behavior in people living with HIV based on Health Belief Model. For validating this instrument after face and content validity, researchers used exploratory factor analysis. After varimax rotation, five factors were extracted, which expressed forty two percent of the total variance.[21] Also, in a study entitled "Development and psychometrics of institutionalized adolescent spiritual coping scale, exploratory factor analysis was used for assessing the construct validity of the instrument. The results showed that three factors could explain fifty five percent of the variance.[22]

A favorable reliability is a criterion for showing the quality of a scale. The MAHNAS had an acceptable internal consistency and stability. Other studies conducted for the design and psychometric assessment of scales have also used reliability assessment methods to determine the quality of their scale and its acceptability. A study was conducted on the psychometric features of adolescents' power and problems' assessment scale in Spain and examined Spanish adolescents using a five-point Likert scale. The factor analysis showed three factors, including adolescents' behavioral problems, emotional problems and capabilities. The reliability of the scale was confirmed using the internal consistency method of measuring Cronbach's alpha, which was acceptable for the scale as a whole.[23]

Another study was conducted for the design and psychometric assessment of a scale for examining pre-marital sexual behaviors in young women. Four main themes emerged at the first stage of the study. After determining the validity of the scale, its reliability was determined using the internal consistency method of measuring Cronbach's alpha, which was acceptable for the scale as a whole and for its different areas. The stability of the scale was measured by calculating ICC, which was proper.[24]

Another study aimed to provide an assessment scale to evaluate Iranian youth reproductive health. This multistage study was conducted to design a valid questionnaire in the domain of knowledge, attitude, and behavior of the youth in order to evaluate behavior change program. A questionnaire was prepared after qualitative research and literature review. Face and content validity was assessed by students and professionals. The result showed that the correlation coefficient and Cronbach's alfa of the questionnaire were acceptable; compared with our result, the reliability of MAHNAS was evaluated higher, which makes it a more reliable scale than similar scales in health domains.[25]

Other points of strength for this scale

included having addressed the sexual needs of male adolescents based on their distinctive definitions of health, which is considered a peculiar need, given the dominant culture of the country. In Iran, one third of the young Iranian men have experienced pre-marital sex.[26] Given the importance of securing sexual health in male adolescents, policy-makers are encouraged to prioritize this vital issue as a goal of the national health system and to also focus on securing the health needs of adolescents.

The limitation of this study was using samples as students just in schools, and also not using confirmatory factor analysis in construct validity. It is suggested that another study should be conducted to use male adolescents in public environment, not just schools and confirmatory factor analysis should be applied for the scale in future studies.

Conclusion

The results of the present study propose MAHNAS as a valid and reliable scale compatible with the dominant culture of the Iranian society to conduct the needs-assessment of the current status and to help with the planning and implementing of health measures aiming to promote health in adolescents and to further assist public health across the society.

Acknowledgement

The present study is a part of Mrs. Elham Zare's PhD thesis, which was approved by Shahid Beheshti University of Medical Sciences (Decree Number: REC2SBMU1394/65). Hereby, we would like to express our gratitude to all those who helped carry out this study.

Conflict of Interest: None declared.

References

1 Dick B, Ferguson BJ. Health for the World's Adolescents: A Second Chance in the Second Decade. Journal of Adolescent Health. 2015;56:3-6.
2 Chen MY, James K, Wang EK. Comparison of health-promoting behavior between Taiwanese and American adolescents: a cross-sectional questionnaire survey. International Journal of Nursing Studies. 2007;44:59-69.
3 Bartholomew KL, Parcel GS, Kok G, et al. Planning Health Promotion Programs: An Intervention Mapping Approach. 3rd ed. US: Jossey-Bass publication; 2011.
4 Avijgan M, Karamalian H, Ashourioun V, Changiz T. Educational Needs Assessment of Medical School's Clinical Faculty Members in Isfahan University of Medical Sciences. Iranian Journal of Medical Education. 2009;9:93-103.
5 McIntosh CA, Finkle JL. The Cairo conference on population and development: A new paradigm? Population and Development Review. 1995;21:223-60.
6 Sajjadi M, Moshki M, Abasnezhad A, Bahri N. Educational needs of fathers about boys puberty period and its related factors. Zahedan Journal of Research in Medical Sciences. 2012;14:66-70. [In persian]
7 Graneheim UH, Laundman B. Qualitative contetnt analysis in nursing research: Concept, procedures and measures to achieve trustworthiness. Nurse Education Today. 2014;24:105-12.
8 Hajizadeh E, Asghari M. Statistical Method and Analysis, with Biology and Health Aproach. Tehran (Iran): Jahade Daneshgahi publication Organization; 2011. [In persian]
9 Lacasse Y, Bérard A. Validation of the nausea and vomiting of pregnancy specific health related quality of life questionnaire. Health and Quality of Life Outcomes. 2008;6:32.
10 Lawshe CH. A quantitative approach to content validity. Personnel Psychology. 1975;28:563-75.
11 Yaghmaie F. Measuring Behaviour with Valid and Reliable Instrument. Tehran

(Iran): Shahid Beheshti Medical Science Publisher; 2008. [In persian]
12 Hyrkäs K, Appelqvist-Schmidlechner K, Oksa L. Validating an instrument for clinical supervision using an expert panel. International Journal of Nursing Studies. 2003;40:619-25.
13 Kaller SP, Kelvin EA. Munro's Statistical methods for health care research. 6th ed. US: Lippincott Williams & Wilkins; 2012.
14 Tavakol M, Dennick R. Making sense of Cronbach's alpha. International Journal of Medical Education. 2011;2:53-5.
15 Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and Recommendations. Research in Nursing & Health. 2007;30:459-67.
16 Yazdanpanah B, Pourdanesh F, Safari M, et al. Health Research Priority Setting by Need Assessment in Kohgiloye and Boyreahmad Province. Armaghan Danesh. 2003;8:19-24.
17 Delgado-Rico E, Carretero-Dios H, Ruch W. Content validity evidences in test development: An applied perspective. International Journal of Clinical and Health Psycology. 2012;12:449-60.
18 Baheiraei A, Khoori E, Ahmadi F, et al. Psychometric properties of the adolescent health concern inventory: the persian version. Iranian Journal of Psychiatry. 2013;8:28-36.
19 Dehdari T, Rahimi T, Aryaeian N, et al. Developing and testing a measurement tool for assessing predictors of breakfast consumption based on a health promotion model. Journal of Nutrition Education and Behavior. 2014;46:250-8.
20 Shahhoseini Z, Simbar M, Ramezankani A, Alavi Majd H. Developing and Psychometric of female adolescent health need questionnaire. Journal of School of Public Health and Institute of Public Health Research. 2012;9:11-22. [In persian]
21 Fallahi H, Tavaffian SS, Yaghmaei F, Hajizadeh E. Developing and Measuring Psychometric Properties of" Reproductive Health Behaviour in people living with HIV based on Health Belief Model". Hakim Research Journal. 2013;16:118-27.
22 Rassouli M, Yaghmaei F, Alavi Majd H, Saeedolzakerin M. Development and Psychometrics of"Institutionalized Adolescents Spiritual Coping Scale". Iranian Journal of Psychiatry and Clinical Psychology. 2009;15:25-32. [In persian]
23 Ortuño-Sierra J, Fonseca-Pedrero E, Paino M, et al. Screening mental health problems during adolescence: Psychometric properties of the Spanish version of the Strengths and Difficulties Questionnaire. Journal of Adolescence. 2015;38:49-56.
24 Rahmani A, Merghati-Khoei E, Moghadam-Banaem L, et al. Development and psychometric evaluation of the Premarital Sexual Behavior Assessment Scale for Young Women (PSAS-YW): an exploratory mixed method study. Reproductive Health. 2014;11:43.
25 Mousavi A, Keramat A, Vakilian K, Esmaeili Vardajani SA. Development and adaptation of Iranian Yoth Reproductive Health questionnaire. ISRN Obstetrics and Gynecology. 2013;2013:950278.
26 Simbar M, Tehrani F, Hashemi Z. Reproductive health knowledge, attitudes and practices of Iranian college students. East Mediterr Health J. 2005;11:888-97.