Original Article

Designing and determining psychometric properties of a questionnaire on assessment of men's attitudes toward male participation in women's sexual and reproductive health issues

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Abstract

Context: Men's participation in sexual and reproductive health (SRH) issues can help countries achieve their national development goals, such as reducing maternal mortality, increasing the use of contraceptives, and reducing the prevalence of human immunodeficiency virus infection and acquired immunodeficiency syndrome.

Aims: The purpose of this study is to design and to determine the psychometric properties of a questionnaire on the assessment of men's attitudes toward male participation in women's SRH issues.

Setting and Design: In this study, 449 married men from cities of Nowshahr and Chalus in Iran who were selected by the available sampling method completed Questionnaire on Assessment of Men's Attitudes in 2018.

Materials and Methods: An exploratory sequential mixed-methods approach was used in the present study and focused on research instrument design performed in two qualitative and quantitative phases.

Statistical Analysis: The formal validity, content, and structure (convergent and divergent validity) and the reliability of the scale were investigated. Confirmatory and exploratory factor analysis was performed using SPSS Amos 24 software.

Results: Four factors fit to the assessment of men's attitudes are confirmed according to standard indicators that include "emotional and gender-based attention," "support for girls," "attention and supply of SRH, and prevention of violence." Convergent and divergent validity for all factors, as well as internal consistency and structural stability, are acceptable.

Conclusions: Given the importance and the necessity of male participation in women's reproductive health, this questionnaire was endowed with sufficient validity and reliability and could be useful to precisely assess men's attitudes in this regard.

Keywords: Male participation, Psychometrics, Reproductive health, Women

Access this article online	
Quick Response Code:	**Website:** www.jnmsjournal.org
	DOI: 10.4103/JNMS.JNMS_14_20

How to cite this article: Soleimani S, Sharif Nia H, Abdollahi F, Khani S. Designing and determining psychometric properties of a questionnaire on assessment of men's attitudes toward male participation in women's sexual and reproductive health issues. J Nurs Midwifery Sci 2020;7:159-69.

INTRODUCTION

It is widely accepted that reproductive health refers to a healthy, satisfying, safe, and responsible sexual life together with freedom in making decisions concerning reproduction by individuals. In this respect, one of the basic principles of reproductive health, specifically that highlighted by the World Health Organization (WHO) is male participation in sexual and reproductive health (SRH) issues.[1] This concept includes assuming responsibilities as a parent and one in charge of family planning, prenatal care, provision of maternal and child health, care about puberty in girls, prevention of human immunodeficiency virus infection and acquired immunodeficiency syndrome (HIV/AIDS) as well as sexually transmitted diseases (STDs), unwanted and high-risk pregnancies, prevention of any violence against women and children, attendance in healthcare programs during spouse's menopause and middle age, and attention to women's diseases such as cancers.[2] Male participation in SRH can also reduce maternal mortality, increase the use of contraceptive methods, and lower HIV/AIDS prevalence rates.[3] In some women's studies, the reason behind opting for no effective or safe contraception has been mentioned as husband's consent and unwillingness.[4-6] Therefore, successful implementation of SRH programs can be closely correlated with attitudes and practices by men who can play a vital role in support for maternal and child health, contraception, prevention of unwanted and risky pregnancies, prevention of HIV/AIDS and STDs, provision of healthcare services for mothers during pregnancy and childbirth, and also reduction of violence against women and children.[7] If men do not pay attention to women's SRH issues, the problems of women of reproductive ages will increase dramatically. In addition, poor educational performance and low knowledge of men about the needs and issues of pregnancy are another factors that reduces men`s participation in SRH programs. The high level of men`s knowledge about their spouse problems and accompanying them to receive pregnancy care is a sign of the interest of men in reproductive health, but low knowledge of men about the needs of pregnant women and pregnancy problems are important barriers for men's supportive behaviors.[8] In a study reported a significant relationship between men's knowledge and positive attitude toward participation in family planning. Women also believed that men's support and participation increased their ability to reproductive decision-making and their ability to plan for childbearing.[9] Despite the couple's positive attitude toward men's participation, are obstacles for men, such as men's lack of awareness and their undefined role in pregnancy care, economic and cultural issues, and problems with the health system.[10]

Facilitators of men's participation in family planning include education, information, and access to the media, and a positive attitude toward family and gender. One of the barriers to participating in the SRH is the negative attitude toward gender equality.[11] Increasing awareness affects people's perceptions and attitudes.[12] One of the first steps in designing health services with men's participation is to be aware of the factors affecting men's participation and also to be aware of their attitude toward promoting their role in this field.[10] In this view, assessment has been introduced as one of the efficient parts of health education programs. Moreover, assessment methods used to meet the objectives of selected health education programs need to be evaluated.[13] Therefore, designing and developing appropriate research instruments, training human resources, and standardizing available tools in this area can be used to reduce errors in assessments.[14] Based on searches in the available online databases, some questionnaires have been developed about SRH, including Reproductive Health Questionnaire,[15] Psychological Maltreatment of Women Inventory,[16] and Questionnaire for Interview-Surveys with Young People.[17] Several studies have been also conducted in Iran to evaluate knowledge, attitudes, and practices regarding SRH in different groups, including men,[18] adolescent boys,[19] as well as male and female students.[20] In which the research instruments utilized have not been described in detail in terms of their design and psychometrics or they have been just briefly delineated or have merely covered limited components of SRH such as contraceptive methods and prevalence rates of HIV/AIDS and STDs. There are also several investigations focused on designing and determining psychometric properties of such research instruments for different dimensions of health and specific groups; for example, Sexual Knowledge and Attitudes Scale for Premarital Couples,[21] Reproductive Health Assessment Scale for HIV-Positive Women,[22] Questionnaire for Vulnerable Women's Knowledge, Attitude, and Practice Concerning STDs,[23] Women's SRH care Needs Assessment-Persian,[24] SRH Needs Questionnaire among Persian Infertile Women,[25] and Questionnaire for Measuring Health Needs of Adolescent Girls,[26] however, none of these tools have been focused on assessing men's attitudes toward male participation in women's SRH issues. Besides, there is a lack of information about reproductive concerns among men and their attitudes toward women's SRH status.[18] Despite extensive search in the available databases, no questionnaire was found to assess men's perspective about women's SRH in several domains. Therefore, the main purpose of this study was to design and determine the psychometric properties

of a questionnaire assessing men's attitudes toward male participation in women's SRH issues.

MATERIALS AND METHODS

An exploratory sequential mixed-methods approach was used in the present study and focused on research instrument design performed in two qualitative and quantitative phases.

Qualitative phase

In this phase, the data were collected via interviews together with a review of the related literature. The interviews were conducted with 20 married men in an individual and face-to-face manner using semi-structured questions. The samples were also selected from community health centers located in two cities of Nowshahr and Chalus in Mazandaran Province, Iran. The inclusion criteria were married men aged above 15 years. The sampling method was also of purposive type with maximum diversity in terms of age, level of education, economic status, number of children, and occupation.

Moreover, all the interviews were carried out in a private and quiet room on the participants' requests, and sampling continued until data saturation, i.e., no new codes were extracted. Accordingly, a total of 20 interviews were performed, and each interview lasting 30–75 min and in one session. The interview questions were as follows:

- In your opinion, what does women's SRH mean?
- What do you think of male participation in women's SRH issues?
- What factors can affect women's SRH status?

The interviews were correspondingly deepened through exploratory questions such as "Please explain more" or "Can you give an example? At the end of each interview, the study participants were also asked to raise issues that had remained untold. After the completion of the interviews, the data collected were analyzed using conventional content analysis method proposed by Graneheim and Lundman. Finally, the pool of items was developed based on definitions, dimensions, and components extracted from the conventional content analysis. To determine data trustworthiness, the four criteria developed by Guba and Lincoln, including credibility, transferability, dependability, and confirmability, were taken into account.[27]

Credibility

In this study, in cases where the researcher was doubt about the accuracy of the perception of the participant's intended item, the issue was raised by re-appointment or telephone call.

Dependability

To achieve this criterion, the researcher reviewed the themes by members of the research team, reviewed the codes and categories that needed serious review in consultation with the supervisor.

Transferability

In this research, we have tried to create judgment and evaluate others about capability with detailed descriptions provide finding transferability.

Confirmability

In the present study, to meet this criterion, the researcher had to show that he did not suffer from bias. In fact, by clearly stating all stages of the study (data collection, analysis, and formation of themes), the researcher has exposed it to critique, i.e., the observers and readers of the research report, by reading it to the researcher's precision and honesty will find out at all stages of research.

The related literature and existing research instruments focused on Men's participation in women's SRH issues were reviewed. All the related studies published between 2010 and 2019 were thus searched in the online databases of Google Scholar, Scopus, PubMed, Science Direct, Scientific Information Database, and Magiran using keywords of attitude, male participation, SRH, questionnaire, and psychometrics with the following search strategy: "(men participation) OR (male participation) OR (men participation) OR (male participation) AND (reproductive health) OR (sexual health) AND (attitude) AND (Psychometrics) AND (questionnaire) AND (women)."

The articles related to the objectives of the study in terms of their titles, abstracts, and full texts were accordingly selected. All the studies in Persian and English, including quantitative and qualitative ones, were also searched. Besides, manual search was performed in the reference lists of the articles about male participation in women's SRH issues. The results of this search led to a total of 4404 articles at the first step, but 20 studies ultimately remained following the removal of duplicated or irrelevant ones. All studies were reviewed several times, and the relevant terms were placed in a separate file as a pool of items comprised of 91 items.

Validity
Face validity
Face validity was determined using qualitative and quantitative methods.

Qualitative face validity

A total of 10 married men were surveyed concerning the appearance of the questionnaire, including the level of difficulty, appropriateness, and ambiguity. To this end, the items of the questionnaire entitled Assessment of Men's Attitudes towards Male Participation in Women's SRH Issues were given to these individuals, and they were surveyed face-to-face.

Quantitative face validity

At this point, the impact score was evaluated. For this purpose, a total of 10 married men were surveyed, and they were asked to rate the importance of each of the items using a five-point Likert-type scale from totally important (score 5) to rarely important (score 1). Computing the multiplication result of importance by frequency, the impact score of each item was then determined. Frequency by percentage meant the number of individuals who had assigned scores 4 and 5 to each item and importance referred to the mean of importance scores based on the five-point Likert-type scale. If the impact score of each item was equal to or larger than 1.5, the given item could be right and proper for subsequent analyses and remained.[28]

Content validity

Content validity was determined using qualitative and quantitative methods.

Qualitative content validity

The items of the questionnaire were given to 10 experts (4 reproductive health specialists, 2 midwives, 1 gynecologist, and 3 family physicians) and they were asked to review the research instrument in terms of observing Persian grammar, use of appropriate words, right placement of items, as well as clarity and simplicity of items, and total scores and finally declare their comments and revisions in a written form.

Quantitative content validity

The quantitative content validity of the given instrument was assessed and analyzed based on the opinions of 10 expert panel members by calculating two quantitative indicators of content validity ratio (CVR) and content validity index (CVI).

Content validity ratio

To determine CVR, the experts were firstly asked to examine each item based on a three-point Likert-type scale of "necessary, useful, and unnecessary." After the calculation of the CVR in the form of a fraction result whose numerator was the difference of half of the participants diagnosing items as necessary and denominator

of half of the total number of the participants, the responses were compared with the criterion available in Lawshe's Table. Accordingly, items whose numerical value of their CVR was above 0.62 (based on assessments by ten experts) indicated that the presence of each item associated with a statistically acceptable significance level in this research instrument was necessary and important.[29]

Content validity index

To determine CVI, ten individuals from the expert panel specified the relevance of each item in the questionnaire using a four-point Likert-type scale. The CVI score for each item was thus calculated based on dividing the number of experts agreeing with each item with 3 and 4 ratings on the total number of experts. According to CVI by Waltz and Bausell, items scored 0.79 were found appropriate, those scored 0.70–0.79 were questionable and needed to be revised, and items with scores <0.70 needed to be deleted.[28] After the finalization of the CVR and CVI scores, the items were reviewed by the research team in a meeting.

Construct validity

Exploratory factor analysis (EFA) was used to identify factors and to determine to construct validity. The sample size required for EFA, by taking at least ten individuals per item, was determined by 400 individuals selected based on convenience sampling method from Nowshahr and Chalous Health Centers، Nowshahr Ports and Shipping Department and Urban Schools.

At the first step of determining construct validity, latent factors were extracted using EFA. Sampling adequacy index was also computed via the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's test. Then, the extraction of latent factors was fulfilled through maximum likelihood estimate, Promax oblique rotation solution, and aggregate chart using the SPSS Statistics software version 25 (SPSS ver. 20 (Chicago, IL, USA)). The presence of one item in one factor based on the formula of $CV = 5.152 \div \sqrt{(n-2)}$ was determined by approximately 0.3. According to the three-indicator rule, at least three observed variables (items) need to be present in each factor for each latent variable. Communalities of items <0.2 were also deleted from EFA.[30] At the next step, extracted factors were examined based on confirmatory factor analysis (CFA) (maximum likelihood estimate) and based on the most common goodness of fit indices of the Structural Equation Modeling (SEM) using SPSS Amos 24 software.

Convergent and divergent validity

Convergent and divergent validity of the given questionnaire was determined using Fornell and Larcker approach (1981)

through average variance extracted (AVE), maximum shared squared variance (MSV), and averaged shared squared variance (ASV). It should be noted that whenever items in a research instrument in one factor have a higher correlation denoting their construct (factor), they have convergent validity, and once the extracted items are separate from each other, there is divergent validity. To establish convergent validity, AVE must be also >0.5 and ASV and MSV need to be smaller than AVE to confirm divergent validity.[30,31]

Reliability

To assess the internal consistency of the questionnaire, Cronbach's alpha coefficients, McDonald's' Omega, and inter-item correlation mean were estimated. To evaluate the stability of test-retest reliability, the questionnaire was also completed within 2 weeks by 20 men, and then intraclass correlation coefficient (ICC) was calculated using two-way mixed-effects model and absolute agreement. After that, composite reliability was calculated via CFA; moreover, reliability higher than 0.7 was considered as significant.[32]

Absolute reliability

Since ICC fails to provide information about accuracy of scores, in this study, absolute reliability was calculated using standard error of measurement (SEM) through the formula of SEM = pooled $SD \sqrt{1 - ICC}$.[28]

Normal distribution of data, outliers, and missing data

Normal distribution of the data and the outliers were separately examined. The presence of multivariate outliers and normal distribution of data with multivariate elongation defects were also examined through Malalanobis distance-squared ($P < 0.001$) and Marida's coefficient values (above 20). The percentage of missing data was further evaluated through multiple imputation, and it was replaced with average responses of participants.[32]

Ethical considerations

The present study registered with the code no. IR.MAZUMS.REC.1397.354 of the Ethics Committee at Mazandaran University of Medical Sciences on January 6, 2019. Before the onset of the study, the main objectives were explained to the participants in oral and written forms and then informed consent was obtained. All the participants were also assured that their information will remain confidential and they could withdraw from the study at any time. Upon their request, the results would be also presented to them. They were further assured that the research team would be committed to answering their questions during the study.

RESULTS

The items Pool contains 91 items, and after removing duplicate items or similar concepts, remained and finally psychometric properties done on these 48 items.

Face and content validity

In the qualitative face validity, 5 items were modified based on the participants' opinions. In quantitative face validity and in qualitative content validity, no items were deleted based on the CVI. In the CVR, 8 items were removed and for determining reliability Cronbach's alpha was calculated, and two items removed in item analysis.

Despite low CVR, for questions 22, 23, and 24 related to girls' puberty were maintained according to the research team pointing view. In the end, out of 48 attitudes items of 38 items were prepared for the EFA.

The total number of the participants was 449 married men and 14.5% of them had high school diploma. The majority of these participants also had stated that their household income was at an average level (76.4%). Other demographic characteristics information is reported in Table 1.

In the present study, 9% of all the items were estimated as missing data. The sampling adequacy index using KMO Measure of Sampling Adequacy and Bartlett's test was also by 0.889 and 3719.357, respectively ($P < 0.001$). According to the EFA results for the construct of male participation, four factors of "emotional and gender-based attention," "support for girls," "attention and provision of SRH needs," and "violence avoidance" were extracted. These four latent factors were respectively assigned with the first-factor participation (5.137), the second factor (4.478), the third factor (5.370), and the fourth factor (3.759) of the Eigenvalue. As a whole, 54.883 could explain the total variance of the construct of male participation. First factor contained eight items, in which the first and the second items had a factor loading of 0.94 and 0.54, respectively. The next three items also had a factor loading >0.46. The items included; "I avoid sex in case of my wife's illness or fatigue (unwillingness), but I express my love and affection." (Item 1), "I care about my wife's satisfaction with marital relationships." (Item 2), "I holistically support my infertile wife (i.e., financially, emotionally, socially, and psychologically)" (Item 3). All the three items had underscored emotional and sexual support and attention. Second factor was comprised 4 items in which the first and the second items had a factor loading of 0.96 and 0.82, respectively. The next item also had a factor loading above 0.46. The items included; "I can assure my children especially

Table 1: Participants' demographic characteristics information

Demographic characteristics	Frequency (%)
Levels of education	
Below high school diploma	65 (14.5)
High school diploma-bachelor's degree	254 (56.6)
higher than bachelor's degree	130 (29)
Employment status	
Unemployed	3 (0.7)
Worker	48 (10.7)
Self-employed	81 (18)
Employee	298 (66.4)
Other	19 (4.2)
Household income	
Very little	29 (6.5)
Little	71 (15.8)
Moderate	343 (76.4)
Much	6 (1.3)
Physical violence	
Never	349 (77.7)
Rarely	88 (19.6)
Sometimes	11 (2.4)
Always	1 (0.2)
Economic violence	
Never	352 (78.4)
Rarely	82 (18.3)
Sometimes	13 (2.9)
Always	2 (0.4)
Emotional violence	
Never	269 (59.5)
Rarely	143 (31.8)
Sometimes	35 (7.8)
Always	2 (0.4)
Age, mean (SD)	42.6 (8.6)
Age at marriage, mean (SD)	26.6 (4.3)
Wife's age, mean (SD)	38.4 (8.1)
Wife's age at marriage, mean (SD)	22.4 (4.1)
Length of marriage, mean (SD)	16 (9)

SD: Standard deviation

my daughter by strengthening intimacy during puberty that she will be supported in case of any problems." (Item 1), "I can support my daughter in terms of referrals to specialists and consultants in the event of a problem during puberty." (Item 2), and "I can establish intimate relationships with my daughter and actively listen to her words" (Item 3). All these three items put emphasis on providing support for girls (as would-be mothers) by fathers. Third factor was made up of 6 items, in which the first and the second items had a factor loading of 0.75 and 0.69, respectively. The next item also had a factor loading >0.64. The items included; "I need to attend counseling sessions in case my wife is affected with cancer." (Item 1), "I need to gain information about physical, mental, and sexual symptoms and changes in menopausal women.", and "I need to holistically support my menopausal wife (i.e., financially, emotionally, psychologically, socially, and sexually). All these three items pointed out the provision of SRH needs. Fourth factor contained three items in which the factor loading of the first item was 0.94 and that was 0.71 and 0.51 for the second and the third items, respectively. The items included; "I avoid use of physical violence

(such as beating) against my wife." (Item 1), "I do not use economic violence (e.g., no provision of financial needs) against my wife." (Item 3), "I support my wife in case of violence against her by others" [Table 2].

In the first-order CFA, construct modification also showed appropriateness and goodness of fit [Table 3]. At first, the Chi-square goodness of fit index was obtained. (X^2 [180, $N = 225$] = 500.69, $P < 0.001$) Then, to evaluate the fit of the model, other indices were examined using all indicators of Minimum Discrepancy Function by Degrees of Freedom divided (CMIN/DF) = 2.782, root mean square error of approximation = 0.063, parsimonious comparative fit index (CFI) = 0.780, parsimonious normed fit index = 0.744, adjusted goodness-of-fit index = 0.881, incremental fit index = 0.911, CFI = 0.910; confirming the goodness of fit of the model [Table 3 and Figure 1]. As shown in Table 4, the AVE of all factors ranged from 0.32 to 0.59, but the AVE of the first and the fourth factors was >0.5. Moreover, the AVE of the first and the third factors was <0.5. In addition, the AVE of the first and the third factors was larger than their MSV (ranged from 0.32 to 0.34) and the AVE of the second and the fourth factors was less than their MSV (74/0). The AVE of all factors was smaller than their ASV (ranged from 0.62 to 0.88). After evaluating the first-order CFA, the components of the construct of male participation and the correlation between the construct and the sub-scales using SEM were also assessed through second-order factor analysis to measure whether all the components could be included in the general concept of male participation or not. The goodness of fit indices of the second-order CFA is shown in Table 3. The structural model and the CFA of the research instrument in the factor loading state with standardized coefficients are illustrated in Figure 2. The value of the factor loading obtained for all the items in the questionnaire were >0.3 and the significance level was <0.001. Moreover, the composite reliability for the first, the second, the third, and finally for the fourth factors was, respectively, 0.788, 0.850, 0.792, and 0.793; indicating the appropriateness of the composite reliability of all the factors of this scale. The internal consistency of the construct of male participation was also calculated using Cronbach's alpha coefficients, McDonald's Omega, and ICC. The results demonstrated that the internal consistency of all factors was acceptable [Table 3].

Reliability

The ICC of the questionnaire was estimated by 0.886 and its absolute reliability was obtained by 6.75.

DISCUSSION

The present study developed a research instrument entitled

Table 2: Exploratory factor analysis of the questionnaire on assessment of men's attitudes toward male participation in women's sexual and reproductive health issues

Factors	Items	Factor loading	Communalities	Eigenvalue	Percentage of variance
Emotional and gender-based attention	Q 1. I avoid sex in case of my wife's illness or fatigue (unwillingness), but I express my love and affection	0.940	0.563	5.137	34.102
	Q 18. I care about my wife's satisfaction with marital relationships	0.544	0.506		
	Q 10. I holistically support my infertile wife (i.e., financially, emotionally, socially, and psychologically)	0.471	0.285		
	Q 9. I make an appropriate decision with the consent of my wife in the event of an unwanted pregnancy	0.469	0.248		
	Q 15. I use condoms especially in cases of polygamy and temporary marriage to prevent all types of sexually transmitted diseases	0.462	0.300		
	Q 28. I respect women's rights to freely choose time of having a baby	0.370	0.285		
	Q 3. I provide postpartum care services to my wife	0.340	0.247		
	Q 30. I collaborate and talk with my wife about planning to have a baby	0.319	0.362		
Support for girls	Q 37. I can assure my children specially my daughter by strengthening intimacy during puberty that she will be supported in case of any problems	0.962	0.799	4.478	8.236
	Q 38. I can support my daughter in terms of referrals to specialists and consultants in the event of a problem during puberty	0.821	0.626		
	Q 36. I can establish intimate relationships with my daughter and actively listen to her words	0.819	0.712		
	Q 23. I financially and emotionally support my wife and accompany her to receive diagnostic-healthcare services in the case of being affected with cancer	0.400	0.321		
Attention and provision of SRH needs	Q 24. I need to attend counseling sessions in case my wife is affected with cancer	0.750	0.385	5.370	6.663
	Q 34. I need to gain information about physical, mental, and sexual symptoms and changes in menopausal women	0.692	0.555		
	Q 35. I need to holistically support my menopausal wife (i.e., financially, emotionally, psychologically, socially, and sexually)	0.641	0.538		
	Q 25. I express enough love and affection and strive to create a lively environment in family if my spouse is affected with cancer	0.585	0.390		
	26. I gain information about my wife's sexual rights, reproductive health, and its observance	0.511	0.502		
	Q 16. I make my wife aware in the event of a sexually transmitted disease (e.g., genital warts, herpes, gonorrhea, syphilis, and HIV/AIDS)	0.349	0.246		
Violence avoidance	Q 32. I avoid use of physical violence (such as beating) against my wife	0.947	0.815	3.759	5.882
	Q 33. I do not use economic violence (e.g., no provision of financial needs) against my wife	0.718	0.540		
	31. I support my wife in case of violence against her by others	0.510	0.419		

HIV/AIDS: Human immunodeficiency virus infection and acquired immunodeficiency syndrome, SRH: Sexual and reproductive health

Table 3: Goodness-of-fit indices of first- and second-order confirmatory factor analysis model

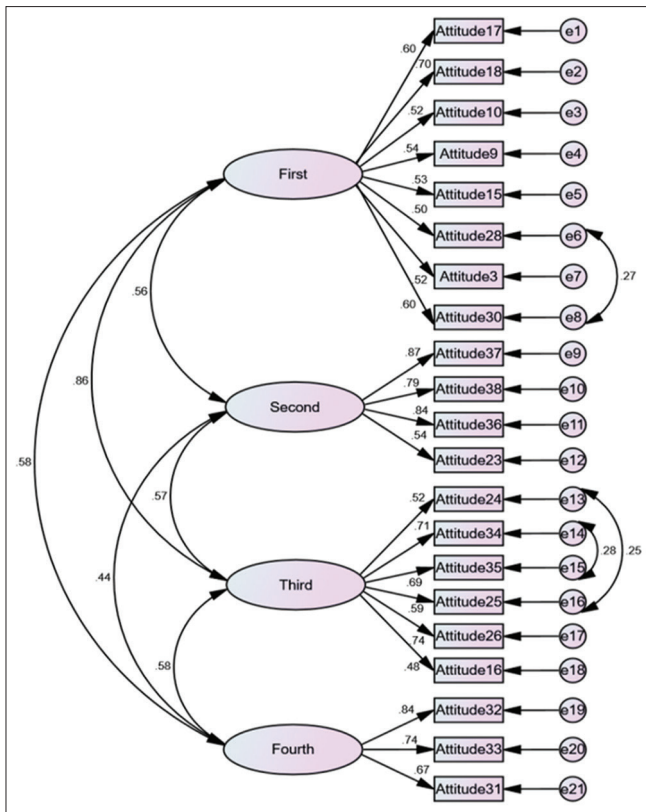| Confirmatory factor analysis model Goodness of fit indices*	χ^2	df	*P*	CMIN/df	RMSEA	PCFI	PNFI	AGFI	IFI	CFI
First-order confirmatory factor analysis following construct modification	500.696	180	<0.001	2.782	0.063	0.780	0.744	0.881	0.911	0.910
Second-order confirmatory factor analysis following construct modification	511.245	183	<0.001	2.793	0.068	0.672	0.610	0.776	0.975	0.971

*AGFI, PCFI, PNFI (>0.5), IFI, CFI (>0.9), RMSE (>0.08), CMIN/df (acceptable >5, good >3). CFI: Comparative fit index, RMSEA: Root mean square error of approximation, PCFI: Parsimonious CFI, PNFI: Parsimonious normed fit index, AGFI: Adjusted goodness-of-fit index, IFI: Incremental fit index, CMIN: Minimum Discrepancy Function by Degrees of Freedom divided

Table 4: Convergent/divergent validity, internal consistency, and construct stability

Factor	Index						
	α	AIC	Ω	CR	AVE	MSV	ASV
Emotional and gender-based attention	0.786	0.324	0.794	0.788	0.320	0.740	0.797
Support for girls	0.840	0.564	0.848	0.850	0.593	0.325	0.883
Attention and provision of SRH needs	0.806	0.407	0.809	0.792	0.394	0.740	0.811
Violence avoidance	0.780	0.549	0.793	0.793	0.563	0.341	0.812

α: Cronbach's alpha coefficients, AIC: Average inter-item corolation, Ω: McDonald's Omega coefficient, CR: Construct reliability, AVE: Average variance extracted, MSV: Maximum shared squared variance, ASV: Average shared squared variance, SRH: Sexual and reproductive health

as Questionnaire for assessing men's attitudes toward male participation in women's SRH issues. Using EFA, four dimensions were accordingly extracted from this questionnaire, including "emotional and gender-based
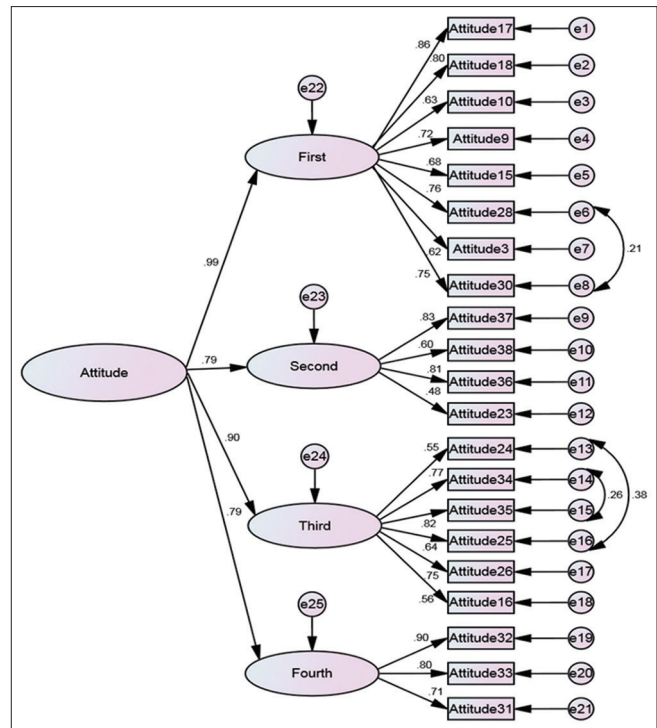
Figure 1: Scale of men's attitudes towards male participation in women's sexual and reproductive health issues: modified first-order confirmatory factor analysis model

attention," "support for girls," "attention and provision of SRH needs," and "violence avoidance" with a variance over 54%; indicating that the given questionnaire had good ability to explain and to measure the concept of male participation in women's SRH issues.

The first factor identified in the given questionnaire was "emotional and gender-based attention." In this respect, emotional intimacy could refer to one's emotions and feelings and those of others[33] and also denote having common resources with individuals who one can refer to for empathy and confidence. So, people endowed with emotional resources could feel like they have someone to refer to once they face problems.[34] As well, women have always highlighted meeting their emotional needs among the most important factors contributing to satisfying marital life. Therefore, expressing affection and receiving emotional attention, respect, praise, and compliment, as well as gratitude, are among behaviors that can affect sense of comfort in women if their emotional needs are met.[35]

The second factor was labeled as "support for girls." One example of support for girls was the attention to their health status during puberty which was of utmost importance

Figure 2: Scale of men's attitudes towards male participation in women's sexual and reproductive health issues: modified second-order confirmatory factor analysis model

since adolescent girls could have special conditions including experiencing the sensitive stage of puberty as well as their gender (womanhood) and responsibilities expected by communities. Today girls would also turn into tomorrow mothers, playing a key role in one's health status and that in communities. Adolescence is also known as a stress-inducing stage for teens and their parents, so the impact that parents can have during this stage and their help to undergo natural changes is very important.[36] Similarly, a healthy and strong father living with children could also increase their compatibility and decrease their aggressiveness. Moreover, fathers could play an important role in developing appropriate sexual orientations in girls and boys.[37]

The third factor was named "attention and provision of SRH needs." It should be noted that everything, including human resources providing services as well as environmental and social conditions such as family planning and telephone health advice lines could be called needs.[38] Accordingly, SRH refers to issues and difficulties among individuals regarding their SRH status. The presence of problems in each aspect of SRH including maternal safety, family planning, history of sexual relationships and behaviors, history of HIV/AIDS and STDs, as well as gender-specific violence, for example, women receiving prenatal and postpartum health-care services or violence as problems are thus called needs in this respect.[39,40]

The fourth factor was labeled as "violence avoidance." According to the WHO definition, sexual violence could refer to behaviors in an intimate relationship that could cause physical, sexual, or psychological harm, including physical violence, sexual coercion, psychological abuse, and behavioral control.[41] Accordingly, intimate partner violence could be considered as a general health concern in the world and also as one of the stress-inducing conditions which could mostly affect women of reproductive age living in a family environment filled with violence can thus bring about serious risks for women's health.[42] Physical and psychological complications, as well as acute and chronic reproductive health problems, are also common in women who are abused.[43]

The results of the present study also showed no convergent validity in the first-order CFA and the covariance between the factors was high. In this regard, Hear (1995) suggested that convergent validity could exist when the items of the construct were closer to each other and shared large variance with each other as well. It was also stated that divergent validity could arise when the items of the construct or the latent factors extracted could be completely separate from each other.[31] In other words, there would be no good convergent validity when the latent factors were not explained very well via the extracted items or the first-order extracted factors indicated a higher construct.[44] For this purpose, a second-order CFA was performed following the first-order CFA, showing sufficient convergent validity [Table 4]. The internal consistency of the questionnaire was also acceptable.

In the present study, composite reliability was reported to be at a high level. It should be noted that composite reliability is more important than Cronbach's alpha coefficient since it is not affected by the number of the questionnaire items and the construct obtained and just depends on the actual amount of factor loading of each item on a latent variable considering measurement error.[30]

Like numerous similar investigations in this area, there were some limitations in the present study, such as naming the factors based on the researchers' opinions. So, there was the possibility of categorization bias.[45,46] One other limitation of this study was to investigate male participation in a self-reporting form, so there was the possibility of some bias in this case. Moreover, superficial or incorrect responses to some items by some participants, along with existing sociocultural differences could be taken into account as expected limitations in this study.

CONCLUSIONS

The present study revealed that the Questionnaire for Assessing Men's Attitudes toward Male Participation in Women's SRH Issues was endowed with sufficient validity and reliability in the target group. Given the importance and the necessity of male participation in women's SRH issues, this questionnaire could be useful to precisely assess men's attitudes in this regard.

Implications

This questionnaire could be helpful to assessing community health status. Since women can have a great contribution to communities and given that men also play a key role in promoting women's health status, it is better to foster positive attitudes among men in this respect; however, an instrument assessing men's attitudes toward women's health had not been so far developed and the mentioned questionnaire was designed to meet this need. This questionnaire could be also utilized by all researchers across the world. Moreover, it could indirectly affect men's health status because the promotion of women's health in communities could consequently improve that of men. In other words, this research instrument targeted men's sexual health status. Furthermore, this questionnaire could be used by students of Counseling in Midwifery, family counselors, as well as family doctors.

Conflicts of interest

There are no conflicts of interest.

Authors' contribution

SKH designed the study, provided the important suggestions for the improvement of the first draft, revised he paper, and supervised the study process. SS collected the data and wrote the first draft of the article. FA advised the study. HSN advise the study and performed the statistical analysis. All the authors read and approved the manuscript and each author believes that the manuscript represents honest work.

REFERENCES

1. Unites Nation. Report of the International Conference on Population and Development: Cairo, 5-13 September 1994. Unites Nation; 1995.
2. Khani S, Hamzehgardeshi Z, Bozorgi N. A review on various aspects of male involvement in women's sexual and reproductive health. J Mazand Univ Med Sci 2017;27:99-116.
3. Walston N. Challenges and Opportunities for Male Involvement in Reproductive Health in Cambodia. United States Agency for International Development (USAID) Policy Project; 2005.
4. Bani S, Hosseini K, Hasanpour S, Valizadeh S, Abedi P. Awareness, attitude and participation rate of men in family planning programs in Iran. IJWHRS 2014;2:17-25.
5. Alimoradi Z, Simbar M. Male involvement in reproductive and sexual health: A systematic review of Iranian litreture. Hakim 2014;17:222-9.
6. Sensoy N, Korkut Y, Akturan S, Yilmaz M, Tuz C, Tuncel B. Factors affecting the attitudes of women toward family planning. Fam Plann 2018;13:33.
7. Population Action International. Men: Partners in Reproductive Health 2001. Available from: http://209.68.15.158/Publications/Reports/A_World_of_Difference/ Men_Partners_in_Reproductive_Health.shtml. [Last accessed on 2020 Jun 20].
8. Taghizadeh Z, Ravaghi H, Sarafraz N, Jafari N, Taheri M. Designing a model for promoting the participation of men in sexual and reproductive health using Structural Equation Modeling-Partial Least Squares (SEM-PLS). Electron J Gen Med 2019;16:em177.
9. Razavizadeh N, Peykani T. A review of social studies on family planning and reducing fertility in Iran. Farhang Strategy Q 2015;8:35-65.
10. Fathnezhad-Kazemi A, Sharifi N, Simbar M. A review on different aspects of men's participation in antenatal care. Jorjani Biomed J 2017;4:1-13.
11. Farideh KF, Jalal H. Qualitative study of the participation of married men in family planning in Zanjan city. Hakim Spring 2013;16:50-7.
12. Forouzi-Azizzadeh M, Mohammad-Alizadeh S. Kermani's parents' attitude towards sex education in 2003. Sci Res J Yazd Shahid Sadoughi Univer Med 2007;15:93-9.
13. Ghafari M, Niknami S, Kazemnejad A, Mirzaei E, Ghofranipour R. Designing and validating 10 conceptual scales to prevent HIV among adolescents. Behbood J 2007;11:38-50.
14. Abed-Saeedi J, Amir-Ali-Akbari S. Research Method in Medical Sciences (Research Design Methodology and Statistic). Tehran: Sociogram Publications; 2016.
15. Eadie E, Runtz M, editors. Development of a Measure of Women's Reproductive and Sexual Health: The Reproductive Health Scale (RHQ). Ottawa: CPA; 2007.
16. Female Questionnaire ABCDFGH – PMA; 2020. Available from: http://www.pma2020.org/sites/.../FQ-Round%20One-English-Generic%20Questionnaire.pdf. [Last accessed on 2020 Jun 20].
17. Cleland J, Ingham R, Stone N. Asking Young People about Sexual and Reproductive Behaviours Illustrative Core Instruments. WHO: Geneva: 2001. p. 105.
18. Sadeghipour Roudsari HR, Sherafat-Kazemzadeh R, Rezaie M, Derakhshan M. Reproductive health knowledge, attitudes and practices of Iranian and Afghan men in Tehran Province. East Mediterr Health J 2006;12:862-72.
19. Mohammadi M, Farahani M, Alikhani S, Zare M, Tehrani FR, Ramezankhani A, *et al*. Reproductive knowledge, attitudes and behavior among adolescent males in Tehran, Iran. Int Perspect Sexual Reprod Health 2006;32:35-44.
20. Simbar M, Tehrani FR, Hashemi Z. Reproductive health knowledge, attitudes and practices of Iranian college students. East Mediterr Health J 2005;11:888-97.
21. Sadat Z, Ghofranipour F, Azin SA, Montazeri A, Goshtasebi A, Bagheri A, *et al*. Development and psychometric evaluation of the

22. Behboodi-Moghadam Z, Esmaelzadeh-Saeieh S, Ebadi A, Nikbakht-Nasrabadi A, Mohraz M. Development and psychometric evaluation of a reproductive health assessment scale for HIV-positive women. Shiraz E Med J 2016;17:2-8.
23. Boroumandfar Z, Khorvash F, Taeri K, Salehi M, Yadegarfar G. Validity and reliability of knowledge, attitude and behavior assessment tool among vulnerable women concerning sexually transmitted diseases. J Family Reprod Health 2016;10:9-14.
24. Khani S, Moghaddam-Banaem L, Mohamadi E, Vedadhir AA, Hajizadeh E. Psychometric properties of the Persian version of the sexual and reproductive health needs assessment questionnaire. East Mediterr Health J 2015;21:29-38.
25. Hajizade-Valokolaee M, Khani S, Fooladi E, Peivandi S, Habibi F, Rahmani Z. Investigating sexual and reproductive health and its related factors in infertile women. J Mazand Univ Med Sci 2018;27:154-65.
26. Shah Hosseini Z, Simbar M, Ramezankhani A, Alavi Majd H. Designing and psychometrics of adolescent girls' health needs questionnaire. IJCBNM 2016;9:11-22.
27. Polit FD, Beck CT. Essentials of Nursing Research: Appraising Evidence for Nursing Practice LWW; Eighth, North American edition (February 9, 2013). p. 512.
28. Measurement and the measurement of change : a primer for the health professions / LWW; 1 edition (February 10, 2015) p 352
29. Lawshe CH. A quantitative approach to content validity. Pers Psych 1975;28:563-75.
30. Pahlavan Sharif S, Sharif Nia H. Structural Equation Modeling with Amos. 1st ed. Tehran: Artinteb; 2017.
31. Hair JF, Black WC, Babin BJ, Anderson RE, Tatham RL. Multivariate Data Analysis. Vol. 6. Upper Saddle River, NJ: Pearson Prentice Hall; 2006.
32. Ebadi A, Zarshenas L, Rakhshan M, Zareian A, Sharifnia SH, Mojahedi M. Principles of Scale Development in Health Science. 2nd ed. Tehran: Jamenegar; 2017.
33. Inglés CJ, Martínez-Monteagudo MC, Pérez Fuentes MC, García-Fernández JM, Mar Molero M, Suriá-Martinez R, *et al*. Emotional intelligence profiles and learning strategies in secondary school students. Educ Psychol 2017;37:237-48.
34. Delpasand KA, Khani S. Social and crime support: A comparative study of juvenile offenders in northern Ilam city. Q Soc Stud Res Iran 2012;1:89-120.
35. Roshani S, Nayeni NG, Bastani S. Experiencing women's sense of marriage: A qualitative study with the theory theory approach. Female Fam Stud 2014;3:61-89.
36. Mallahi M, Niknezhadi F. Effectiveness of positive thinking skills on improve the relation of veteran father and daughter. Iran J War Publi Health 2016;8:135-40,
37. Adibi G. The impact of group-based learning in a focused approach on the happiness of young adolescent girls deprived of father. Soc Health 2017;10:1-10.
38. Asadi-Lari M, Packham C, Gray D. Need for redefining needs. Health Qual Life Outcomes 2003;1:34.
39. Khani S, Moghaddam Banaem L, Mohammadi E, Vedadhir A, Hajizadeh E. The most common sexual and reproductive health needs in women referred to healthcare and triangle centers of Sari-2013. J Mazand Univ Med Sci 2014;23:41-53.
40. Hajizade-Valokolaee M, Khani S, Peivandi S. The validity and reliability of sexual and reproductive health needs questionnaire among Persian infertile women. J Nurs Midwif Sci 2018;5:15-20.
41. Mikton C. Preventing intimate partner and sexual violence against women: Taking action and generating evidence. Inj Prev 2010;16:359-60.
42. Laanpere M, Ringmets I, Part K, Karro H. Intimate partner violence and sexual health outcomes: A population-based study among

16-44-year-old women in Estonia. Eur J Public Health 2013;23:688-93.

43. Dolatian M, Hesami K, Shams J, Alavi Majd H. Evaluation of the relationship between domestic violence in pregnancy and postnatal depression. Sci J Kurdi Univer Med Sci 2008;13:57-68.

44. Fornell C, Larcker DF. Evaluating structural equation models with unobservable variables and measurement error. J Mark Resea 1981;18:39-50.

45. Moradzadeh R, Mansournia MA, Baghfalaki T, Ghiasvand R, Noori-Daloii MR, Holakouie-Naieni K. Misclassification adjustment of family history of breast cancer in a case-control study. Asian Pac J Cancer Prev 2015;16:221-6.

46. Ranjkesh F, Nasiri M, Sharif Nia H, Goudarzian A. Validation of the Persian version of the sleep condition indicator in pregnant women. Iran J Epidemiol 2019;14:366-74.