Design and Psychometric Properties of a Questionnaire for Assessing Sexual and Reproductive Health Needs of Married Adolescent Women: An Exploratory Sequential Mixed Methods Study

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Abstract

Background

To date, there is no valid and reliable instrument to specifically evaluate the married adolescent women's SRH needs. Hence, the aim of this study was to develop and evaluate the psychometric properties of a questionnaire for assessing Iranian married adolescent women's SRH needs.

Methods

The current exploratory sequential mixed method study was performed in two phases. In the first phase, a preliminary questionnaire was developed based on in-depth interviews with 34 married adolescent women and 4 key informants as well as a comprehensive literature review. In the second phase, validity of the questionnaire was assessed using face, content, and construct validity and reliability of the questionnaire was assessed using internal consistency and test-retest reliability.

Results

Based on qualitative content analysis and literature review, 137 items were extracted. After several modifications of the generated items, a 108-item questionnaire was prepared for the psychometric process. After checking face and content validity, 85 items remained in the study. In the exploratory factor analysis, eleven items were removed and the remaining 74 items were categorized into nine factors. The Cronbach's alpha coefficient and the Intraclass correlation coefficient were found to be 0.878 and 0.99 for whole scale, respectively.

Conclusions

The 74-item questionnaire has acceptable validity and reliability. Therefore, it can be used as an appropriate instrument for assessing married adolescent women's SRH needs.

Plain English Summary

Sexual and reproductive health needs of married adolescent women are different from those of married adult women or unmarried, sexually active adolescents. Therefore, this study was conducted to develop the Married Adolescent Women's Sexual and Reproductive Health Needs Assessment Questionnaire and evaluate its psychometric properties. This study was conducted in two phases. In the first phase, a questionnaire was developed through interviewing 34 married adolescent women. In the second phase, the questionnaire was revised based on ten married adolescent women's viewpoints. Also, ten experts (in midwifery, and reproductive health) commented on the grammar, wording, allocation, and scoring of the questionnaire items. The final questionnaire consists of 74 items in nine domains. MAWSRHNAQ is a valid and reliable questionnaire for assessing married adolescent women's SRH needs.

Introduction

Despite widespread efforts to end child marriage, about 1 in 3 girls in the developing countries marry before age 18 and 1 in 9 marry before the age of 15 (1, 2). If current levels of child marriages hold, the total number of women married in childhood will grow from more than 700 million today to nearly 1.2 billion by 2050 (3). Child marriage is associated with suboptimal reproductive health (4). Married adolescent women start childbearing earlier, give shorter birth intervals, and report having more unwanted pregnancies than their peers who marry later (5). They are also more likely to have limited access to, and use of, contraception, and other maternal healthcare services compared to adult peers (6). These factors put them at higher risk of pregnancy complications, which are the leading cause of death among adolescent girls in developing countries (7). Married adolescent women have also higher risk of HIV infection and other sexually transmitted infections, and are more likely to experience intimate partner violence, than unmarried, sexually active girls or women who marry later (8, 9). Further, babies born to adolescent mothers are at higher risk of preterm birth, low birth weight, stillbirth and neonatal mortality (10, 11). Yet, despite their large numbers, increased risk of pregnancy complications, and many unmet needs, little is known about the sexual and reproductive health (SRH) needs of married adolescent women. Awareness of SRH needs of married adolescent women is critical for developing interventions to reduce the negative health consequences of child marriage. Evidence suggests that the SRH needs of married adolescent women are different from those of married adult women or unmarried, sexually active adolescents (12). However, to the best of our knowledge, there are to date no valid and reliable instruments to specifically evaluate the married adolescent women's SRH needs. Hence, the purpose of this study was to design and evaluate the psychometric properties of a questionnaire for assessing SRH needs of married adolescent women in Iran.

Methods

This sequential, exploratory mixed methods research had two phases: Descriptions of these are provided as follows:

Phase 1: Item generation and questionnaire development

A conventional qualitative content analysis was designed to determine the concept and dimensions of the married adolescent women's sexual and reproductive health needs. The research was conducted from November 2017 to June 2018 in Mashhad city (healthcare centers) and Shahrood County (a maternity teaching hospital and urban/rural healthcare centers), Iran. Data were collected using semi-structured, in-depth interviews with 34 married adolescent women and 4 healthcare providers. In the interviews, married adolescent women were asked the following questions: "What does sexual and reproductive health mean to you?"; "What are the sexual and reproductive health needs of married adolescent women?"; "What are the barriers and challenges faced by married adolescent women in accessing and utilizing reproductive health services?"; "Have you ever experienced such challenges?"; "What major challenges did you face, and how did you handle them?". Healthcare providers were asked the following interview questions: "What are the sexual and reproductive health needs of married adolescent women?"; "What are the barriers and challenges faced by married adolescent women in accessing and utilizing reproductive health services?". Each interview lasted between 30 and 80 min. All interviews were audio-recorded with the participants' permission and transcribed verbatim for analysis. MAXQDA software (Version 10) was used to facilitate data management.

Then, the following databases were searched for relevant papers: Web of Science, PubMed/M*edline*, Scopus, and Science Direct. Google Scholar was also searched for any pertinent studies that may not have been found in the database search.

Key search terms used were as follows: 'child marriage', 'early marriage', 'married adolescent women', 'adolescent women', 'adolescent mother*', 'teenage mother*', 'adolescent', 'teenager', 'young mother*', 'adolescent pregnan*', 'teenage pregnan*', 'maternal health', 'antenatal care', 'prenatal care', 'postnatal care', 'skilled birth attendan*', 'delivery', 'obstetric care', 'STD', 'sexual transmited disease', 'unwanted pregnancy', 'health seeking' 'family planning methods', 'need*', 'reproductive health needs', 'sexual health needs', 'reproductive tract infections', 'RTI', 'health care seeking', 'pregnancy complications', 'early pregnancy', 'contraception', 'community support', 'reproductive health service', 'social support', 'support*', 'domestic violence', 'partner violence', 'violence*', 'IPV', 'intimate partner violence', 'information', 'knowledge', 'information seeking', 'experience', 'barriers*', 'decision-making'.

Extracted codes from the interviews and a review of the literature led to an initial questionnaire with 137 items. After several modifications of the generated items, a 108-*item* questionnaire was *prepared* for the next stage.

Phase 2: Psychometric properties of the questionnaire

In this phase, the validity (face, content and construct validity) and reliability (internal consistency and test-retest reliability) of the designed questionnaire were assessed. Details are as follows:

1. Face validity

Qualitative and quantitative methods were used to determine face validity. In qualitative assessment of face validity, 10 married adolescent women were recruited using convenience sampling to determine complexity, relevance, and ambiguity of the items. Then, the items were modified according to the married adolescent women's viewpoints.

For quantitative face validity assessment, the same adolescent women rated the importance of each item on a 5-point Likert scale. Then, the impact score for each item was calculated using the following formula: (frequency (%) × importance). Frequency reflects the percentage of raters who scored a score of 4 or 5, and importance reflects the mean score for the importance of each item. Items with an impact score of greater than or equal to 1.5 (which corresponds to a mean frequency of 50% and a mean importance of 3 on the 5-point Likert scale) were considered appropriate (13).

2. Content validity

For analyzing qualitative content validity, 10 experts in the fields of midwifery and reproductive health were requested to assess grammar, wording, item allocation, and scaling of the questionnaire. Then, items were amended based on their comments.

Quantitative assessment of content validity was done by calculating content validity ratio (CVR) and content validity index (CVI).

To determine CVR, the same ten experts were asked to score each item on a 3 - point Likert scale: 1 = not essential; 2 = useful, but not essential; and 3 = essential. The CVR for each item was calculated using the following formula: CVR = (ne – (N/2)) / (N/2). In this formula **N** is the total number of experts and **ne** is the number of experts that rated the item as essential. According to Lawshe's table, items with a CVR greater than or equal to 0.62 were retained (14). For calculating CVI, the same ten experts were asked to rate each item based on relevance, clarity, and simplicity on a 4-point Likert scale (rating from 1[not relevant/ not clear / not simple] to 4[highly relevant/ highly clear/ highly simple]) (15). The CVI was calculated for individual items (I-CVI) and the overall scale (S-CVI). The I-CVI was calculated as the proportion of experts who rated the item as 3 or 4 (16). The S-CVI was calculated as the average value of all the I-CVI values (16). Content validity indexes were considered acceptable when I-CVI and S-CVI were at least 0.78, and 0.90, respectively (16, 17). To counter the limitations of CVI, each I-CVI was adjusted for chance agreement by calculating the modified kappa statistic (κ*). To compute the modified kappa statistics, the probability of chance agreement was computed first: $Pc = (N/A\ (N - A) \times 0.5^N$, where N denotes the number of experts and A denotes the number of experts who agree that the item is relevant. Then, the κ* was calculated using the following formula: κ* = (I-CVI – Pc) / (1 – Pc) (16). K values are categorized as: [poor <0.4]; [fair 0.40 to 0.59]; [good 0.60 to 0.74]; [excellent >0.74] (16, 18).

3. Construct validity

Exploratory factor analysis (EFA) was performed in order to assess the construct validity of the questionnaire. The required sample size for conducting EFA is 3–10 subjects per item (19). Therefore, for 85-item questionnaire, a sample size of 85 × 3 = 255 was estimated; however, in practice 248 married adolescent women participated in the study and completed the questionnaire. Census method was used to recruit subjects from urban/rural healthcare centers in Shahrood County and Miami County of Semnan province, northeast Iran (July to November 2020). The inclusion criteria were: having Iranian nationality; being 10 to 19 years old; being married; living in Shahrood County or Miami County; given birth to ≥ 1 child or being pregnant with a gestational age of ≥ 20 weeks; and willingness to participate in research. Married nulliparous adolescents (who had never been pregnant or had never carried a pregnancy beyond 20 weeks) were not included in the study. Kaiser-Meyer-Olkin (KMO) was used for checking sampling adequacy and Bartlett's test of sphericity was used to examine the appropriateness of data for factor analysis. The KMO value should be greater than 0.5 and result of Bartlett's test of sphericity should be statistically significant with a *p* value less than 0.05 (20). Principal components analysis (PCA) with varimax rotation was conducted to extract the underlying factors (21). Factor loadings greater than or equal to 0.3 were considered appropriate (22). The number of factors was extracted based on eigenvalues greater than 1 and then see the scree plot. All statistical analyses were performed using SPSS software, version 22.0 (SPSS Inc., Chicago, IL, USA).

4. Internal consistency

The internal consistency for each dimension and the entire scale was assessed using the Cronbach's alpha coefficient. Values equal to or greater than 0.7 were considered acceptable (23).

5. Test-retest reliability

In order to assess test-retest reliability, 20 subjects completed the questionnaire twice with a 2-week interval. Test–retest reliability of the questionnaire was determined by calculating intraclass correlation coefficients

(ICC), and its results were interpreted as follow: 0–0.20 as poor; 0.21–0.40 as fair; 0.41–0.60 as good; 0.61-0.80 as very good; and 0.81–1 as excellent (19).

Ethics

The study protocol was approved by the Ethics Committee of Shahroud University of Medical Sciences with the ethical code: IR.SHMU.REC.1396.69. All subjects gave informed consent prior to participation in research.

Results

Phase 1: Item generation and questionnaire development

The results of the qualitative content analysis led to the extraction of the concept and dimensions of married adolescent women's sexual and reproductive health needs in four main categories, as follows: ‘improving the quality of educational institutions’, ‘husband's involvement in married adolescent woman's sexual and reproductive health’, ‘strengthening the foundations of married adolescent women's sexual and reproductive health’, and ‘need for social support’.

The preliminary questionnaire consisting of 137 items was developed according to the extracted codes from qualitative study (135 items) and a comprehensive literature review (2 items). After careful review of the items by the research team, the number of items was reduced to 108. Seventy-nine of the items were rated on a 5-point Likert scale ranging from 1 (strongly disagree, not at all, never) to 5 (strongly agree, very much, always), and 29 were placed on a 3-point Likert scale (1 = correct, 0 = incorrect and I do not know). Eighteen items were negatively worded.

Phase 2: Psychometric properties of the questionnaire

1. Face validity

In qualitative face validity, six items were modified and three were merged into each other based on married adolescent women's suggestions. Then, in quantitative face validity, eight items were deleted due to their impact score of less than 1.5.

2. Content validity

In qualitative assessment of content validity, twenty-six items were modified and two were merged into each other based on experts' recommendations. In the quantitative assessment of content validity, twelve items with a CVR of less than 0.62 were deleted. All remaining 85 items had an excellent content validity (I-CVI $\geq$ 0.78, κ^* $\geq$ 0.74). The average scale content validity (S-CVI/Ave) was 0.94.

3. Construct validity

For exploratory factor analysis, 248 married adolescent women completed the 85-item questionnaire.

The Kaiser-Meyer-Olkin index (0.716) and Bartlett’s test of sphericity ($\chi^2 = 4803.455$, df = 2145, $p < 0.001$) indicated that the sampling was adequate for EFA. The results of the PCA with varimax rotation indicated an initial thirty-factor solution with eigenvalues greater than 1 that accounted for 69.06% of the total variance.

However, due to the large number of factors and the uninterpretable results, the scree plot was used to determine the number of factors (9). The scree plot showed that the major variance was related to the first nine factors (Figure 1). Factor analysis with nine constant factors was repeated with varimax rotation.

The nine factors explained 34.71% of the observed variance.

As shown in Table 1, eleven items that were not loaded on any of the factors were excluded from the questionnaire, whereby the questionnaire was reduced to 74 questions. Subsequently, each factor was named according to its items. factor 1: need to improve married adolescent women's sexual quality of life (13 items); factor 2: need to promote married adolescent women's SRH self-care (8 items); factor 3: need to improve married adolescent women's SRH self-efficacy (6 items); factor 4: need to increase married adolescent women's SRH knowledge (18 items); factor 5: need to increase husband's involvement in married adolescent woman's SRH (9 items); factor 6: need to improve the performance of health care providers (6 items); factor 7: need to strengthen the family support to married adolescent women (8 items); factor 8: need to improve family involvement in SRH education of married adolescent women (3 items); and factor 9: need to provide specific premarital counseling to married adolescent women (3 items).

4. Internal consistency

The Cronbach's alpha coefficient for the entire instrument was .878 and ranged from .704 to .809 for its sub-scales, all of which reflect acceptable internal consistency. Therefore, no items of the scale were omitted in this phase. The results are shown in Table 2.

5. Test-retest reliability

The intraclass correlation coefficient (ICC) was .99 for the entire instrument and ranged from .97 to 1 for its subscales, lending support for the stability of the questionnaire. The results are shown in Table 2.

Scoring

The final questionnaire consists of 74 items divided into nine separate domains. The score of items related to the domain of 'need to increase married adolescent women's SRH knowledge' has a two-point Likert scale (1 = correct, 0 = incorrect and I do not know). The items of other eight domains are rated on a five-point Likert scale ranging from 1 (strongly disagree, not at all, never) to 5 (strongly agree, very much, always). Nine negatively worded items in the questionnaire are reverse scored, including three items in factors 1 and 9, two items in factor 5 and one item in factor 6.

To convert raw scores into standard scores, the following conversion formula was used:

Transformed scale = [(actual raw score-lowest possible row score) / possible row score range)] × 100

Where, 'actual raw score' is the values achieved through summation, "lowest possible raw score" is the lowest possible value that could occur through summation, and "possible raw score range" is the difference between the maximum possible raw score and the lowest possible raw score.

Using this formula, each subscale is scored on a scale of 0 to 100, with higher scores indicating fewer unmet need.

The total score of the questionnaire is computed using calculating the average of the total modified scores of the questionnaire. Higher scores in the entire questionnaire represent fewer unmet need for sexual and reproductive health.

Discussion

The aim of this exploratory sequential mixed methods study was to develop and evaluate the psychometric properties of a questionnaire for assessing married adolescent women's sexual and reproductive health needs, called the MAWSRHNAQ. To our knowledge, the MAWSRHNAQ is the first psychometrically tested scale available for assessing married adolescent women's SRH needs. The initial questionnaire was developed based on in-depth interviews with married adolescent women and key informants as well as a comprehensive literature review. Results from the psychometric assessment indicated that the scale has an acceptable validity and reliability. The results of face validity showed that the words and phrases used in the MAWSRHNAQ are easy to understand by the target population. Moreover, the content validity of the instrument was confirmed by a panel of experts. The construct validity of the questionnaire was performed using EFA. The Cronbach's alpha of the questionnaire was 0.878; indicating acceptable internal consistency and test-retest reliability of the questionnaire was excellent, with an ICC of 0.99. After completing the validity and reliability stages, the final version of questionnaire consists of 74 items in 9 domains: need to improve married adolescent women's sexual quality of life, need to promote married adolescent women's SRH self-care, need to improve married adolescent women's SRH self-efficacy, need to increase married adolescent women's SRH knowledge, need to increase husband's involvement in married adolescent woman's SRH, need to improve the performance of health care providers, need to strengthen the family support to married adolescent women, need to improve family involvement in SRH education of married adolescent women, and need to provide specific premarital counseling to married adolescent women.

Some limitations of this study should be mentioned. First, subjects were recruited from two counties in the northeast Iran, which may limit generalizability of our findings to other regions. Another limitation is the sample size, which was the minimum required for factor analysis and not relatively large. The other limitation is the long length of the questionnaire, which might have led to participants' boredom and could have influenced the accuracy of the participants when completing the questionnaire. A further limitation of the current work is lack of comparable valid and reliable instruments in the literature. In addition, the possibility of response bias is an inherent problem with any self-report measure. Our research also has some strengths. The questionnaire is developed based on the experiences of target group and a comprehensive literature review. Selection of married adolescent women from urban-rural areas is other strength. Another strength of this study is utilizing a mixed methods sequential explanatory research design. Moreover, the psychometric properties of the questionnaire were assessed through analyses of its face, content, construct validity, internal consistency, and stability.

Conclusion

The MAWSRHNAQ scale fills a gap in the literature, given the lack of sexual and reproductive health needs assessment tools for married adolescent women. This valid and reliable instrument can be used by researchers, and policymakers to assess married adolescent women's SRH needs before and after design and develop specific interventions for improving SRH status of this group of women. However, further modifications and psychometric testing of this new instrument should be performed before using it in different cultural contexts.

Abbreviations

MAWSRHNAQ: Married Adolescent Women's Sexual and Reproductive Health Needs Assessment Questionnaire

Declarations

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Availability of data and materials

Data is yet to be analyzed for other publications, hence the availability of data is currently limited. Contact a.ghiasi25@gmail.com to request data availability.

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Contributions

AGH, AK, FZ, MF, KV were involved in the design of the research project. AGH, FZ and LB participated in the data analysis. AGH wrote the first draft of the paper and all other authors reviewed and approved the manuscript.

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Ethics declarations

Ethics approval and consent to participate

This study was approved by the Ethics Committee of Shahroud University of Medical Sciences, Shahroud, Iran (code: IR.SHMU.REC.1396.69).

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

References

1. United Nations Population Fund. Marrying too young: end child marriage [internet]. New York, NY: United Nations Population Fund; 2012.
2. UNICEF. Progress for children: a report card on adolescents. New York: UNICEF; 2012.
3. Brides GN. The Role of Parliamentarians in Ending Child Marriage A Toolkit. Girls Not Brides. 2016.
4. Doskoch P. Child marriage associated with suboptimal reproductive health. International Perspectives on Sexual and Reproductive Health. 2013;39(2):105.
5. Raj A, Saggurti N, Balaiah D, Silverman JG. Prevalence of child marriage and its effect on fertility and fertility-control outcomes of young women in India: a cross-sectional, observational study. The lancet. 2009;373(9678):1883-9.
6. Maharjan B, Rishal P, Svanemyr J. Factors influencing the use of reproductive health care services among married adolescent girls in Dang District, Nepal: a qualitative study. BMC pregnancy and childbirth. 2019;19(1):1-9.

7. Sychareun V, Vongxay V, Houaboun S, Thammavongsa V, Phummavongsa P, Chaleunvong K, et al. Determinants of adolescent pregnancy and access to reproductive and sexual health services for married and unmarried adolescents in rural Lao PDR: a qualitative study. BMC pregnancy and childbirth. 2018;18(1):219.
8. Bruce J. Child marriage in the context of the HIV epidemic. 2007.
9. Speizer IS, Pearson E. Association between early marriage and intimate partner violence in India: a focus on youth from Bihar and Rajasthan. Journal of interpersonal violence. 2011;26(10):1963-81.
10. Gilbert W, Jandial D, Field N, Bigelow P, Danielsen B. Birth outcomes in teenage pregnancies. The journal of maternal-fetal & neonatal medicine. 2004;16(5):265-70.
11. Mohsin M, Bauman A, Jalaludin B. The influence of antenatal and maternal factors on stillbirths and neonatal deaths in New South Wales, Australia. Journal of biosocial science. 2006;38(5):643.
12. Santhya K, Jejeebhoy SJ. Sexual and reproductive health needs of married adolescent girls. Economic and Political Weekly. 2003:4370-7.
13. Lacasse Y, Godbout C, Series F. Health-related quality of life in obstructive sleep apnoea. European Respiratory Journal. 2002;19(3):499-503.
14. Lawshe CH. A quantitative approach to content validity. Personnel psychology. 1975;28(4):563-75.
15. Davis LL. Instrument review: Getting the most from a panel of experts. Applied nursing research. 1992;5(4):194-7.
16. Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. Research in nursing & health. 2007;30(4):459-67.
17. Fleiss J, Levin B, Paik M. Statistical methods for rates and proportions. John Wiley & Sons. New York. 1981;870.
18. Wynd CA, Schmidt B, Schaefer MA. Two quantitative approaches for estimating content validity. Western journal of nursing research. 2003;25(5):508-18.
19. Munro BH. Statistical methods for health care research: lippincott williams & wilkins; 2005.
20. Field A. Discovering statistics using spss for windows: Advanced techniques for the beginner. Sage publications; 2000.
21. Ferguson E, Cox T. Exploratory factor analysis: A users' guide. International journal of selection and assessment. 1993;1(2):84-94.
22. Kline RB. Principles and practice of structural equation modeling 2nd ed. New York: Guilford. 2005.
23. Cronbach LJ. Coefficient alpha and the internal structure of tests. psychometrika. 1951;16(3):297-334.

Tables

Table1: The results obtained from exploratory factor analysis using varimax rotation

Items	Factor loading								
	1	2	3	4	5	6	7	8	9
My husband prepared me both mentally and emotionally for the first time sex.	0.324	0.315							
In our sexual relationship, my husband does not do anything that bothers me or if I ask him, he won't repeat it again.	0.559								
My husband pays attention to my sexual needs.	0.654								
My husband spends enough time on foreplay before intercourse.	0.483								
I enjoy having sex with my husband.	0.684								
My husband kisses or hugs me after sex.	0.496								
I can openly express my love and feelings for my husband during sex.	0.657								
My husband forces me to have sex with him when I don't want to.	0.462		0.352						
I have no interest to have sex.	0.628								
Because of the fear of the consequences of saying no to my husband, despite not having desire, I am forced to have sex with him.	0.579								
I can initiate sex with my husband.	0.396								
I talk openly to my husband about my sexual needs and expectations.	0.465								
I don't criticize my husband's sexual behavior when he is tired, angry, upset, or sexually aroused.	0.387								

As soon as I know I am pregnant, make first prenatal appointment with a doctor or midwife.	0.511	
I eat a varied diet during pregnancy based on a range of foods from the five food groups (fruits, vegetables, grains, protein foods, and dairy).	0.352	0.336
For appropriate weight gain during pregnancy, I follow the healthcare provider s ' advice.	0.357	
If I suspect that I have a vaginal infection, see a doctor as soon as possible.	0.358	
If I *have* a *sexual problem*, I will try to solve it.	0.402	
I take vitamin and mineral supplements (especially iron, folic acid, and calcium) during pregnancy and up to 3 months after delivery.	0.446	
If I have a vaginal infection, I will complete the entire course of treatment.	0.419	
During pregnancy, I brush and floss my teeth regularly, even if nausea and vomiting or bleeding gums occur.	0.429	
I can persuade my husband to pay attention to my ideas about timing and number of births.		0.537
I can persuade my husband to involve in family planning.		0.575
If I decide to use a method of contraception, I am able to get it.		0.340
During pregnancy if I feel that I can no longer control my anger when I argue with my husband, I will postpone the		0.486

discussion to another time.		
When I encounter a stressful situation during pregnancy (such as facing financial difficulties, arguing with husband, Concern about fetal health), I can manage it.	0.333	
I feel comfortable talking about my sexual and reproductive health concerns with healthcare professionals.	0.348	
Pregnancy is possible after even only one unprotected sex.		
A woman is most likely to become pregnant in the middle of her menstrual cycle (usually about 14 days before the start of the next period).		0.478
Pregnancy can happen if semen is spilled outside the vagina (such as in intercrural sex, or anal sex).		0.439
A woman can get pregnant if she has unprotected sex during her menstrual cycle.		
The correct way to take the oral contraceptive (COC) tablet is to take one every day (regardless of whether you have sex or not) for 21 days, then stop for seven days.		0.314
Emergencycontraception should not be used as an ongoing *birth control* method.		
The condom should be unrolled onto an erect (hard) penis before any penetration occurs.		0.380
Birth control pills do not cause infertility.		0.463
The mini-pill is a good choice for breast-feeding		0.430

mothers because it does not reducethe milk supply.	
IUD expulsion isn't common.	
Preconception care should begin at *least 3 months before* a woman becomes pregnant.	0.341
Earlypregnancies among *adolescents* have major health *consequences* for *adolescent* mothers and their babies.	0.518
Because I'm a teenager, I should pay more attention to my diet during pregnancy than other pregnant women.	0.482
Fever and chills, severe headache, vision problems; such as blurring or seeing flashing lights, and severe nausea -vomiting are some warning signs of possible pregnancy complications.	0.338
Periodontal infection such as tooth decay and gum disease is linked to an increased risk of premature birth and low birth weight.	0.378
In a normal and healthy pregnancy, orgasm doesn't increase the risk of miscarriage or preterm labor.	0.712
Having sex during pregnancy is generally safe and won't hurt the fetus.	0.586
Genital herpes and genital warts are both transmitted through sexual contact.	0.603
Apart from HIV/AIDS, there are many other diseases that can be transmitted through sexual contact.	0.583
Condoms are most	0.379

effective at protecting against sexually transmitted diseases like HIV/AIDS.					
Sexually transmitted diseases can be passed from a mother to her baby and can cause miscarriage or stillbirth.					
Genital ulcers are usually caused by sexually transmitted diseases.		0.409			
It is not possible to know if someone has HIV/AIDS by looking at him or her.					
HIV / AIDS cannot be transmitted through kissing, hugging, sharing toilets, towels, or dishes.		0.367			
My husband and I decide together which form of birth control to use.			0.447		
My husband pays attention to his sexual hygiene.			0.335		
My husband cooperates with me during treatment of genital infection (e.g, he stops having sexual intercourse, or uses a condom from the beginning of sex, and takes medication if necessary).			0.535		
My husband is emotionally abusive toward me while I am pregnant.			0.437		
My husband is physically abusive toward me while I am pregnant.	0.301		0.361		
My husband accompanies me to prenatal care (including appointments, screening tests and ultrasound scans) and the delivery process.			0.391	0.316	
My husband and I decide together how many children to have, and when to have them.			0.532		

My husband understands my mood swings during pregnancy.	0.376	
My husband helps me with household chores during pregnancy.	0.378	
My husband helps me take care of the newborn baby.		
I am satisfied with the way the health care providers communicate with me.		0.566
I have received information about *nutrition during pregnancy, sex during pregnancy*, oral health care during pregnancy, childbirth preparation classes, how to take iron supplement, benefits of taking iron and multivitamins during pregnancy from health care providers.		0.678
Because I became pregnant as a teenager, I receive special attention from health care providers during, and after pregnancy.		0.458
Healthcare providers provide me all the information I need (pregnancy nutrition, sex in pregnancy, pregnancy risk symptoms, how to use contraception ...) without having to wait for a question from me.		0.735
Health care providers provide me the required *health information in a simple and understandable language*.		0.423
Because I became pregnant before the age of 19 years, health care providers blame me.		0.389
In internal (vaginal) examinations during		

labour or during normal delivery, Midwives - obstetricians treat me with respect.	
My family tries to keep me calm and stress free during pregnancy.	0.385
My husband's family tries to keep me calm and stress free during pregnancy.	0.538
I need financial assistance for pregnancy-related health care costs.	
My family will financially support me for costs associated with pregnancy (*e.g. for purchasing foods, routine antenatal tests, ultrasound screening, or frequent hospitalizations)*, if needed.	0.548
My husband's family will financially support me for costs associated with pregnancy (*e.g. for purchasing foods, routine antenatal tests, ultrasound screening, or frequent hospitalizations),* if needed.	0.705
I need help to take care of my child.	
I will receive help from my family to take care of my child, if needed,	0.333
I will receive help from my husband's family to take care of my child, if needed.	0.707
During pregnancy and postpartum, I receive attention and emotional support from my family.	0.441
During pregnancy and postpartum, I receive attention and emotional support from my husband's family.	0.696

I received sexual and reproductive health information from my family before I got married.	0.633	
I received sexual and reproductive health information from my family during the engagement period.	0.699	
I feel comfortable talking about sexual and reproductive health issues with my mother.	0.488	
In the pre-marriage counseling program, sexual and reproductive health issues should be taught in several sessions.		0.409
In pre-marriage counseling classes, sexual and reproductive health content is taught insufficiently.		0.387
It is necessary to hold a special pre-marriage counseling training class for teenagers.		0.362
If in the pre-marriage counseling classes, in addition to group education, the conditions for couple education were provided, the possibility of understanding of the subject taught would be increased.		

Table 2: Cronbach's alpha coefficient and ICC of the instrument and its subscales

Subscales	Cronbach's alpha	ICC*
Need to improve married adolescent women's sexual quality of life	*0.809*	*0.99*
Need to promote married adolescent women's SRH self-care	*0.736*	*0.99*
Need to improve married adolescent women's SRH self-efficacy	*0.704*	*0.98*
Need to increase married adolescent women's SRH knowledge	*0.736*	*0.99*
Need to increase husband's involvement in married adolescent woman's SRH	*0.743*	*0.99*
Need to improve the performance of health care providers	*0.720*	*0.98*
Need to strengthen the family support to married adolescent women	*0.772*	*0.99*
Need to improve family involvement in SRH education of married adolescent women	*0.766*	*1*
Need to provide specific premarital counseling to married adolescent women	*0.716*	*1*
Total	*0.878*	*0.99*

ICC*: Intraclass correlation coefficient

Figures

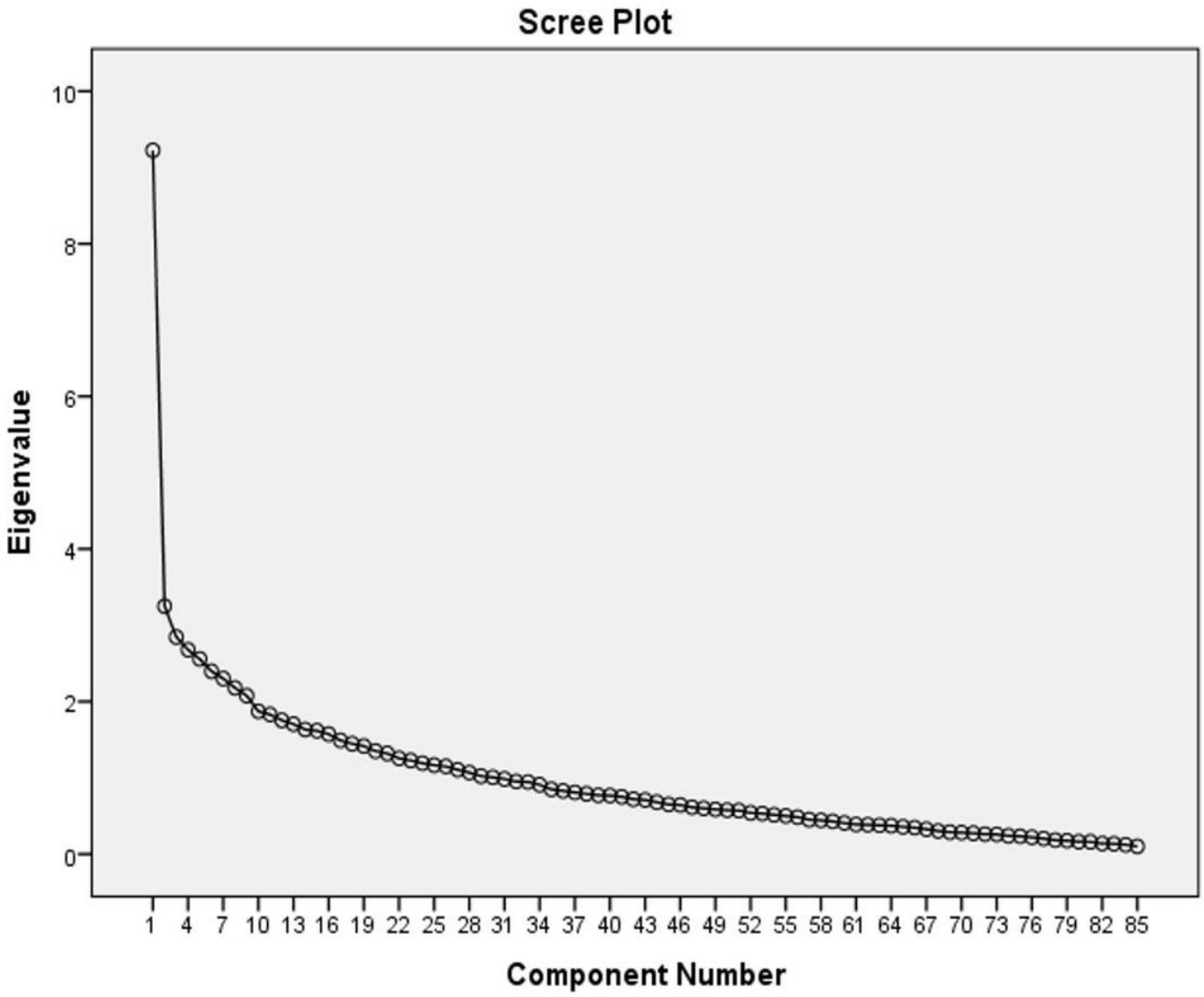

Figure 1

Scree plot.