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Psychometric Properties of the Persian Version of Sexual and Reproductive Health Illustrative Questionnaire

Effat Merghati-Khoei
Iranian center of addiction studiees. Tehran university of medical sciences

Mahnaz Motamedi (mahnazmotamedi@yahoo.ca)
Iran Ministry of Health and Medical Education https://orcid.org/0000-0002-1344-5717

Mohammad Shahbazi
Department of Behavioral and Environment Health, Jackson State University

Shahrzad Rahimi-Naghani
Institute of Public Health, Heidelberg University

Mehrdad Salehi
Department of psychiatry, Isfahan University of medical sciences

Ahmad Hajebi
Research Center for Addiction & Risky Behaviors(RECARB), Iran University of Medical Sciences

Safieh Shah
Aga Khan University

Research

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Abstract

Background: Sexual health is a human right, yet there is a lack of comprehensive, standardized and culturally appropriate instruments to assess sexual health in Iran.

Objectives: This study aimed to assess the psychometric properties of the Persian version of the Sexual and Reproductive Health Illustrative Questionnaire (SRH-IQ).

Material and methods: This was a methodological psychometric study conducted in Tehran, Iran, during 2014–2015, with a sample of 755 men and women aged 15–49 years. The SRH-IQ was translated and adapted via the method recommended by the world health organization.. Qualitative and quantitative face and content validity were evaluated and the construct validity assessed using exploratory and confirmatory factor analysis. The internal consistency and the stability of the tool were assessed using Cronbach's alpha, Intraclass Correlations Coefficient (ICC) and test–retest method.

Results: Several items were changed in accordance with the cultural and religious beliefs of Iranians. The mean item-level content validity index (I-CVI) was 0.98; the content validity ratio (CVR) was high at 0.976; and scale-level content validity average (S-CVI/Ave) and scale level content validity universal agreement (S-CVI/UA) were found to be 0.97 and 0.94, respectively. Exploratory and Confirmatory factor analysis confirmed that all items in domains were significant, and the results supported goodness of fit indices, too. The final Cronbach's alpha coefficients of all sub-scales were > 0.60 indicating acceptable internal consistency. Test-Retest data analysis showed that the ICC was higher than 0.88 for most items (0.75–0.99). Kappa coefficients were above 0.8 in most instances (0.65–0.99).

Conclusion: Given the appropriate validity and reliability of the Persian version of the SRH Questionnaire, it can be used to assess sexual health knowledge, attitudes, behaviour and outcomes of Iranian adults.

Plain English Summary Sexual health is an integral component of human right, and it is an important basis for an individual's physical and psychological well-being, as well as the social and economic development of communities. Evaluating the sexual health needs of people is necessary to address sexual health goals. Several studies have been conducted within the field of sexual health in Iran, however, no Persian instrument is available to assess the sexual health needs of adults within the reproductive ages. In order to make it applicable within the context of Iranian culture, we have investigated the psychometric properties of the Persian version of the Sexual and Reproductive Health Illustrative Questionnaire (SRH-IQ) among Iranian men and women in reproductive age. With this aim, we have recruited 755 men and women aged between 15-49 years in urban Tehran, Iran. Several items of the questionnaire were changed in accordance with the cultural and religious beliefs of Iranians. Exploratory and Confirmatory factor analysis confirmed that all items in domains were significant, and the results supported goodness of fit indices, too.

All in all, this study has given the appropriate validity and reliability of the Persian version of the SRH Questionnaire, and it can be used to assess sexual health knowledge, attitudes, behaviour and outcomes

of Iranian adults.

Background

According to the World Health Organization (WHO) *"sexual health is a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity*(1)*."*

Sexual health is an integral component of human rights (2, 3), and it is an important basis for an individual's physical and psychological well-being, as well as the social and economic development of communities (4, 5).

Evaluating the sexual health needs of people is necessary to address sexual health goals.

Several studies have been conducted within the field of sexual health in Iran (6–9), but these studies did not utilize endorsed and validated instruments. In fact, the absence of such instruments in Persian (the official language in Iran) presented a challenge for researchers in this field.

Recently, a few studies have been conducted to design case specific questionnaires for measuring the sexual health of patients with spinal cord injuries (10); a scale to identify sexual behaviours in young women (11), and the Persian version of modified multidimensional sexual self-concept questionnaire (12). However, no Persian instrument is available to assess the sexual health needs of adults within the reproductive ages.

Cleland developed the Sexual and Reproductive Health Illustrative Questionnaire (SRH-IQ) to assess the knowledge, attitude, behaviour and outcomes in the domain of sexual and reproductive health (13). This instrument was used by Mohammadi and Khalajabadi-Farahani to investigate the knowledge, attitudes, and behaviour of Iranian adolescents. In their studies, the tool was summarized according to the objectives of the studies. They did not perform the psychometric assessment of the questionnaire for age group 15–49 years (6). This instrument has also been used in other countries including India, Nepal, Ghana, Boamah, Saudi Arabia, Kenya Nigeriya, China and Tanzania, where religiosity is a strong component informing culture (14–17).

Objective:

In order to make it applicable within the context of Iranian culture, this study aimed to investigate the psychometric properties of the Persian version of the SRH-IQ among Iranian people aged between 15 and 49 years in urban Tehran.

Materials/patients And Methods

This was a methodological study conducted in Tehran, Iran, from May 2014 to September 2015.

The Questionnaire:

The SRH-IQ contains eight domains including: source of information on sexual and reproductive health (16 items), sexual and reproductive health knowledge (26 items), sexual ideology and attitude (24 items), protective behaviours (31 items), contraceptives (28 items), current sexual partners/encounters (35 items), sexual and reproductive health services (17 items) and sexual and reproductive health outcomes (16 items). Of these eight domains, three domains: sexual and reproductive health knowledge, sexual attitude, and sexual permissiveness are measured by a three-point Liker scale (1- agree, 2- not sure, 3- disagree or 1- correct, 2- not sure, 3- false), and the remaining domains are measured based on yes/no format or descriptive categories.

The SRH knowledge contains 26 items in four sections: knowledge of physiology (3 items), sexually transmitted infections/ HIV (7 items), contraception (11 items) and specifically condoms (5 items). A 2-point scale was considered for each question. A score of 2 was assigned for each correct answer, while a score of 1 was assigned for an uncertain or wrong answer.

Sexual attitude includes 23 items on attitudes toward sexual permissiveness (9 items), coercion (2 items), abortion (2 items), peer influence (2 items) and condom (8 items). A score of 3 was assigned for each “liberal” (higher sexual permissiveness) answer, while a score of 2 was assigned for an uncertain and a score of 1 for “conservative” (lower sexual permissiveness) answer.

Instrument translation

After securing permission from the developers of the questionnaire, Persian translation was carried out simultaneously by two linguists (English – Persian translation experts) using the method recommended by the World Health Organization (WHO) (18). Two translations were composed by the experts to create a single translation. Then, the questionnaire was translated back into English by two translators, one English speaking fluent in Persian and another Persian speaking fluent in English. To confirm the conceptual uniformity and synonymy of the words and phrases, the English version was compared with the original version by other English language and sexual and reproductive health experts and an agreed upon final version was adapted. With a careful review of this version by an expert in instrument designing and three experts in sexual and reproductive health, themes and phrases that were irrelevant to the Iranian society were modified or deleted. Finally, the provisional version of the Persian questionnaire was developed.

Face and Content validity

Qualitative and quantitative methods were used to assess the content validity. For qualitative methods, a multi-disciplinary panel of experts; including SRH specialists, public health professionals, psychiatrists, epidemiologists, sociologists and anthropologists reviewed the instrument in detail. They paid attention

to Persian grammar and syntax, using appropriate words to fit the selected meaning and eliminated unnecessary items, which were considered culturally inappropriate. The experts also made the decision to organize the questionnaire, so that it could be self-administered and reformulated the format accordingly. The University Ethics Committee also suggested a few questions be rephrased to be more ethically sensitive and viable in the best interest of the people answering the questions.

In the quantitative method, the content validity ratio (CVR) and the content validity index (CVI) were measured.

A limited number of questions needed to be modified in terms of clarity and transparency and subsequent modifications were sent to the experts and approved. To assess the CVR, academics in the field of SRH were brought on as advisors to rate each item as “necessary”, “helpful but not necessary” or “not necessary”. Eight out of 10 professionals completed the task, and the answers were calculated according to the Lawshe formula (19).

To assess the CVI, the Persian version of the questionnaire was presented to 14 SRH specialists (different from previous group) and they were asked to evaluate each item in terms of "simplicity and fluency", "relevance" and "clarity and transparency" on a four Likert scales, then the CVI was calculated for each item (I-CVI). Eight of the experts completed the task. Based on the mean scores of the content validity index of the questionnaire items, the average content validity index of the questionnaire (S-CVI/ Average) was calculated. Also, the scale level content validity/ Universal agreement (S-CVI/UA) of the questionnaire was calculated. This indicator expresses the ratio of the total phrases that all experts have scored 3 or 4 (20).

To obtain the face validity, the instrument was piloted with ten people of the target group from different regions of Tehran to assess it in terms of simplicity, clarity and readability. Items were reviewed and amended according to the pilot group’s comments.

Phase 2: Construct validity and Reliability

The sample size was determined according to the number of items (21). Therefore, a purposeful sample of 800 males and females (aged 15–49 years) residing in Tehran, the capital of Iran, were recruited using convenience sampling method in June 2014. Trained staff explained the objectives of the study to the individuals who agreed to complete the questionnaire. Written informed consent was taken prior to providing the self-administered questionnaire.

Female staff assisted female participants to complete the questionnaires and male staff assisted the male participants, in a culturally sensitive manner, and the participants were ensured that they are free to withdraw from the study at any point without any judgment, stigma. The issues of confidentiality as well as de-identifying data procedures that were later carried out were also explained to potential participants.

Inclusion criteria consisted of: a certain level of literacy that led to their ability to understand and communicate in Persian, residence of Tehran, not having any physical or mental debilitating conditions preventing replying reliably to the questionnaire, and being in the age range of 15 to 49 years.

To determine the construct validity of the Persian version of the instrument, exploratory and confirmatory factor analyses were performed. We used LISREL 8.8 software for confirmatory factor analysis (CFA), and SPSS version 16 for exploratory factor analysis includes Bartlett specificity test and Kaiser-Meyer-Olkin (KMO) for assessing the proportionality of the factor analysis model and adequacy of sampling respectively. We used the principle components analysis with method of Varimax rotation (22).

In the present study, minimum load factor was considered 0.3 for each item. After extracting the factors and expressions in each factor, the consistency of the factors with the concept and the main aspects of SRH was investigated.

To examine model fitness, the following goodness-of-fit indices were used: the adjusted root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), Tucker-Lewis index and comparative fit index (CFI) (23). The cut-off values of ≤ 0.06, ≤ 0.08, ≥ 0.95, were thought acceptable for RMSEA, SRMR, TLI and CFI respectively (24).

The Cronbach's alpha was used to ensure the internal consistency of the measurement. The Cronbach's alpha higher than 0.6 was considered acceptable (25). Test-retest analysis was used to determine the stability of the questionnaire. A sample of 60 individuals (30 men and 30 women) completed the questionnaire twice with a two-week interval.

Stability for binary items was assessed using the Kappa statistics (26), and for Likert scales using the intraclass correlation coefficient (ICC) (27).

Ethical Consideration

All the processes of this study were approved by the Ethics Committee in the Isfahan University of Medical Sciences (reference: 393460).

Results

Face and content validity

Based on the opinion of the experts in qualitative content validity, several items were changed in accordance with the cultural and religious beliefs of Iranians. For example: *"Did you ever stroke your boy/girlfriend's vagina/penis so that you climaxed?" was* changed to: *"Did you ever have courtship with him/her that brought you to orgasm?"* And the question: *"Did you ever put your penis inside your girlfriend's vagina? / Did your boyfriend ever put his penis inside your vagina?"* became *"have you ever had sexual intercourse with your boy/girlfriend?"*

Also in this phase some modifications were implemented. For example *"intercourse"* was modified to *"vaginal, anal and oral intercourse"*, as in Iran, 'intercourse' mainly refers to 'vaginal intercourse'.

The overall CVR score was calculated as 0.976; the mean I-CVI for each item was 0.98. S-CVI/Ave and S-CVI/UA were 0.97 and 0.94 respectively (Table 1).

Table 1
The CVI and CVR coefficients[a] of 10 domains of the SRH-IQ

Domains	CVI	Mean of I-CVI	CVR
Sources of information on sexual and reproductive health	> 0.99	> 0.99	0.98
Sexual and reproductive health knowledge	> 0.99	> 0.99	0.98
Sexual conduct including number and types of sexual partner and details of first sexual partnership	0.98	0.99	0.98
Sexual ideology/ Sexual attitude	> 0.99	> 0.99	0.98
Sexual permissiveness	> 0.99	> 0.99	0.98
Protective, or risk, behaviour	0.99	0.99	0.98
Condoms (knowledge, attitudes, use)	> 0.99	> 0.99	> 0.97
Characteristics of current (most recent) and first sexual relationship	0.97	0.99	0.98
Sexual and reproductive health services (knowledge, use, evaluation)	> 0.99	> 0.99	0.99
Background characteristics	0.85	0.85	0.97

[a]CVI: Content Validity Index; CVR: Content Validity Ratio

Reliability and factor analysis

Seven hundred and fifty five individuals completed all domains of the questionnaire. Forty-five people decided to withdraw from the study, and another 45 questionnaires were excluded because they had more than 20% missing data. The mean age of participants was 29.4 ± 8.30. Other demographics are presented in Table 2.

Table 2
Percentage distribution of sample aged 15–49 years, by selected social and demographic characteristics

Variable	n (%)
Gender	**N = 755**
Male	345 (45.5)
Female	410 (54.5)
Age groups	
15–24	231 (30.6)
25–33	331(43.8)
≥35	193 (25.6)
Education	
<Diploma	89 (11.1)
Diploma	189 (24.3)
Collegiate	477 (64.5)
Marital status	
Never married	385 (51.1)
Ever married	370 (48.9)
Religiosity	
Very important	199 (26.3)
Important	355 (46.9)
Not important	202 (26.7)

The results of Bartlett's test of sphericity and KMO test showed adequacy of sample size (2510.1 and 0.838 respectively). Based on factor analysis, three important factors were extracted that could explain %72.6 of the total variance.

The results of CFA for each domain are shown in Table 3 and Figs. 1, 2 and 3. Factor's loads for all items in the domains were significant, and the results supported the goodness of fit indices for the initial model to data. The instrument items were divided into three domains, namely: sexual health knowledge, sexual permissiveness, and attitude:

Sexual health knowledge domain of Persian version was divided into four sections to assess knowledge of: physiology, contraceptives, condoms, and HIV/STI. CFA was run to test the hypothesized factor structures underlying the scales within this domain (Fig. 1).

The initial questionnaire for the sexual permissivness domain consisted of nine items. The results of the factor analysis supported the goodness of fit of the initial model (Table 3).

Table 3
Goodness- of- fit indices for each domain

Domains	X^2 (df)	X^2/df	RMSEA[a] (P-value)	CFI[b]	TLI[c]	SRMR[d]
Sexual and reproductive health knowledge	298.4(43)	1.5	0.05 (0.79)	0.95	0.94	0.06
Sexual Permissiveness	64.6 (24)	2.7	0.05 (0.60)	0.99	0.98	0.60
Sexual health attitude	328.6 (118)	2.8	0.05 (0.63)	0.91	0.88	0.08

[a]RMSEA: root mean square error of approximation; CFI[b]: comparative fit index; TLI[c]: Tucker-Lewis index; [d]SRMR: square root mean residual

All relationships between the items were statisticaly significant ($p < 0.001$) (Fig. 2).

Sexual attitude domain of Persian questionnaire was divided into six sub-domains: sexual permissiveness, peer influences, gender beliefs, coercion and attitude toward condoms, and abortion. Results of CFA supported the goodness of fit of the initial model (Table 3). All relationships between scales and items were statitically significant ($p < 0.001$) (Fig. 3). The Cronbach's alpha coefficients of all sub-scales were higher than 0.60 (Table 4).

Table 4
Cronbach's alpha of retained sub-scales of the Persian version Illustrative questionnaire

Domains	Sub-groups	Number of items	Cronbach's alpha
Sexual and reproductive health knowledge			
	Knowledge of physiology	3	0.71
	Contraception knowledge	10	0.85
	HIV/STI knowledge	6	0.75
	Condom knowledge	5	0.75
Sexual permissiveness		9	0.80
Sexual health attitude			
	Coercion	2	0.75
	Gender belief	7	0.78
	Peer influences	2	0.70
	Condom attitude	8	0.77
	Abortion	2	0.85

The test-retest also showed that the ICC was higher than 0.88 for most items (ranging from 0.75 to 0.99). The Kappa coefficient was calculated to examine the dichotomous response. In this study, Kappa coefficients were above 0.8 in most instances (ranging from 0.65 to 0.99) (Table 5).

Table 5
ICC and Kappa coefficients of questionnaire's content (reliability) for 9 domains of the SRH-IQ adapted

Domains	ICC		Kappa	
	Min	Max	Min	Max
Sources of information on sexual and reproductive health	-	-	0.76	0.98
Sexual and reproductive health knowledge	-	-	0.75	> 0.99
Sexual conduct including number and types of sexual partner and details of first sexual partnership	0.77	> 0.99	0.75	> 0.99
Sexual ideology/ Sexual attitudes	-	-	0.76	0.92
Sexual permissiveness			0.85	0.96
Protective, or risk, behaviour	0.83	0.99	0.75	0.91
Condoms (knowledge, attitudes, use)	-	-	0.73	0.89
Characteristics of current (most recent) and first sexual relationship	0.75	0.99	0.72	> 0.99
Sexual and reproductive health services (knowledge, use, evaluation)	0.98	0.98	0.72	> 0.99

Discussion

This study aimed to investigate the psychometrics of the Persian version of the SRH-IQ. During the instrument translation some changes were required to make the cross-cultural adaptation of the instrument's components understandable as well as culturally relevant for the target group as recommended by the WHO (18).

Although the validity and reliability of this questionnaire has been confirmed in young people (15–25 years old) (13), it was not validated in older individuals. Thus, we adapted the questionnaire for 15 to 49 –year- old people to cover a larger spectrum of the sexually active age group.

An important feature of this questionnaire is its usability across both genders. Using this questionnaire can also assess the male sexual health needs, which are often overlooked in religious countries. Sexual issues are sensitive topics in Iran. As such, some parts of the questionnaire were identified as being culturally challenging by experts, however, their input led us to culturally adapt these sections to ensure that the questionnaire can be used in a sensitive and yet accurate manner not only in Iran but also in other countries where religiosity is a strong component of their cultures(13, 14, 17).

The average value of the CVR was 0.98. Polit and colleagues recommended a score of 0.90 or higher as acceptable S-CVI/UA and S-CVI/Ave (20).

The items of sexual health knowledge, sexual permissiveness and sexual attitude domains were confirmed by CFA so that the CFI and IFI indices were larger than 0.9 that completely confirmed the validity of the model. The results of reliability tests indicated good reliability of the Persian questionnaire. However, the questionnaire is relatively long and takes time to be completed. Then, a shorter version of the questionnaire is needed to deal with this limitation. In addition, the questionnaire might be improved in its format. For instance, a number of questions can be omitted for people who have never had a sexual relationship. Notably, only 8 out of 14 professionals approved all the aspects of the questionnaire. However, we think sexual health and sexual health needs are important aspects of life and warrant further research in Iran and elsewhere.

The Cronbach's alpha of all domains of the sexual and reproductive health questionnaire was higher than 0.70. A Cronbach's alpha 0.70 and greater is usually acceptable (28). The test-retest ICC and Kapa values for all domains were between 0.75 and 0.99 that seems to be satisfactory (29).

Based on the literature review, no Persian tool was previously available for assessing the comprehensive sexual health, for both men and women. Khani et al. have translated a questionnaire for assessing the sexual and reproductive health needs (30). But, this questionnaire was only for women of reproductive age. Other researchers have also designed some instruments for assessing some aspects of sexual and reproductive health of specific groups like adolescents and women (31, 11). While the Persian version of Sexual and Reproductive Health Illustrative Questionnaire is suitable for both men and women aged 15–49 years.

Conclusion

This questionnaire has been translated, localized and standardized in Persian for the first time. The results of this study provide a localized and standardized tool for assessing the state of sexual health in Persian-speaking communities. Given the appropriate validity and reliability of the Persian version of the SRH Questionnaire, it can be used to assess sexual health knowledge, attitudes, behaviour and outcomes of Iranian adults.

Limitations

This study is a cross-sectional study and does not have the ability to measure the sensitivity to change over time or responsiveness to change.

Declarations

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Ethics approval

- This study was approved by the ethical committee of the Isfahan University of Medical Sciences (reference: 393460).
- All participants were informed about the aim of the study and also were ensured about the confidentiality of their responses as well as voluntary participation, along with a verbal consent.

Consent for publication

All participants were consent to publish before complete the questionnaire.

Availability of data and material

Data are available on request due to privacy or other restrictions.

Funding

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Competing interests

The authors disclose that they have no conflict of interests.

Author’s contribution

MM designed and directed the study in all steps. EF participated to design of the study. MSH and AM helped in analyzed of data MS and SS aided in analyzing work of the manuscript. SR participated to translate and data gathering. All authors discussed the results and commented on the manuscript.

References

1. World Health Organization. Sexual health, human rights and the law. ISBN 978 92 4 156498 4, (NLM classification: WQ 200), 2015.

2. International Planned Parenthood Federation. Sexual and reproductive health and rights: A crucial agenda for the post-2015 framework. London, United Kingdom. 2014.
3. United Nation. Riport of the International Conference on Population and Development. Cairo, Egypt: 1994. ISBN 92-1-151289-1, United Nation Publication. 1995.
4. World Health Organization. Sexual and reproductive health and rights: A global development, health, and human rights priority. WHO, Geneva, Switzerland. 2014.
5. World Health Organization. Developing sexual health programmes: A framework for action. Geneva: Department of Reproductive Health and Research. 2010.
6. Khalajabadi Farahani F, Cleland J. Perceived norms of premarital heterosexual relationships and sexuality among female college students in Tehran. Cult Health Sex. 2015;17(6):700-17.
7. Khajehei M, Ziyadlou S, Ghanizadeh A. Knowledge of and attitudes towards sexual and reproductive health in adults in Shiraz: A need for further education. East Mediterr Health J. 2013 Dec;19(12):982-9.
8. Latifnejad R, Javadnoori M, Hasanpour M, Hazavehei S, Taghipour A. Socio-cultural challenges to sexual health education for female adolescents in Iran. Iran J Reprod Med. 2013;11(2):101-10.
9. Khalajabadi Farahani F, Cleland J, Mehryar AH. Correlates and Determinants of Reproductive Behavior among Female University Students in Tehran. J Reprod Infertil. 2012;13(1):39-51.
10. Merghati Khoei E, Norouzi Javidan A, Abrishamkar M, Yekaninejad MS, Chaibakhsh S, Emami-Razavi SH, et al. Development, validity and reliability of sexual health measures for spinal cord injured patients in iran. Int J Fertil Steril. 2013;7(2):82-7.
11. Ghorashi Z, Merghati-Khoei E, Yousefy, A. Measuring Iranian women's sexual behaviors: Expert opinion. J Educ Health Promot. 2014;3(80). doi: 10.4103/2277-9531.139245\
12. Ziaei T, Khoei EM, Salehi M, Farajzadegan Z. Psychometric properties of the Farsi version of modified Multidimensional Sexual Self-concept Questionnaire. Iran J Nurs Midwifery Res. 2013;18(6):439-45.
13. Cleland J, Ingham R, Stone N. Asking Young People About Sexual and Reproductive Behaviours: Introduction to Illustrative Core Instruments. Special Programme of Research, Development and Research Training in Human Reproduction: Geneva: UNDP/UNFPA/WHO/World Bank .2006 Jan.
14. Jain T, Mohan Y. Sexuality in Adolescents: have we Explored Enough! A Cross-sectional Study to Explore Adolescent Health in a City Slum in Northern India. J Clin Diagn Res. 2014; 8(8): JC09–JC11.
15. Farih M, Khan K, Freeth D, Meads C. Protocol study: sexual and reproductive health knowledge, information-seeking behaviour and attitudes among Saudi women: a questionnaire survey of university students. Reproductive Health. 2014; 11: 34.
16. Ghimire L, Teijlingen EV. Barriers to Utilisation of Sexual Health Services by Female Sex Workers in Nepal. Glob J Health Sci. 2009;1 (1):12-22.
17. Boamah E, Asante K, Mahama E, Manu G, Ayipah E, Adeniji E, et al. Use of contraceptives among adolescents in Kintampo, Ghana: A cross sectional study. Open Access Journal of Contraception. 2014;5:7-15.

18. World Health Organization. Process of translation and adaptation of instruments. 2014, Available from: http://www.who.int/substance_abuse/research_tools/translation/en/
19. Lawshe CH. A Quantitative Approch to Content Validity. Pers Psychology. 1975; 28(4):563-75.
20. Polit D, Beck C. The content validity index: are you sure you know what's being reported? Critique and recommendation. Res Nurs Health. 2006;29(5):489-97.
21. Polit DF. Statistics and data analysis for nursing research. second edition. newjersey: pearson. 2010.
22. Cowan DT, Jenifer Wilson-Barnett D, Norman IJ, Murrells T. Measuring nursing competence: development of a self-assessment tool for general nurses across Europe. Int J Nurs Stud. 2008;45(6):902–13. doi:10.1016/j.ijnurstu.2007.03.004. [PubMed: 17451716].
23. Tinsley HEA, Brown SD. Handbook of Applied Multivariate Statistics and Mathematical Modeling. New York: Academic Press. 2000.
24. Jackson D. L., Gillaspy A, Purc-Stephenson R. Reporting Practices in Confirmatory Factor Analysis: An Overview and Some Recommendations. Psychological Methods.2009; 14(1): 6-23.
25. Tavakol M, Dennick R. Making Sense of Cronbach's Alpha. International Journal of Medical Education. 2011; 2:53-55.
26. Kenny, D. A. Dyadic Analysis. 2008, Available from: http://davidakenny.net/dyad.htm/
27. DeLong E, Lokhnygina Y. The Intraclass Correlation Coefficient (ICC). Reviewed by: NIH Collaboratory Biostatistics/Study Design Core, Version: 1.0, last updated; 2014 June.
28. Tappen RM. Advanced nursing research.New York: Jones & Bartlett Publishers; 2010.
29. Houser J. Nursing research: Reading, using and creating evidence. New York: Jones & Bartlett Publishers. 2013.
30. Khani S, Moghaddam-Banaem L, Mohamadi E, Vedadhir A.A , Hajizadeh E. Psychometric properties of the Persian version of the Sexual and Reproductive Health Needs Assessment Questionnaire. EMHJ; 2015; 21(1): 29-38.
31. Javadnoori M, Latifnejad- Roudsari R, Hasanpour M, Hazavehei SMM. Exploring meaning and constructs of sexual health education for female adolscents: developing a model using exploratory mixed methos research, dissertation of Phd, Mashhad university of medical of sciences; 2012.

Figures

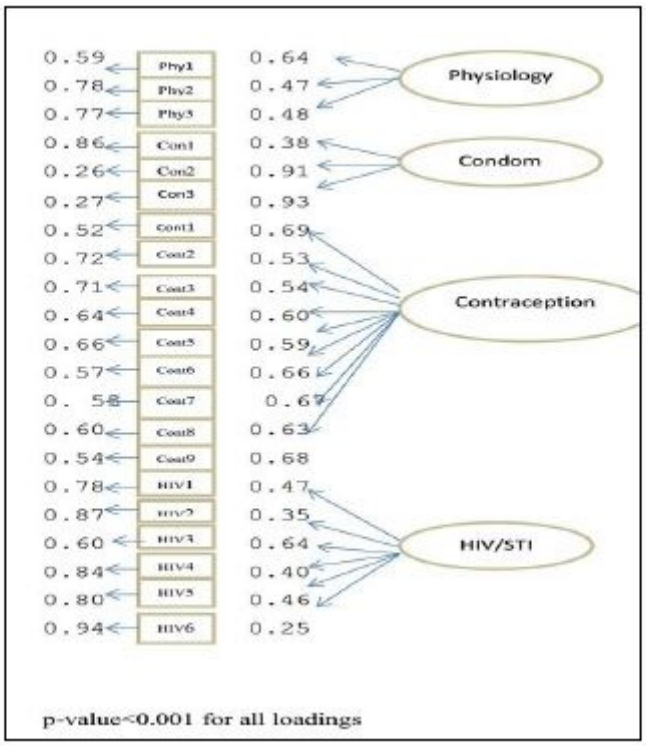
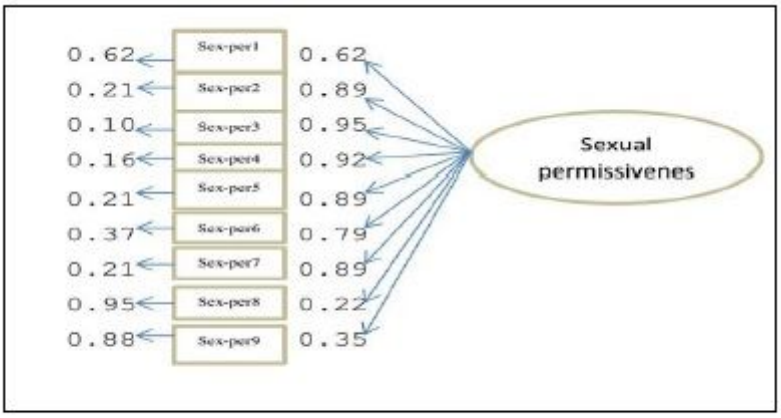


Figure 1

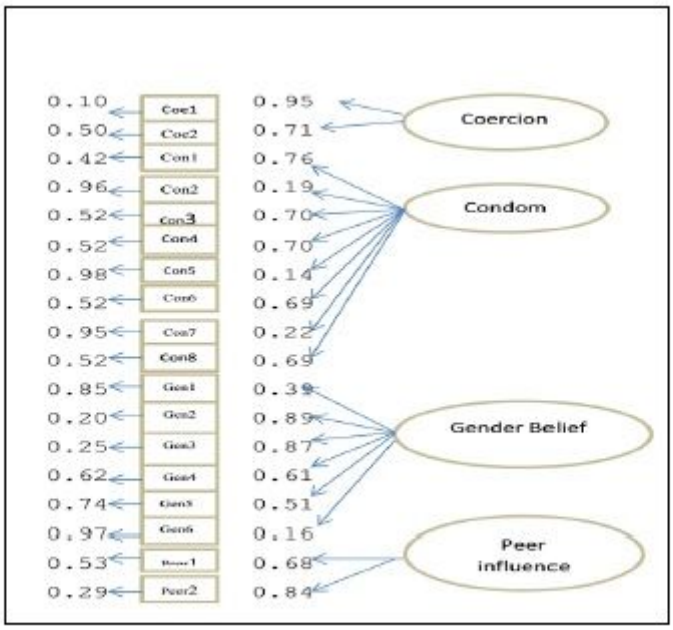
Factor Correlation between Sexual and Reproductive Health Knowledge for SRH-IQ



Fit indices: DF= 24, Chi-Square = 50.06, RMSEA = 0.38, CFI= 1.00, IFI= 1.00, Standardized RMR= 0.052, GFI = 1.00, P-value=0.0013

Figure 2

Factor correlation for sexual permissiveness domain for SRH-IQ



Chi-square= 367.56 , df= 124, p-value= 0.000 , RMSEA= 0.0521

Figure 3

Factor correlation of sexual and reproductive attitude domain for SRH-IQ