Development and Psychometric Properties of the Sexual Health Scale for Middle-Aged Married Women (SHIMA): a Mixed Methods Study

Sedigheh Moghasemi[1], Masoumeh Simbar[2], Fazlollah Ahmadi[3], Ali Montazeri[4,5], Hamid Sharif Nia[6], Giti Ozgoli[2]*

Purpose: This study aimed to develop and psychometrically validate the Sexual Health Scale for Middle-Aged sexually active women (SHIMA).

Methods: This study was a sequential exploratory study consisting of two phases. In phase one, we interviewed 19 middle-aged women and reviewed the existing instruments to generate an item pool. Then, a panel of experts (n = 16) examined the items. In the second phase, the psychometric properties of the scale were assessed. For content and face validity, a panel of experts (n = 8) and a group of middle-aged women (n = 10) reviewed the items. For construct validity, a cross-sectional study was carried out on a sample of 427 married women. Finally, SHIMA's reliability was assessed.

Results: In the first phase, the sexual health concept was explored, and a provisional scale including 60 items was generated. Next, 21 items were removed based on content and face validity. Accordingly, the results obtained from the exploratory factor analysis (EFA) indicated acceptable loading for 34 items tapping into six factors that jointly explained 48.67% of the total variance observed. The internal consistency evaluation revealed that Cronbach's alpha and McDonald's omega were greater than 0.7, and the average inter-item correlation was greater than 0.4, except for one factor that showed borderline results. Test-retest reliability over a 2-weeks interval was 0.90, indicating its high stability.

Conclusion: The SHIMA is a reliable and valid scale for measuring sexual health in middle-aged married women. It can be used as a sexual health screening scale by healthcare professionals and for research purposes.

Keywords: Surveys and Questionnaires; middle aged; sexual health; psychometrics

INTRODUCTION

According to the World Health Organization (WHO), "sexual health is a state of physical, emotional, mental and social well-being in relation to sexuality" that is important not only during reproductive years but also during lifetime[1]. However, sexual health is an issue beyond the absence of disease or dysfunction[2] such that a holistic approach to sexual health is recommended by international societies such as WHO and the International Society for the Study of Women's Sexual Health (ISSWSH)[3].

Female sexual problems and dysfunctions are usually due to the interaction of best identified and resolved factors using the biopsychosocial model. Female sexual function is influenced by some psychosocial, relational, and contextual factors. Therefore, addressing these variables in therapy can help improve sexual functioning in women. Ultimately, a comprehensive biopsychosocial assessment and treatment plan will provide women with the most holistic method to ameliorate their sexual health difficulties[3]. In this respect, the result of a survey showed that biopsychosocial management of Female Sexual Dysfunction (FSD) was associated with patient-perceived benefits, satisfaction, and value[4].

The sexual health of women beyond reproductive years has long been considered taboo. This attitude has resulted in the sexual life of middle-aged women do not receive enough attention and have to conceal their sexual desire[5].

The mentioned issues make it difficult for middle-aged women to receive their desired health services, despite their particular sexual health needs. For instance, health workers in sexual health do not have the required competencies to meet the care needs of middle-aged women such that they concentrate on meeting their biomedical

[1]Counseling and Reproductive Health Research Centre, School of Nursing and Midwifery, Golestan University of Medical Sciences, Gorgan, Iran.
[2]Midwifery and Reproductive Health Research Center, Department of Midwifery and Reproductive Health, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
[3]Department of Nursing, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran.
[4]Health Metrics Research Center, Iranian Institutes for Health Sciences Research, ACECR, Tehran, Iran.
[5]Faculty of Humanity Sciences, University of Science & Culture, Tehran, Iran.
[6]Psychiatry and Behavioral Sciences Research Center, Addiction Institute, Mazandaran University of Medical Sciences, Sari, Iran.
*Correspondence: Midwifery and Reproductive Health Research Center, Department of Midwifery and Reproductive Health, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran. Mobile: (98)9123223453 . Email: g.ozgoli@gmail.com.

Table 1. Demographic characteristics of participants in the qualitative study

Variable		n = 19
Age (years)	40-49	11
	50-59	5
	60-65	3
Educational level	Lower than diploma	5
	Diploma	8
	Bachelor degree or higher	6
Occupation	Housewife	12
	Working	7
Religion (Islam)	Shia'	16
	Sunni	3
Menopausal state	Premenopausal	12
	Postmenopausal	7
Marital status	Divorced	3
	Married	16

needs[6]. Hence, this important health component is ignored by middle-aged women and health care providers, and issues such as sexual health are not prioritized in preventive health care[7].

By increasing the life expectancy[8], women spend at least a third of their lives in middle age and beyond. Therefore, it is necessary to reform the concept of sexual health as a part of public health and women's health in middle age and beyond. On another side, using questionnaires is one element of the basic Structured Approach to screen and diagnosing a sexual problem[3]. Recently, a more holistic approach has been developed to measure sexual health. The female sexual well-being scale (FSWB scale) assessing sexual well-being rather than sexual dysfunction in women without medical/psychosocial conditions is an example[9]. Collected data from such tools play an essential role in determining individual sexual health, health service planning, and policy-making[10].

As sexual health have different meaning based on the socio-cultural context[11], its definition varies in different age groups[7]. Hence, it is necessary to assess female sexual health based on their understanding of sexual health from a more holistic viewpoint. The present study aimed to investigate the Sexual Health of Iranian Married Middle-Aged Women (SHIMA) through the development and psychometric validation of a sexual health scale in sexually functional women in their midlife.

MATERIALS AND METHODS

The present exploratory sequential mixed method study was conducted in Gorgan, Iran. It is a joint research between Shahid Beheshti University of Medical Sciences and Golestan University of Medical Sciences with the ethical codes of IR.SBMU.PHARMACY.REC.1399.175 and IR.GOUMS.REC.1397.146, respectively.

Following the descriptions of the Waltz model[12], the present study included two phases: a) scale development and b) Psychometric evaluation. A summary of the two phases is presented in Fig. 1.

Phase one: scale development
I: Qualitative study: Using a conceptual framework to systematically guide the measurement process increases the likelihood of identifying and illustrating the concepts and variables universally salient to health care practice[12]. Thus, the conceptual model of sexual health was explored using qualitative content analysis. To this end, between May and November 2015, 19 middle-aged women aged 40-65 years were interviewed. The main research question was "how do middle-aged women perceive the notion and dimensions of sexual health?" Purposive sampling with maximum diversity in terms of age, education, and economic status was performed on women under the coverage of comprehensive health centers affiliated with Golestan University of Medical Sciences (**Table 1**). Data were collected through semi-structured in-depth interviews conducted by the main researcher (S. M). Women interested in talking about their marital and sexual experiences were invited with the assistance of trusted health professionals to participate in the study. Each interview lasted about 60 minutes on average. All interviews were audio-recorded.

Before each interview, the participants were informed about their rights in the study and signed written consent. The interviews were carried out in a private and calm place.

Because talking about sexuality in Iranian culture is very hard and embarrassing, especially with middle-aged and elderly people, after warm-up, interviews began with the open-end, general, and the well-known question of "please talk about your marital relationship". Then, the interview continued by considering the points mentioned by the interviewee, which were related to their sexuality. The principal questions raised through the interviews included "when do you feel healthy sexually?" and "when have you felt healthy/unhealthy sexually? Explain it".

Moreover, we verified the trustworthiness and accuracy of data and promoted the validity of results by rewording or summarizing the participants' responses. Except in one case, one interview session was held for all participants.

Data collection and data analysis were conducted simultaneously. Data were collected until data saturation was achieved. Next, data analysis was performed based on the systematic approach proposed by Graneheim and Lundman[13].

II: Then, concept maps and primary items for each theme were provided to generate an item pool. Simultaneously, similar tools and related documents were

Table 2. The number of items in each construct of sexual health in the item pool of SHIMA

Construct	Number of the generated items	Number of the items extracted from the literature review
Sexual health care	19	1
Holistic/multi-dimensional sexual preparation	22	-
Quality of sexual relationship	42	4*
Partner sexual incompetency	11	-
Compatibility and resolving sexual problems conflicts	22	-
Conservative socio-cultural norms	42	-
Total	159	

Table 3. Demographic characteristics of participants in the cross-sectional study

Characteristics	n = 407
Age, years	
Mean (±SD)	46.38 (± 5.46)
Range	40-63
Education, N (%)	
<High school graduate	103(± 25.3)
High school graduate	138 (± 33.9)
Some college	48 (± 11.8)
College graduate	103 (± 25.3)
>college	14 (± 3.4)
Missing	1 (± 0.2)
Job Status, N (%)	
Employee	154 (± 27.8)
Unemployed	253 (± 62.2)
Duration of marriage, years	
Mean (SD)	22.6 (±8.6)
Range	1-47
Menstrual status, N (%)	
Premenopause	296 (±72.7)
Postmenopaus	106 (±26.0)
missing	5 (±1.2)

searched using a literature review via electronic databases in Persian (Scientific Information Database (SID), IranMedex) and English (ProQuest, PubMed, Science Direct, and Scopus) languages. Finally, the initial item pool included 158 items generated by the research team and 1 item extracted from the study conducted by Lotfi et al.[14]. In addition, 4 items were modified according to the FSWB scale proposed by Rosen[9]; see **Table 2**. The provisional 159 items scale was reviewed by an expert panel (n = 16), including scholars in sexual reproductive health, nurses and sex therapists. The output of this revision was the initial item reduction, and as a result, 99 items were removed. The items were removed mostly because of the similarity and repetition of the items. For example, we merged the following three questions "I feel like I am a means to satisfy my husband's sexual needs", "I am worth sexually to my husband", and "I am satisfied as being a woman in sex" into the following question: "I feel valuable during sex with my wife".

Phase two: Psychometric evaluation
I. Content validity
The content validity of the study scale was performed both qualitatively and quantitatively. Eight experts (psychology, sexual and reproductive health, nurse, and community medicine) were invited to evaluate the scale. For qualitative content validity, experts commented on

Table 4. The results obtained from the exploratory factor analysis for the SHIMA

Factors	Items		Factor loading	h2	Variance	λ
couple sexual interaction	Q12:	My partner can satisfy my sexual expectations.	0.831	0.646	14.08	4.928
	Q5:	In general, I have a good sexual relationship with my partner.	0.820	0.738		
	Q9:	After the intercourse is over, my partner kisses or hugs me	0.762	0.513		
	Q6:	Before having sex, I am mentally ready	0.757	0.647		
	Q11:	I can satisfy my partner's sexual desires.	0.698	0.566		
	Q8:	In a sexual relationship, my partner does enough touch and foreplay.	0.680	0.504		
	Q10:	My partner and I talk about our sexual desires and reach an agreement.	0.635	0.575		
	Q7:	We have sex in a safe and private place.	0.633	0.361		
	Q28:	My partner cares about my sexual satisfaction.	0.568	0.605		
	Q29:	My partner is satisfied with the quality of our sex.	0.466	0.617		
	Q27:	I get relaxed after sex.	0.345	0.582		
couple relationship quality	Q20:	My partner and I respect each other.	0.960	0.720	12.31	4.311
	Q19:	My partner and I are close to each other.	0.878	0.700		
	Q18:	I am satisfied with my marriage.	0.876	0.744		
	Q21:	My partner has accepted me and he pays attention to me.	0.831	0.667		
	Q22:	I have good memories of sexual relationships with my partner in the past.	0.675	0.545		
	Q23:	I feel valued during the sexual relationship with my spouse.	0.600	0.627		
	Q24;	I have the willingness to have sex with my partner.	0.588	0.534		
Satisfaction with sex organs' appearance and function	Q34:	I am satisfied with my breasts' appearance.	0.855	0.670	7.42	2.599
	Q35:	I am satisfied with the appearance and function of my genitals	0.844	0.728	.	
	Q31:	I am satisfied with my partner's penis erection (penile stiffness) during the sex.	0.619	0.603		
	Q33:	I am satisfied with my face and appearance.	0.589	0.505		
	Q30:	I am satisfied with my partner's ejaculation time (releasing the semen from the penis) during the sex.	0.504	0.563		
	Q25:	I am satisfied with the degree of moisture and wetness of my genitalia during the sex.	0.330	0.424		
Access to sexual health services	Q4:	If needed, I would easily ask my sexual questions from experts in counseling and/or health centers.	0.935	0.837	6.23	2.185
	Q3:	If needed, I would go to a counseling or health center to solve my sexual problem.	0.804	0.714		
	Q2:	If needed, I have access to counseling and/or health centers to solve my sexual problem.	0.685	0.484		
	Q1:	If I have any sexual problem, I will try to solve it.	0.437	0.536		
sexual agency	Q17:	I take the initiative to have sex with my spouse	0.646	0.443	3.15	1.103
	Q14:	I feel very sexual, like when I was younger.	0.594	0.471		
	Q16:	I try to have a romantic relationship with my partner.	0.577	0.540		
sexual concerns	Q37:	I worry about urinary control (urinary incontinence) during sex.	0.833	0.690	4.766	1.668
	Q36:	I am worried that my partner does not find me sexually attractive.	0.705	0.602		
	Q38:	I am worried that having sex too often damages my health.	0.691	0.456		

h2: Item communality, λ: Eigenvalue

Table 5. The indices of the convergent, divergent validity, and internal consistency of SHIMA

Factors	AVE	MSV	CR	MaxR (H)	Alpha (95% CI)	AIC	Omega
Couple sexual interaction	0.504	0.676	0.917	0.922	0.918 (0.906 to 0.930)	0.508	0.920
Couple relationship quality	0.586	0.527	0.909	0.918	0.910 (0.896 to 0.923)	0.592	0.912
Couple sexual function	0.492	0.676	0.853	0.857	0.857 (0.835 to 0.878)	0.510	0.864
Access to sexual health services	0.570	0.332	0.840	0.857	0.827 (0.798 to 0.853)	0.540	0.832
Sexual agency	0.426	0.537	0.688	0.699	0.690 (0.633 to 0.738)	0.427	0.692
Sexual concerns	0.581	0.012	0.804	0.834	0.799 (0.762 to 0.830)	0.571	0.804

AVE: Average Variance Extracted; MSV: Maximum Shared Squared Variance; CR: Composite Reliability; MaxR (H): Maximum Reliability, Alpha: Cronbach's alpha; AIC; Average inter-item Correlation; Omega: McDonald's omega coefficient.

whether appropriate words and structure for each item were used, whether items were placed in a fair domain, and whether appropriate scoring was assigned. Eight experts calculated the Content Validity Index (CVI) and Content Validity Ratio (CVR) for content validity analysis. Items with CVI > 0.75 were retained. As the number of experts was less than 10, CVI for each item (I-CVI) was calculated by modified Kappa (K*). I-CVI > 0.74 and Summative CVI (S-CVI) average $\geq$ 0.9 were considered appropriate[15].

II. Face validity
Face validity was evaluated both qualitatively and quantitatively. First, 10 married middle-aged women stated their viewpoints about the difficulty, relevance, and ambiguity of each item. Second, items' impact score was calculated, and items with an impact score higher than 1.5 were retained.

III. Construct validity
The construct validity of the scale was determined using factor analysis. Since the scale has 39 items, an average of 6 samples per item (360 people) was considered appropriate[18]. Finally, the sample size was calculated to be 424 people, considering the dropout rate of 15%. The samples were selected through stratified random sampling with appropriate allocation from the electronic files available in the Centers for Integrated Healthcare Services of Gorgan (NAB system). For this purpose, in the order of the list, the eligible individuals were invited to complete the scale. Inclusion criteria in this study were marriage, age 40-65 years, fluency in Persian, and at least high school education. On the other hand, the exclusion criteria were having diseases such as uncontrolled diabetes or hypertension, psychiatry (e.g., depression and anxiety under treatment) problems, based on self-reporting, incomplete filling of the questionnaire by not answering more than 5% of the questions.
Data collection tools included: 1) a written consent form, 2) a demographic characteristics form, and 3) the 39-item SHIMA.
Data was analyzed to estimate scale validity and reliability. The procedure for construct validity analysis is as follows:
a. Structural validity was evaluated using estimation of maximum likelihood exploratory factor analysis (EFA) with Promax rotation. Items with a factor loading equal to or greater than 0.4 were included in the scale.
Next, we conducted maximum likelihood CFA to validate the factorial structure extracted from EFA. The model fit was assessed through a number of fit indices, such as Chi-square (χ2) test, Chi-square(χ2) /degree of freedom(df) ratio < 4, goodness-of-fit index (GFI)> .9,

comparative fit index (CFI)> .9, normed fit index (NFI) > .9, relative Fit Index (RFI) >.9, incremental fit index (IFI) > .9, and TuckerLewis index (TLI) > .9, standardized root mean square residual (SRMR) < .09, and root mean square error of approximation (RMSEA) < .08[16]. b. Convergent and divergent validity: The convergent and divergent validity was estimated using Fornell and Larcker approach (1981) by measuring Average Variance Extracted (AVE), Maximum Shared Squared Variance (MSV), and Composite Reliability (CR). An AVE < 0.5 and CR > AVE reflects suitable convergent validity and MSV > AVE confirms divergent validity. c. Reliability: The internal consistency was assessed via calculating Cronbach's alpha, McDonald's omega, and Average inter-item Correlation (AIC). Cronbach's alpha and McDonald's omega values of more than 0.7 and the minimum AIC values of 0.2-0.4 were considered satisfactory. Ten middle-aged women completed SHIMA twice for two weeks, and stability was assessed using test-retest analysis (Intraclass correlation coefficient-ICC)[16]. In addition, absolute reliability was examined by the standard error of measurement (SEM), which was calculated according to the following formula: SEM = SD Pooled$\sqrt{(1\text{-}ICC)}$.

RESULTS

Findings from phase one
Table 1 shows the demographic characteristic of the participants. Qualitative data analysis resulted in 1624 condensed codes, 166 codes, 46 sub-categories, 15 categories, and 6 themes. The emerged themes were 'quality of sexual relationship', 'sexual health care', 'holistic/multi-dimensional sexual preparation', 'partner sexual incompetency', 'conservative socio-cultural norms', and 'compatibility and resolving sexual problems conflicts'.
Finally, based on the themes extracted from the experiences of middle-aged women participating in the present study, the conceptual framework of middle-aged women's sexual health was extracted as follows:
"Sexual health is a dynamic and multi-dimensional concept perceived through general health, sexual rights, and a satisfactory sexual response. The realization of this concept is affected by how to take care of sexual health, the cohabitation context, the sexual satisfaction of the spouse, and how to adapt and resolve conflicts in sexual matters. Conservative socio-cultural patterns are the contextual factors shaping the sexual attitudes and behaviors of middle-aged women. The product of women's sexual health is family stability".
Accordingly, the provisional 60-items scale was developed, and its psychometrics was assessed in phase two.
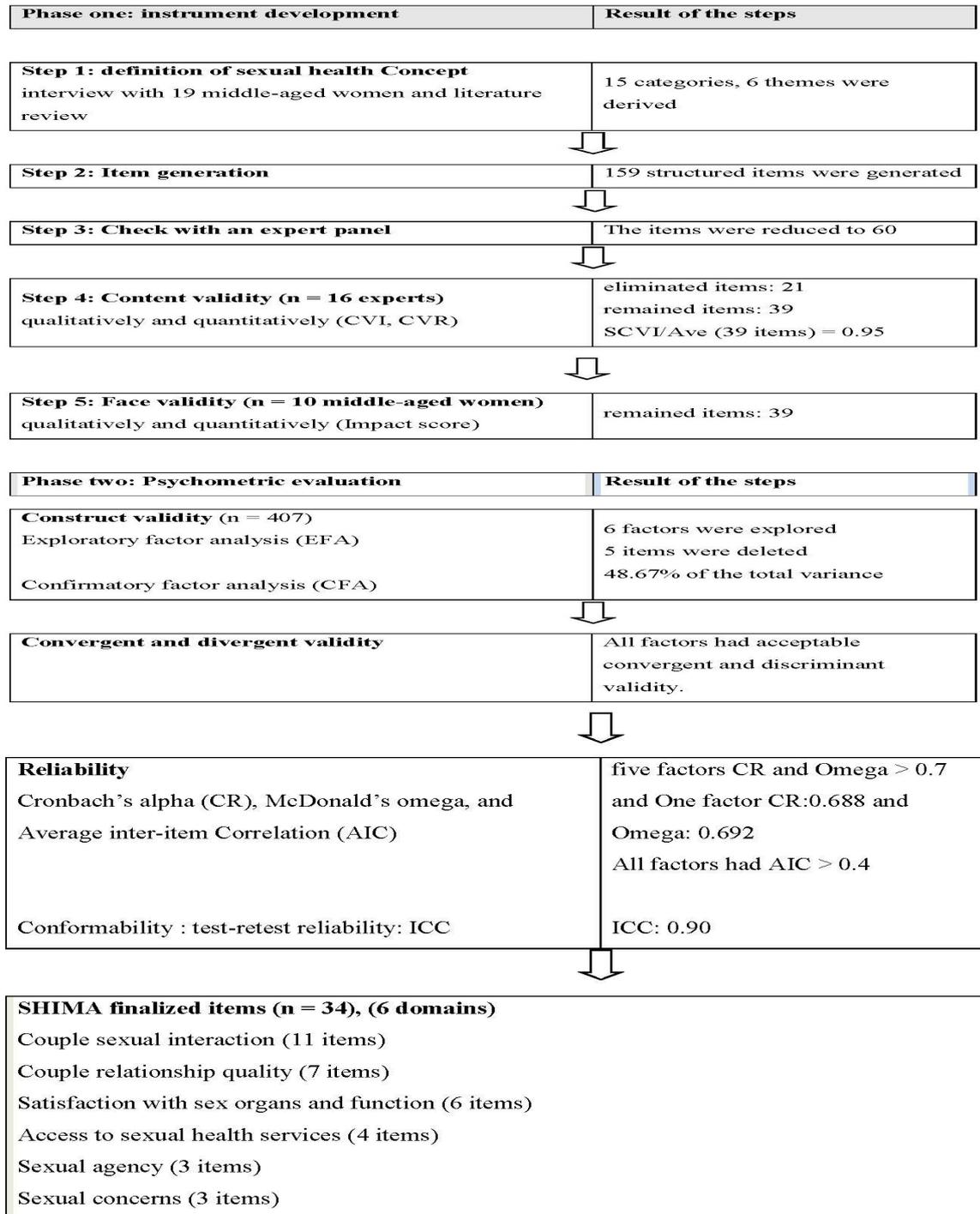
Phase one: instrument development	Result of the steps
Step 1: definition of sexual health Concept interview with 19 middle-aged women and literature review	15 categories, 6 themes were derived
Step 2: Item generation	159 structured items were generated
Step 3: Check with an expert panel	The items were reduced to 60
Step 4: Content validity (n = 16 experts) qualitatively and quantitatively (CVI, CVR)	eliminated items: 21 remained items: 39 SCVI/Ave (39 items) = 0.95
Step 5: Face validity (n = 10 middle-aged women) qualitatively and quantitatively (Impact score)	remained items: 39

Phase two: Psychometric evaluation	Result of the steps
Construct validity (n = 407) Exploratory factor analysis (EFA) Confirmatory factor analysis (CFA)	6 factors were explored 5 items were deleted 48.67% of the total variance
Convergent and divergent validity	All factors had acceptable convergent and discriminant validity.
Reliability Cronbach's alpha (CR), McDonald's omega, and Average inter-item Correlation (AIC) Conformability : test-retest reliability: ICC	five factors CR and Omega > 0.7 and One factor CR:0.688 and Omega: 0.692 All factors had AIC > 0.4 ICC: 0.90

SHIMA finalized items (n = 34), (6 domains) Couple sexual interaction (11 items) Couple relationship quality (7 items) Satisfaction with sex organs and function (6 items) Access to sexual health services (4 items) Sexual agency (3 items) Sexual concerns (3 items)

Figure 1. The flowchart of SHIMA scale development process

Findings from phase two
I. Content validity
CVR and CVI were calculated for quantitative content validity assessment. In this step, 21 items were eliminated. Finally, the SCVI/Ave for the remaining 39 items was 0.95.
II. Face validity:
In the qualitative face validity, some minor wording changes were made according to the women's suggestions. The results revealed that all the items had an impact score $\geq$ 1.5. These items were important in the target group.

III. Construct validity
a. Exploratory factor analysis (EFA): All 424 middle-aged women completed the questionnaire. Of these participants, 17 women were excluded due to incomplete responses to the questionnaire. Thus, the data obtained from 407 participants were analyzed for construct validity. The characteristics of the study participants are presented in **Table 3**. In EFA, the KMO test value
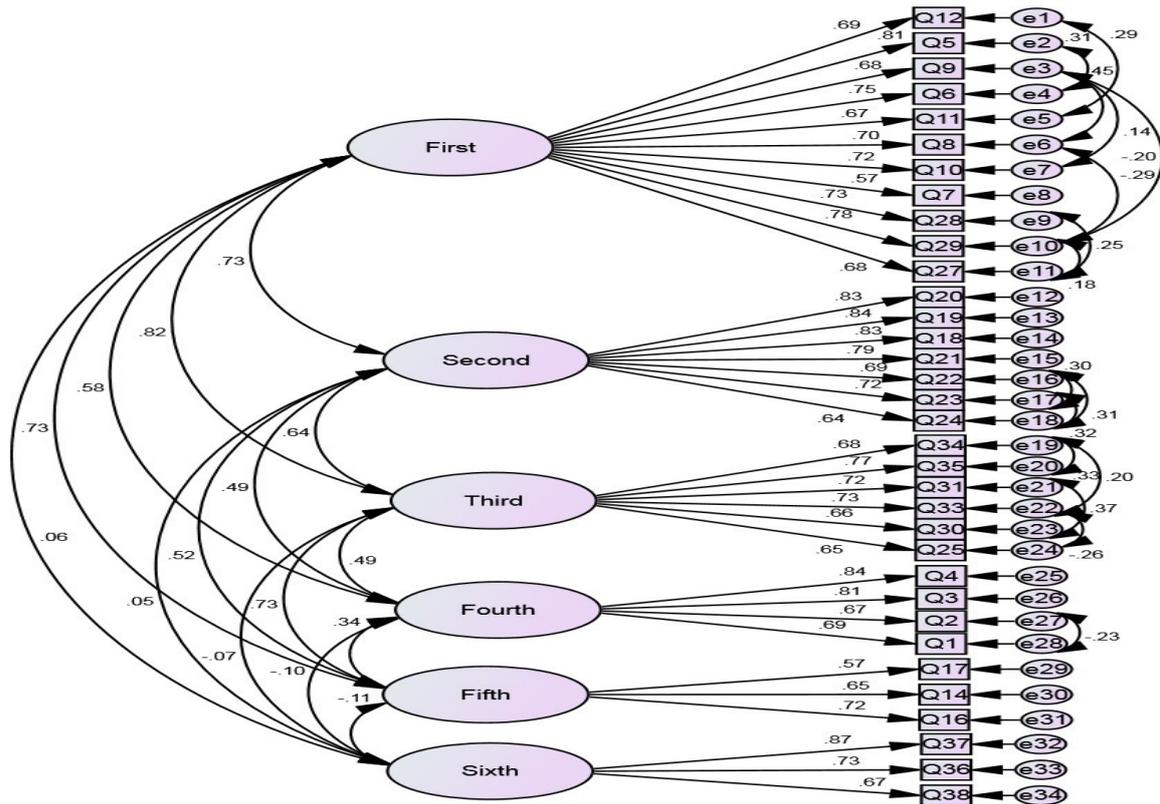
Figure 2. The final factor analysis model for SHIMA

was 0.943 and Bartlett's test value was 7843.55 ($P < 0.001$). Thirty-four items and six factors were extracted and named as couple sexual interaction (11 items), couple relationship quality (7 items), satisfaction with sex organs appearance and function (6 items), access to sexual health service (4 items), sexual agency (3 items), and sexual concerns (3 items). The six factors explained 48.67% of the total variance (**Table 4**). **Figure 2** presents the final factor analysis model for SHIMA.

b. The results (**Table 5**) revealed that all factors had acceptable convergent and divergent validity.

c. Reliability: For five factors, internal consistency evaluation revealed that Cronbach's alpha and McDonald's omega were greater than 0.7, and the average inter-item correlation was greater than 0.4. Finally, the composite and maximum reliability (H) were acceptable except for one factor (**Table 5**). Test-retest reliability over a 2-week period was 0.90.

DISCUSSION

This study showed that sexual health is a multi-dimensional concept for middle-aged married women, and the SHIMA had acceptable psychometric properties to measure sexual health in this population.

The SHIMA represents the multidimensionality of the sexual health concept and assesses it in the dimensions beyond sexual satisfaction or sexual function. According to the definition of sexual health[1], in addition to the physical aspect, SHIMA encompasses psycho-so-cio-emotional dimensions. In other words, it indicates sexual health in a bio-psycho-social model. As the quality of a relationship affects women's sexual health in different ways[17,18], "couple sexual interaction" and

"couple relationship quality" are the most powerful predictive factors of this concept. These two factors encompass 26.39% from 48.67% of the total variance of SHIMA, respectively. In this regard, based on the theory of systems, an individual's situation in a couple affects the whole system (both members of a couple). Therefore, partners' competency and life skills can help a couple have a happier relationship[19]. However, there is not any similar domain in Female Sexual Function Index (FSFI)[20], which is a widely-used measure in women's sexuality studies.

"Interpersonal domain" and "cognitive-emotional" domains in FSWB imply the importance of couple interactions in women's sexual health in a similar way[9]. Therefore, these items should be considered in sexual health promotion intervention programs.

The third factor is "satisfaction with sex organs appearance and function". Normal sexual function is assessed based on the sexual response cycle, which is a combination of mind and body responses[21]. As body image affects all aspects of female sexual function[22], the items of the third facto are related to the body and sexual self-image. In recent years, several studies have reported the association between body image and female sexual function[22-24]. A multi-center study in Iran showed that sexual dysfunction is more prevalent in married women who feel they are not attractive to their partners (OR: 1.9)[25].

The scale used in this study had an item about the satisfaction about lubrication during sex. This question assessed the most objective part of female sexual response. Limited lubrication is related to vaginal dryness and dyspareunia especially after cessation of the men-

strual cycles in menopausal women. Also, Kennedy et al. in a systematic review found that lubricants can be an important part of improving sexual health and well-being[26].

In the third factor, not only female sexual function but also a spouse's sexual function is assessed from the women's viewpoint. In sexual dysfunction assessment, it is strongly recommended to evaluate sex partner-related factors regularly[18,21].

It is worthy to mention that as sex and sexual desire are considered undesirable for women in the most conservative cultures and communities, such as Iran, especially in the post-reproductive years, thus questioning straight about sexuality may be seemed unfair or accompanied by feelings of shame. So some items which are related to sexual desire such as Q 17 (I have the willingness to have sex with my partner) and Q 24 (I take the initiative for having sex with my spouse) were loaded in the "sexual agency" and "couple relationship quality" domain, respectively.

The fourth factor is "access to sexual health service", which encompasses three factors, namely physical, financial, and information[27]. In this respect, the provision of free-of-charge Primary Health Care (PHC) in most countries, such as Iran, facilitates access to health care services physically and financially. Nevertheless, there are some limitations in providing health information, especially on a difficult topic such as sexuality[28]. Sexual health care services are restricted to providing contraception methods and reproductive cancer screening for reproductive-aged and married women and prevention of STDs in high-risk groups [6, 29]. Therefore, sexual health generally is neglected for men and women beyond reproductive age or marriage. This approach can result in unmet sexual health needs in different groups and communities. Access to sexual health services, as an important factor in an individual's sexual health, can help both individuals and HCPs plan appropriate interventions based on a need assessment or situation analysis.

The fifth factor is "sexual agency". It refers to people's ability to act on their sexual needs, desires, and wishes. Starting sex and attempting to make love imply women's tendency to break common limiting beliefs and norms to meet their sexual needs and wishes. Women with a high negotiation ability about the sexual agency have more sexual desire and better sexual well-being[30]. The sixth factor is sexual concerns. This dimension, which has three items, is very important because, despite various changes in sexual life in midlife and beyond, there are substantial barriers to seeking help for sexual health problems and concerns. Hence, only a few middle-aged people with sexual problems seek care[31]. In this regard, Pakgohar et al. showed that 27.2% of menopausal women with urinary incontinence seek medical attention[32]. It is assumed that the "sexual concern" dimension can be an appropriate trigger for women to speak about their sexual health problems with healthcare providers (HCPs).

Sexual health is a multi-dimensional and dynamic issue[22]. Therefore, researchers and HCPs should focus on women's sexual health from a multi-dimensional or bio-psycho-social perspective instead of focusing solely on sexual function as a physical problem. This approach could result in an individual's well-being and quality of life. In other words, considering genitalia response to sexual function, sexual health cannot be outlined without incorporating individuals' satisfaction with physical, emotional, and social experiences[33].

The SHIMA is a multi-dimensional and context-based scale developed using a more holistic approach to women's sexual health. Thus, it assesses not only physical but also intrapersonal (sexual concerns and sexual agency), interpersonal (couple relationship quality, couple sexual interaction, and couple sexual function), and the social/community (access to sexual health service) measures of sexual health from a bio-psycho-social perspective. Overall, it is assumed that SHIMA can provide a better sexual health profile of women in research and clinic than the female sexual function questionnaires.

This study had some limitations. Although this scale was designed specifically for middle-aged married women, there are few specific items for this age group. This pattern may indicate that being in midlife solely is not an important factor in women's sexual health. In other words, psychosocial factors are more important than physical and age-related changes, including hormonal alteration. Therefore, it is recommended to apply this scale to other populations such as reproductive-age women, women with special conditions (e.g., chronic diseases), and intervention studies to confirm its validity and reliability in other populations. Moreover, conducting the same study on unmarried women could give insight into the meaning and importance of sexual health in these women.

CONCLUSIONS

The Sexual Health scale for Middle-aged women (SHIMA) is a validated and reliable scale for measuring sexual health in this population that can be used as a sexual health-screening tool. Also, the data acquired by the scale could be useful for designing appropriate interventions to improve women's sexual health, especially in their midlife.

CONFLICT OF INTEREST

The authors report no conflict of interest.

REFERENCES

1. world health organization. Sexual and reproductive health. availabe at: http://www.who.int/reproductivehealth/topics/sexual_health/conceptual_elements/en/ acess date: 27/4/2016.
2. World Health Organization. Measuring sexual health: Conceptual and practical considerations and related indicators. 2010.
3. Goldstein I, Clayton AH, Goldstein AT, Kim NN, Kingsberg SA. Textbook of female sexual function and dysfunction: Diagnosis and treatment: John Wiley & Sons; 2018.
4. Rullo J, Faubion SS, Hartzell R, Goldstein S, Cohen D, Frohmader K, et al. Biopsychosocial Management of Female Sexual Dysfunction: A Pilot Study of Patient Perceptions From 2 Multi-Disciplinary Clinics. Sex med. 2018;6:217-23.
5. Lusti-Narasimhan M, Beard JR. Sexual health in older women. Bull World Health Organ. 2013;91(9):707-9.
6. Binfa L, Pantoja L, Gonzalez H, Ransjo-

Arvidson AB, Robertson E. Chilean midwives and midwifery students' views of women's midlife health-care needs. Midwifery. 2011;27:417-23.

7. World Health Organisation. Defining sexual health Report of a technical consultation on sexual health.Geneva. 2006.

8. World Health Organisation. The estimates confirm the trend for longevity: lifespans are getting longer. [cited 2022 4/11/2022]. Available from: https://www.who.int/data/gho/data/themes/mortality-and-global-health-estimates/ghe-life-expectancy-and-healthy-life-expectancy.

9. Rosen RC, Bachmann GA, Reese JB, Gentner L, Leiblum S, Wajszczuk C, et al. Female sexual well-being scale (FSWB scale): development and psychometric validation in sexually functional women. The J Sex Med. 2009;6:1297-305.

10. Hensel DJ, Fortenberry JD. A multidimensional model of sexual health and sexual and prevention behavior among adolescent women. J Adolesc Health. 2013;52:219-27.

11. BeatriceBean'E R, Bockting WO, Rosser BS, Miner M, Coleman E. The sexual health model: application of a sexological approach to HIV prevention. Health Educ Res. 2002;17:43-57.

12. Waltz CF, Strickland OL, Lenz ER. Measurement in nursing and health research: Springer publishing company; 2010.

13. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. Nurse Educ Today. 2004;24:105-12.

14. Lotfi R, Tehrani FR, Yaghmaei F, Hajizadeh E. Developing a valid and reliable instrument to predict the protective sexual behaviors in women at risk of human immunodeficiency virus. Iran Red Crescent Med J. 2014;16(9).

15. Polit DF, Beck CT, Owen SV. Focus on Research Methods; Is the CVI an Acceptable Indicator of Content Validity? Appraisal and Recommendation. Res Nurs Health. 2007;30:459-67.

16. Esposito Vinzi V, Chin WW, Henseler J, Wang H. Handbook of partial least squares: Concepts, methods and applications. Computational Statistics Handbook series. 2010;2.

17. Nazarpour S, Simbar M, Tehrani FR. Factors affecting sexual function in menopause: A review article. Taiwan J Obstet Gynecol. 2016;55:480-7.

18. Brotto L, Atallah S, Johnson-Agbakwu C, Rosenbaum T, Abdo C, Byers ES, et al. Psychological and Interpersonal Dimensions of Sexual Function and Dysfunction. J Sex Med. 2016;13:538-71.

19. Larson JH, Blick RW, Jackson JB, Holman TB. Partner traits that predict relationship satisfaction for neurotic individuals in premarital relationships. J Sex Marital Ther. 2010;36(5):430-44.

20. Rosen CB, J. Heiman, S. Leiblum, C. Meston, R. Shabsigh, D. Ferguson, R. D'Agostino, R. The Female Sexual Function Index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. J Sex Marital Ther. 2000;26:191-208.

21. Basson R. Women's sexual dysfunction: revised and expanded definitions. Cmaj. 2005;172:1327-33.

22. Woertman L, van den Brink F. Body Image and Female Sexual Functioning and Behavior: A Review. J Sex Res. 2012;49:184-211.

23. Pandya AA, Corkill HA, Goutos I. Sexual Function Following Burn Injuries: Literature Review. J Burn Care Res. 2015;36:e283-93.

24. Male DA, Fergus KD, Cullen K. Sexual identity after breast cancer: sexuality, body image, and relationship repercussions. Curr Opin Support Palliat Care. 2016;10:66-74.

25. Ramezani Tehrani F, Farahmand M, Mehrabi Y, Malek Afzali H, Abedini M. Prevalence of female sexual dysfunction and its correlated factors: a population based study. Payesh. 2012;11:869-78.

26. Kennedy CE, Yeh PT. Lubricants for the promotion of sexual health and well-being: a systematic review. Sex Reprod Health Matters. 2021;29:2044198.

27. World Health Organisation. Gender, equity and human rights. [cited 2020]. Available from: https://www.who.int/gender-equity-rights/understanding/accessibility-definition/en/

28. Gott M, Galena E, Hinchliff S, Elford H. "Opening a can of worms": GP and practice nurse barriers to talking about sexual health in primary care. Fam Pract. 2004;21:528-36.

29. Damari B, Tabrizchi N, Riazi-Isfahani S. Designing a national plan for improving sexual health in Iran: An experience of an Islamic country. MJIRI. 2016;30:407.

30. Wood JM, Mansfield PK, Koch PB. Negotiating sexual agency: postmenopausal women's meaning and experience of sexual desire. Qual Health Res. 2007;17:189-200.

31. Moreira Jr ED, Brock G, Glasser DB, Nicolosi A, Laumann EO, Paik A, et al. Help-seeking behaviour for sexual problems: The global study of sexual attitudes and behaviors. Int J Clin Pract. 2005;59:6-16.

32. Pakgohar M, Sabetghadam S, Vasegh Rahimparvar SF, Kazemnejad A. Quality of life (QoL) and help-seeking in postmenopausal women with urinary incontinence (UI): A population based study. Arch Gerontol Geriatr. 2014;59:403-7.

33. Thomas HN, Thurston RC. A biopsychosocial approach to women's sexual function and dysfunction at midlife: A narrative review. Maturitas. 2016;87:49-60.