

Design and Psychometrics of the Sexual-Reproductive Needs and Concerns Scale of Iranian Never-Married Women Over 35

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Abstract

Objective: The purpose of the present study was to design the Farsi Scale of Sexual-Reproductive Needs and Concerns of never-married women over 35 and to assess its psychometric properties.

Materials and methods: This mixed method research had two phases. The first phase was qualitative (Conventional Content Analysis). We interviewed never-married Iranian women over 35; from their responses, we extracted specific statements which to be used as questionnaire items. To validate the questionnaire psychometrically, we tested its validity (face, content, and structure) and reliability (internal consistency and stability). For qualitative face validity, 15 never-married women and 5 experts commented on the style of sentences. For quantitative face validity, we used the impact score. For qualitative content validity, 15 experts commented on the items based on their appropriateness, and for quantitative content validity, we performed the Content Validity Ratio and Content Validity Index. Exploratory Factor Analysis was used to Construct Validity. To evaluate structural validity, a cross-sectional sample of 240 never-married women over the age of 35 completed the questionnaire. Cronbach's Alpha was used for internal consistency. In addition, the test-retest method and Intraclass Correlation Coefficient were used to ensure stability.

Results: The Sexual-Reproductive Needs and Concerns Scale of Iranian Never-Married Women over 35 was developed with 15 items and three dimensions (Emotional burden; Sexual needs; Stigma). Cronbach's alpha for the instrument was 0.81 and the Intraclass Correlation Coefficient was 0.98.

Conclusion: The results of the study showed that the developed scale has acceptable validity and reliability, and thus can be used to assess the sexual-reproductive needs and concerns of never-married Iranian women of 35 and over.

Keywords: Never-Married Women; Reproductive Needs; Sexual Needs; Scale Design

Introduction

The WHO (World Health Organization) defines sexual-reproductive health as a state of complete physical, mental, and social well-being related to the

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reproductive system and its processes and functions (1). In the context of specific cultural expectations, sexual health can become a health issue among never-married women (NMW). In recent years, the number of NMW has increased worldwide and is still increasing (2). This increase appears to be occurring for personal, cultural, social, and economic reasons (3), though for a woman aged 35 and over, not being married may have adverse individual and social consequences (4).

More specifically, the state of not being married appears to be double-edged. While this state is associated with higher academic and work-related achievements, the following disadvantages have been observed: physical health issues (increased risk of cancer) (5), mental health issues (e.g., lack of self-confidence) (6), sexual issues (e.g., sexual harassment and sexual dissatisfaction) (7), and social issues (e.g., social exclusion) (8).

Various self-rating questionnaires are available to assess women's sexual health issues, including sexual-reproductive health: 1) The WHO Sexual-Reproductive Health Questionnaire (9) covers issues such as information sources and type of sex in young people; 2) The foci of the Sexual-Reproductive Health Needs of Married Women (10) are on motherhood, contraception, and the development of sexuality and sexual experiences. 3) Sexual Health of Middle-aged Women questionnaire (11) asks about the development of sexuality, sexual experiences, including sexually transmitted infections, and married women's sexual needs.

The three questionnaires listed above appear not to take into consideration the specific cultural or religious context of never-married women aged 35 and older. To address this, the present self-rating questionnaire was designed to assess the sexual-reproductive needs and concerns of NMW over 35 in Iran. We believe that the questionnaire is of practical and social importance for this group of women and for those concerned with health policy, so that they may take these women's psychological, sexual, and social health needs and concerns into consideration. In this study, we focused exclusively on adult NMW, excluding those who are divorced or widowed. This was because, in Iranian-Islamic culture, it is assumed this first group has no prior experience of sexual or emotional relationships with men.

Materials and methods

The present study is a mixed method, exploratory, and instrument design study (12). The mix method study consists of a mix of two qualitative and quantitative phases. In the first phase (qualitative phase), we interviewed 18 participants aged 36-64 years old. After interviews, the transcribed interviews were input into the MAXQDA-10 software for managing data. In this phase, codes, subcategories, categories, and themes appeared. Then the second phase (quantitative phase) started, and in this phase, we used the statements from the qualitative phase to make a questionnaire and validate it. The procedure in the quantitative phase was as follows:

Two sources were used to design the tool. These were the current literature and a qualitative and interview-based study that provided insight into the needs and concerns of NMW over 35. From these two sources, we generated an initial pool of 95 items. Four experts in reproductive health then independently evaluated these items. Overlapping items were removed, and the wording of semantically ambiguous items was modified to improve style and grammar. This procedure yielded 47 items. Finally, these 47 items were psychometrically tested. To this end, the validity (face, content, and construct) and reliability (internal reliability and stability) were analyzed.

Face Validity: For qualitative face validity, 15 NMW over 35 with satisfactory educational backgrounds were asked for their overall impression and opinion, while five experts in reproductive health and linguistics commented on grammar and style (13).

For quantitative face validity, the item impact score was used; to this end, 15 NMW rated the content of the items on a five-point Likert scale. Next, the impact score of the items was calculated, and an impact score above 1.5 was considered appropriate (14).

Content Validity: To assess qualitative content validity, 15 experts in reproductive health commented on the scales; specifically, they inspected the positions of the items, their appropriateness, and their scoring.

Quantitative content validity was performed using CVR (Content Validity Ratio) and CVI (Content Validity Index). For the CVR, 15 reproductive health experts scored the necessity of the items. The Ayre and Scally's Table (15) was used to remove items with a score < 0.49.

I-CVI (Item-CVI) and S-CVI (Scale-CVI) were used to determine CVI. For this purpose, 15 reproductive health experts rated the appropriateness

of the items. After calculating the I-CVI for each item, the average of the total I-CVIs was reported as the S-CVI. Items with an I-CVI ≥ 0.79 , S-CVI > 0.8 , and a Kappa of $0.7 \geq$ were accepted (16).

Item Analysis: First, 40 participants with different levels of education determined the adequacy of the number of items and identified ineffective items. Then, Cronbach's alpha was also calculated. Items with a correlation coefficient < 0.3 were removed, and semantically similar items with correlation coefficients > 0.7 were merged into one item (9). Attention was paid to the reliability score; if this score was reduced following the removal of an item, this indicated the importance of this item (17). The relationship between items (Cronbach's alpha) was 0.765; accordingly, reliability was high.

Construct Validity: Exploratory Factor Analysis (EFA) was used to perform construct validity, given that factor analysis is one of the best methods for construct validity (18). To this end, a cross-sectional study was conducted in 2021, sending an online questionnaire to NMW over 35 living in different cities in Iran. Participants were self-declared to be aged 35 and older, never married, psychologically healthy, and with a satisfactory educational background. The target sample size was 10 x the number of items (19, 20); here: 24 items x 10 = 240 participants. Exploratory Factor Analysis was performed using the maximum likelihood method, and ProMax rotation was used to extract the latent factors. The Kaiser-Meyer-Olkin (KOM) test was calculated to assess the adequacy of sampling. Bartlett's test of sphericity was calculated to fit the factor analysis model. A minimum factor loading ≥ 0.30 was taken into consideration (21). Statistics were performed with SPSS® 21.0 (IBM Corporation, Armonk NY, USA).

Reliability: Internal consistency and stability (relative and absolute) were calculated to determine the reliability of the scale. To assess the internal consistency, Cronbach's alpha was calculated for each dimension of the scale and for the scale as a whole. To determine Cronbach's alpha, the scale was completed by 30 (22) participants. If Cronbach's alpha was > 0.7 , the internal reliability was considered satisfactory (23).

The test-retest method and Intraclass Correlation Coefficient (ICC) were used to show the relative stability of the scale (13). Forty participants completed the scale twice, with an interval between completions of two weeks. An ICC ≥ 0.8 for the two tests was taken

to reflect a satisfactory scale stability (23). Last, the Standard Error of Measurement (SEM) was calculated to determine absolute stability (22, 24).

Normal Distribution: To evaluate the normal distribution of the data, skewness ($\pm 3\%$) and kurtosis ($\pm 8\%$), descriptive and analytical statistics, statistical factor analysis, and Pearson's correlation were computed.

Scoring: The present tool had a six-state ordinal continuum rating range (completely agree, agree, somewhat agree, somewhat disagree, disagree, and completely disagree). Points are given for completely agree, agree, somewhat agree, somewhat disagree, disagree, and completely disagree from one to six, respectively. The scoring of items 9 and 13 is reversed. Obviously, the higher a person's score on the present tool, the lower her needs and worries about singleness.

The authors decided to perform a linear transformation ranging from zero to 100, with a higher score representing lower sexual-reproductive needs and concerns. In this way, according to the following formula (25), the obtained score minus the minimum score of the questionnaire will be divided by the maximum score of the questionnaire minus the minimum score of the questionnaire, and then we multiply the resulting number by 100. In this way, scores between 0 and 100 will be reported.

$$\text{Transformed Score} = \frac{(\text{Actual raw score} - \text{Lowest possible raw score})}{(\text{Highest possible raw score} - \text{Lowest possible raw score})} \times 100$$

Results

This study contained two phases. The first phase that provided the most weight to the study was the qualitative phase. In this part, 23 interviews with 18 NMW with different educational levels and career, and socio-economic conditions and from diverse cities in Iran were done. The interviews were semi-structured, in-depth, and face-to-face and continued until data saturation. The interviews lasted 60-90 minutes. Sampling was purposeful, and then it snowballed. For sampling, the researcher invited never-married women in the faculty to take part in the study. For access to more participants with maximum variation, the researcher asked participants to introduce and invite their friends or other women that they knew to take part in the study. In addition, the researcher pursued women among her relatives and friends. Also, she went to religious places where

there were many women, as well as NMW, that collected there to pray. All interviews were recorded and immediately transcribed. MAXQDA-10 was used for data management. A total of 927 codes, 31 subcategories, 11 categories, and 4 themes were extracted from the interviews that were published in two qualitative articles (26, 27). The qualitative stage (23 interviews and a literature review) produced a pool of 95 items of which 89 items were provided from the qualitative phase and six items from the literature review. This number was reduced to 47 on the basis of research panel opinion.

Face Validity: In the qualitative face validity phase, the wording of 13 items was changed on the basis of experts opinions, but no items were deleted. All items achieved an impact score above 1.5.

Content Validity: At this stage, 14 items were removed in CVR based on the opinions of the experts' panel. One item was also removed on the basis of an I-CVI score of less than 0.79. Following that, two items were added to the scale following proposals by the experts' panel, and the 34 items scale was prepared for item analysis.

Item Analysis: A further 13 items were removed, and a scale with 21 items was prepared for construct validity. The steps in the construction of the items are shown in Table 1.

Construct Validity: First, for exploratory factor analysis, we used the KOM test to calculate sampling

adequacy and Bartlett's test for sphericity to evaluate the item correlation matrix (Table 2).

For the exploratory factor analysis of 21 items, we used the maximum likelihood and ProMax rotation methods. To ensure the structure of the scale, 3 to 6-factor structures with different epochs were tested, and finally, a three-factor structure was shown to be optimal (Figure 1).

Figure 1: Determining the Number of Factors Constructing the Iranian Never-Married Women Needs and Concerns Scale

The factor analysis yielded three factors with 15 items, which together explained 54.83% of the variance. The first factor, with nine items, explained 32.07% of the variance.

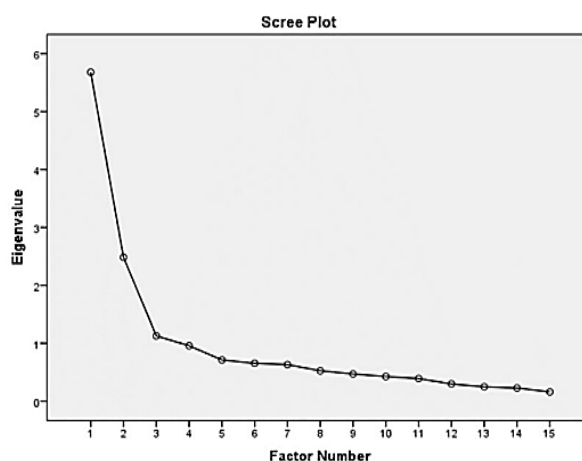


Table 1: Item reduction steps from the item pool development stage to a final scale developed

Stages	Items	Results	Number of remaining items
Initial Item Pool	95	42 items removed	53
Research Panel	53	6 items removed	47
Face Validity	47	All items accepted	47
CVR	47	14 items removed	33
CVI	33	1 item removed	32
Research Panel Decision	32	2 items added following expert panel suggestions	34
Item Analysis	34	13 items removed	21
Exploratory Factor Analysis	21	6 items removed	15

CVR: Content validity ratio, CVI: Content validity index

Table 2: Kaiser-Meyer-Olkin Measure of Sampling Adequacy index and Bartlett test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.858
Bartlett's Test of Sphericity	Approx. Chi-Square	1616.859
	df	630
	P-value	< 0.001

df: Degree of freedom

The second factor with four items accounted for 15.43% of the variance, and the third factor with two

items accounted for 7.32% of the variance. Table 3 reports the extracted factors along with the factor loading of each factor. The factor labels were: emotional burden, sexual needs, and stigma. Variable 15 has negative loadings. A negative sign of loading does not indicate any meaning regarding the strength of the variable relative to the factor. However, it gives meaning to the fact that the variable is related in the opposite direction to the factor (28).

Reliability: 240 participants completed the final 15 item version of the scale; Cronbach's alpha was 0.815, and the overall ICC was 0.989 (CI 95%: 0.978-0.990) (Table 4).

Discussion

The aims of the present study were to design a questionnaire to assess specific personal and social issues of NMW over 35 in Iran and to calculate the psychometric properties of such a questionnaire. Overall, the psychometric properties are very satisfactory. The final version consists of 15 items,

loading on the following three factors: "emotional burden", "sexual needs" and "stigma". These factors are now considered in turn.

The first factor was labeled “emotional burden” and covers emotional issues such as feelings of loneliness, experiencing a boring life, reporting lower self-confidence, or regret at not being or getting married. Thus, not being married appears to be considered a personal disadvantage. Not surprisingly, studies by Sali and Himawan reported similar patterns of experiences (29, 30). To summarize, in our opinion, the factor “emotional burden” reflects well what adult NMW are experiencing in Iran. In studies conducted on NMW in different countries, psychological needs are very strong (31, 32). Psychological needs were also the first theme to emerge in the qualitative phase of the present study.

Next, as reported in Table 3, the item “I feel free and comfortable in life”, loaded negatively on this factor. Indeed, not being a married woman aged 35 and older may also yield advantages (33).

Table 3: Side effects as per different age group

No	Items	Factor Loading		
		Factor 1	Factor 2	Factor 3
		Emotional burden	Sexual needs	Stigma
1	I refuse to participate in ceremonies and events, due to concern for the words and views of others.			0.943
2	It is easy for me to control my sexual needs.		0.938	
3	I feel the partner's vacancy in my life.	0.911		
4	I feel lonely because I do not have a companion.	0.832		
5	My life has become boring.	0.827		
6	People’s looks are annoying for me.			0.813
7	I get nervous about not being able to meet my sexual needs.		0.704	
8	I need a way to satisfy my sexual needs.		0.700	
9	There will no one in old age to support me and I may be a burden to others.	0.681		
10	I get lonelier as I get older.	0.619		
11	Maybe marriage increase my self-confidence.	0.613		
12	I regret married life.	0.593		
13	I'm worried about having sex.		0.474	
14	I get married just to get rid of loneliness.	0.386		
15	I feel free and comfortable in life.	-0.336		

Table 4: Item reduction steps from the item pool development stage to a final scale developed

Factors	Number of items	Cronbach’s alpha coefficient	Mean	SD	ICC	CI (95%)	P-value	SEM
Emotional burden	9	0.842	31.14	8.92	0.991	0.980-0.996	<0.001	0.802
Sexual needs	4	0.760	17.36	4.62	0.975	0.948-0.988	<0.001	0.693
Stigma	2	0.824	9.86	2.53	0.979	0.953-0.990	<0.001	0.354
Total	-	0.815	58.38	12.71	0.989	0.978-0.995	<0.001	1.271

SD: Standard deviation, ICC: Intraclass correlation coefficient, CI: Confidence intervals 95%, SEM: Standard error of measurement

Thus, some studies have shown that being single can lead to academic and professional advancement and therefore a sense of freedom and independence in women (34), which is one of the features of this dimension and themes in the qualitative phase.

The second factor refers to NMW's sexual needs. Humans are basically social beings (35), and sexuality is an integral part of psychological health in an adult's life (36-39). The sexual activity of couples usually signifies exclusivity, intimacy, and bond-reinforcing behavior, and sexual impairment is regarded as both distressing and disturbing for the individual quality of life.

The study showed that sexual needs in single women are not only not ignored but also remain one of the most important needs. This dimension forms one of the themes of the "psychological vacuum" in the qualitative phase. Items in this dimension refer to matters such as getting nervous because of not responding to this need, worrying about having sex, requiring a way to satisfy sexual needs, and easy control of sexual need. Response to sexual needs varies in different contexts according to religion and culture. In communities where having sex outside marriage is not prohibited, it is more easily met (40). But in Muslim societies like Iran, where having sex before marriage is legally and religiously forbidden, responding to sexual need causes anxiety and is even experienced as guilt (41). In the WHO questionnaire, which was designed to assess the sexual-reproductive health needs of young people, dimensions include type of sexual intercourse and awareness of condom use (9). Nevertheless, in the present study, given the religious context, questions of these kinds were not asked. On the other hand, one of the items on the scale refers to easy control of sexual needs. For some single people, religious beliefs are so strong that they come to terms with their sexual needs and find them easy to control. Sometimes the ease of controlling sexual desire is related to aging and to lack of a person to meet sexual needs (42).

Stigma is the third factor. This issue merged as the second theme in the qualitative stage (reform of culture and society). Stigma refers to the ways a specific cultural, social, and religious context may affect the status of NMW. Such stigma unfavorably impacts a woman's psychological health. This dimension is also completely dependent on culture and society. For example, in Asian countries such as Malaysia and Iran, NMW are called *Andartu* ("Old Virgin") and *Torshideh* ("The Expired") (33), while to

our knowledge, NMW in contemporary European and American countries are not labeled in such a dismissive fashion. In contrast, Iranian culture treats marriage as an important social and cultural expectation; consequently, NMW can be viewed with suspicion (4, 43), for having failed to follow the social rules, and for challenging social contracts (30). In contrast, the social status of a married woman is never questioned (11). Due to this prevailing view in their society, in the qualitative study, most of the NMW mentioned issues such as discomfort from the society's point of view more often than other aspects of social life such as social security or having social status.

With regard to the psychometric properties of the present scale, statistical indices had satisfactory validity and reliability. As described in greater detail above, the procedures involved in selecting the items and testing their psychometric properties were carefully executed, rigorously following standard procedures. Given this, we believe that the present questionnaire is a valuable tool in assessing the psychological state of NMW in Iran.

The next step would be to translate the measure into other languages, test the psychometric properties of these translated versions, and perform cross-cultural comparisons.

Conclusion

The Scale of Sexual-Reproductive Needs and Concerns of NMW over 35 is a measure with acceptable validity and reliability. The first and second dimensions reflect, respectively, psychological and sexual needs, while the third dimension reflects the adverse view of society and the prevailing culture. Given this background, health policy-makers and stakeholders should reconsider their problematic attitude towards such women.

Conflict of Interests

Authors declare no conflict of interests.

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