



Original Article

## Construction and validation of a self-report violence scale in Iranian women

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### Abstract

**Introduction:** The study of sexual violence requires a valid scale that does not exist in Iran, so this study aims to build and validate the scale of sexual violence in Iranian women.

**Materials and Methods:** The method of this research is qualitative and quantitative. The statistical population included all women in Jiroft city, Iran. In the qualitative section, the available samples were collected through interviews with women with sexual violence and review of information sources, and in the quantitative section, the number of samples 100 people were selected for the predictive narrative section and 301 for the convergence narrative section. These samples were selected by cluster sampling. The data collection tool in the quantitative section was a researcher-made questionnaire based on the World Health Organization Quality and Domestic Violence Section. Content validation methods, convergence, and factor analysis were used to evaluate the validity of the scale. The reliability of the scale was assessed by internal consistency and syntactic reliability methods.

**Results:** The results of exploratory factor analysis showed that the sexual violence questionnaire was composed of 18 items of the four factors and had good validity and reliability. The second-order confirmatory factor analysis also confirmed the four-factor model.

**Conclusion:** The sexual violence questionnaire can be used to assess sexual violence in women.

**Keywords:** Construction, Scale, Validation, Violence

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### Introduction

Violence is one of the most important health problems in the world (1-3) which is more common in women than men (4). At least 4.6% of women victims die as a result of violence (5). Violence against women includes all gender-based behaviors that are likely to lead to

psychological or sexual harm to women or to force or deprive women of their lives (2,6). Violence against women is perpetrated by spouses, parents, other family members, relatives, and strangers (7). Which include emotional, physical, mental, economic, and sexual violence (8,9). The prevalence of

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violence against women aged 15 to 45 is estimated at 61.8% (10). The cost of the violence is estimated at \$ 12 billion and the death toll is projected to increase over the next 20 years (8). 75% to 80% of victims of violence show signs of physical and psychological harm (11,12). In the most extreme cases of violence, serious damage is done to the victim's physical and mental health (13-16), which in victims leads to a post-traumatic stress disorder, depression, suicide, and substance abuse (17-19). So that 10% of victims suffer from post-traumatic stress (11). Violence against women, on the other hand, has doubled due to restrictions on controlling the spread of the coronavirus (20-23). During the coronavirus epidemic, 25% of women experience some form of violence (22). In China, violence against women has increased by 300 percent (24). Violence in the United Kingdom, France, and Canada increased by 20%, 30%, and 22%, respectively (25). Appropriate action is needed to prevent and control violence against women (26). In this regard, reporting violence can play a role in reducing it (5, 27, 28). However, many women victims of violence refrain from reporting violence due to ethnic and cultural barriers and fears of identity disclosure (29,30). This lack of reporting of violence is more prevalent in traditional societies (31). Having the right screening tools can help prevent the spread of violence (32). Also, any action on violence without a specific ethnic or gender approach can undermine efforts in this area (33). Studies show that in Iran, no reliable tools for measuring violence against women have been developed so far, and many studies use Western tools to measure violence (34,35). The prevalence of violence against women is 63.8%, of which 58.8% do not report violence (36). Because factors such as fear of losing a child, fear of a spouse, lack of social support, lack of awareness of the law, fear of ruining their children's lives, and lack of appropriate tools affect the non-disclosure of violence in Iranian women (37).

Given the high prevalence of violence in Iran, the lack of disclosure of violence, and the lack of appropriate tools in Iran, It is essential to develop an appropriate tool for policymakers, planners, researchers, and other stakeholders to measure and screen violence against women.

The city of Jiroft in the south of Kerman province has high levels of violence (38). There is a significant percentage of women among the

victims, with estimates showing a 70% prevalence of violence among women (39). Many of violence cases are unreported due to tribal structure, traditional culture, poverty, deprivation, and economic pressures (40). Therefore, due to the lack of a local scale for assessing violence among Iranian women, this study was conducted to construct and validate a scale for violence among women in Jiroft city, Iran.

## Materials and Methods

In terms of purpose, this research is in the set of developmental research, and in terms of method, research is mixed. In this study, a combination of quantitative and qualitative methods are used to answer research questions; the implementation of this research is as follows:

*Interview:* The purpose of the interview in the present study was to obtain detailed and rich data that can be used for further analysis in the design of the main components of the tool and the construction of the questionnaire. Face-to-face interviews were conducted to search extensively for judgments and attitudes of violence. In-depth interviews are used when answering specific questions that are often open-ended; for this reason, in the present study, the purpose of the initial interview was to obtain information about women's experiences of violence. At this stage, women victims of violence who reported violence to judicial centers were interviewed. Women were selected through purposive sampling from among sexually abused women in Jiroft, sampling was completed after 15 interviews because of theoretical saturation.

Inclusion criteria for women included informed consent to participate in the study, age 15 to 45 years, no mental health problems, and no smoking or drug use. The most important exclusion criteria included the occurrence of stressful events (such as the death of relatives, divorce, etc.).

*Resource Review:* In this section, a systematic review of existing scales of violence and available sources and texts was performed, In this section, articles related to violence in the databases of Meg Iran, Sid, IranMedex, Magiran, Medilib, Elmnet, Pubmed, Web of Science, Scopus, and Google Scholar were reviewed.

Then the initial questionnaire was designed. This stage consisted of designing a scale of violence based on the categories and subcategories of the primary violence, which

was a combination of the previous stages (categories extracted from qualitative stage interviews and the results of a systematic review of articles). Then, this questionnaire was validated using the Delphi method by faculty members (including 10 faculty members of Kerman University of Medical Sciences who were selected as available);

The Delphi method in this study, based on Fowle's suggestion, included the following ten steps:

1. Forming a group to perform and supervise Delphi;
2. Selecting one or more committees consisting of experts and experts in the field of research to participate in the activities;
3. Preparing a questionnaire (first round);
4. Examination of the questionnaire in terms of writing;
5. Sending the first questionnaire to the members of the boards;
6. Analysis of the answers received in the first round;
7. Preparing the second-round questionnaire (with the necessary revisions);
8. Sending the second-round questionnaire to the members of the boards;
9. Analysis of the answers received in the second round (steps up to 9; continues until stability is obtained in the received answers);
- and 10. Preparation of the report by the analytical team. The initial draft of the questionnaire was prepared using Delphi results; which was performed to determine the validity and reliability of the questionnaire using psychometric methods. The results of these calculations are presented in the findings section of this article.

#### Research instrument

A) *The Researcher-Made Scale*: It is described above.

B) *WHO Domestic Violence Scale*: The WHO Domestic Violence Scale includes 32 items (on a 5-point Likert scale (never, 1 time, 2 times, 3-5 times, more than 5 times)) (21 items on demographic characteristics, 1 item on family history of violence by family members, 5 items on violence, 3 items on sexual orientation with husband, 1 item on husband addiction, and 1 item on reasons Violence). The validity of the scale has been confirmed by Rahnavardi et al. using the content validation method. Also, the content validity index (CVI) above 0.80 and the in-category reliability coefficient of 0.99 were calculated (41). This research was conducted after obtaining informed permission from the study participants. Participants were reminded that all points on the scale will remain

confidential so that subjects can choose the most accurate answers. Also, this research has an ethics code from Shahroud University of Medical Sciences. The study population in the present study includes women living in Jiroft in the age range of 15 to 45 years. According to the 2017 census, 42,000 people have been reported (42).

The number of samples for convergence validity was 100 based on the criteria of Sanjari et al. Also, the number of samples required in the exploratory factor analysis for each item was 15, Therefore, according to the number of items and the probability of falling samples, 330 people were finally selected (43).

The cluster sampling method was used for sampling in convergent validity and factor analysis. At first, convergence validity samples were selected and analyzed, and the selected individuals were excluded from the statistical population for factor analysis.

Cluster sampling was performed as follows. Thus, among the neighborhoods of Jiroft (including Silo, Shahid Beheshti, Hosseinabad, Keshavarzi, Sahebabad, Sahel Halil, Ameri, Rahjard, Narjoo, Behesht Zahra, and Kalrood neighborhoods), 4 areas were randomly selected (Kahrouyeh, Shahid Beheshti, Keshavarzi, and Behesht Zahra neighborhoods).

In each neighborhood, one street was randomly selected from all the streets. The required sample was then taken using systematic sampling.

Data analysis was performed based on 301 questionnaires received using SPSS software version 22 and LISREL version 8. In the descriptive statistics section, the frequency and percentage of demographic variables were calculated. To evaluate the content validity, the content validity ratio (CVR) and the content validity index (CVI) were estimated.

To evaluate the validity of convergence, the Pearson correlation coefficient was used between the scores of the researcher-made scale and the WHO domestic violence scale.

To investigate the validity of the structure and to determine the factor structure of the scale understudy, exploratory factor analysis was performed by principal component analysis with varimax rotation. In this analysis, factors with eigenvalues greater than 1 were considered as the main factors (43). Confirmatory factor analysis was used to examine the fit of the scale.

## Results

The results include findings from the implementation of qualitative methods (including review of documents and in-depth interviews with women) and findings from the implementation of quantitative methods (including validation of evaluation scales based on psychometric methods).

### Qualitative results

After reviewing the documents, in-depth interviews with abused women, and Delphi implementation, the following components, and indicators for assessing violence were identified:

A) Economic violence includes 1. preventing employment, 2. threatening to cut living costs, 3. lack of independence in personal assets, 4. accountability for personal expenses, and 5. permanent control of expenses

B) Physical violence includes: 1. beating, 2. damage to personal property, 3. pushing, 4. pulling hair and clothing, and 5. slapping

C) Psychological violence includes: 1. humiliation of body and appearance, 2. blaming, 3. shouting, and 4. swearing and cursing

D) Sexual violence includes: 1. blinking, 2. vulgar sexual harassment, 3. forced sex, and 4. touching the genitals

### Quantitative results

Marriage status among participants included 207 (68.77%) married, 61 (20.27%) single, 25 (8.31%) divorced and 7 (2.33%) spouse death. 39 people (12.97%) less than diploma, 82 people (27.24%) diploma, 34 people (11.30%) associate degree, 80 people (26.58%) bachelor, 59 people (19.60%) master's degree and 6 people (1.99%) had Ph.D. degree. 27 people (8.97%) under 20 years old, 35 people (11.63%) between 20 and 25 years old, 63 people (20.93%) between 25 and 30 years old, 70 people (23.26%) between 30 to 35 years old, 60 people (19.93%) were between 35 and 40 years old and 45 people (14.95%) were over 40 years old.

Content validity, all questions were confirmed by experts. The content validity ratio for the 18 items of the scale ranged from 65 to 100% (According to the Lavashev table, a CVR above 0.62 is required to evaluate 10 specialists) (44).

CVI was also estimated to be 0.73, which is an acceptable value (The minimum acceptable CVI value is 0.70) (45). To investigate the

correlation between the subjects' scores in each item and the total score of the researcher-made scale, the Pearson correlation coefficient was used. The results of the correlation of items with the total score of the scale indicate that all items have a positive and significant correlation with the total score in the range of 0.41 to 0.54. To evaluate the validity of convergence, the researcher-made scale was implemented alongside the domestic violence scale. The results showed that the correlation between the researcher-made scale and the domestic violence scale was positive and significant ( $r=0.71$ ,  $P=0.001$ ).

### Exploratory factor analysis

The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) and Bartlett's test of sphericity were used to determine whether the correlation matrix between scale questions was sufficiently appropriate for factor analysis.

The results showed that the KMO value for the present study was equal to 0.90, which indicates the adequacy of the sample size; Bartlett's test of sphericity was equal to  $\chi^2=2973.69$  ( $df=153$ ,  $P<0.01$ ), so performing factor analysis on the obtained data is justified. To perform a good factor analysis in the sampling adequacy test, values of 0.60 and above are required, and to factor analysis, the appropriate, p-value of Bartlett's test should be less than the significance level of 0.05 (46). The results showed that the scale consists of four factors. These four factors explain 69.48% of the variance of violence based on the principal component method with varimax rotation (The first factor= 20.31%, the second factor= 18.20%, the third factor= 15.97%, and the fourth factor= 14.99%). The factor load for each item according to the four-factor model is presented in Table 1.

Based on the results of Table 1, none of the items on the scale were omitted because all the extraction coefficients of the questions were higher than 0.4.

Table 2 shows the questions related to each dimension. These dimensions were registered as follows:

Dimension 1: items 6, 7, 8, 9 and 10 (economic violence)

Dimension 2: Items 1, 2, 3, 4 and 5 (physical violence)

Dimension 3: items 15, 16, 17 and 18 (psychological violence)

Dimension 4: items 11, 12, 13 and 14 (sexual violence)

**Table 1.** Extraction coefficients related to each item on a researcher-made scale

	Initial	Extraction
i1	1	0.69
i2	1	0.66
i3	1	0.73
i4	1	0.71
i5	1	0.68
i6	1	0.71
i7	1	0.64
i8	1	0.66
i9	1	0.70
i10	1	0.73
i11	1	0.66
i12	1	0.70
i13	1	0.71
i14	1	0.71
i15	1	0.71
i16	1	0.70
i17	1	0.68
i18	1	0.72

**Table 2.** Item loadings from exploratory factor analysis using PCA

	Component			
	1	2	3	4
i1	0.16	0.81	0.04	0.09
i2	0.25	0.76	0.10	0.05
i3	0.18	0.83	0.04	0.07
i4	0.28	0.78	0.09	0.14
i5	0.46	0.62	0.20	0.21
i6	0.82	0.17	0.04	0.13
i7	0.75	0.23	0.11	0.12
i8	0.78	0.20	0.00	0.10
i9	0.79	0.22	0.13	0.09
i10	0.76	0.29	0.19	0.18
i11	0.10	0.07	0.18	0.78
i12	0.14	0.15	0.15	0.80
i13	0.10	0.05	0.13	0.82
i14	0.29	0.18	0.39	0.67
i15	-0.01	0.09	0.82	0.20
i16	0.09	0.07	0.82	0.12
i17	0.08	0.02	0.81	0.11
i18	0.25	0.15	0.73	0.33

#### Exploratory factor analysis

For the comparative fit index of the scale, a model that was derived from the exploratory factor analysis was set up and tested. The (Standardized RMR) SRMR < 0.1, (Root Mean Square Error of Approximation) RMSE < 0.08, (Comparative Fit Index) CFI > 0.9, Goodness of Fit Index (GFI) > 0.9, (Adjusted Goodness of Fit

Index) AGFI > 0.85, and (Chi-square/Degrees of Freedom) CMIN/DF < 3 were used to test the overall fitness of the model (47). As shown in Table 3, all the goodness-of-fit measures met their respective criterion. It shows the factor loadings of the four factors in Figure 1, this shows that the proposed model fits the data we can say that the data model supports four

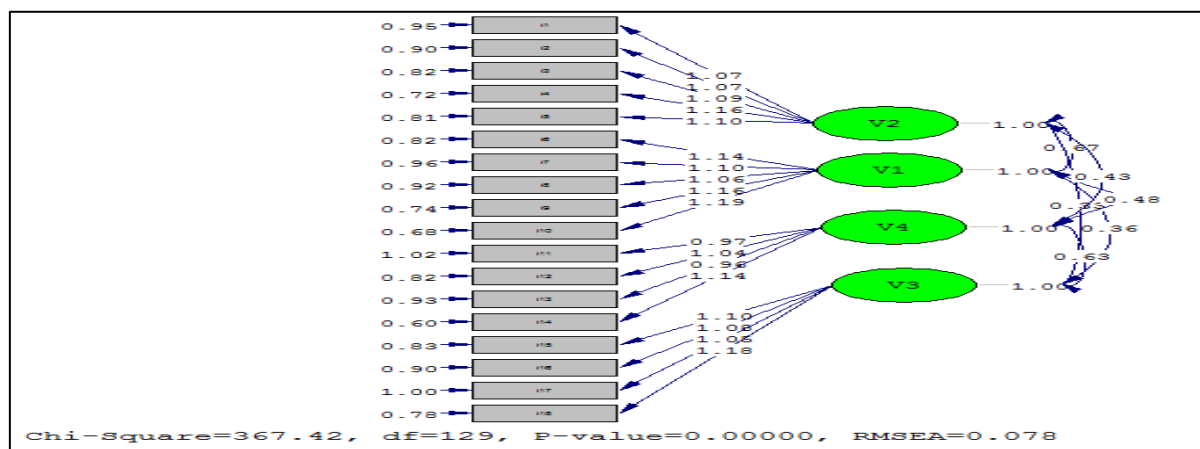
operating. We can say that the data model supports four operating reasonably well. Internal consistency methods (Cronbach’s alpha coefficients) were used to test the reliability of the Scale. The got alpha coefficient was for the whole scale 90% and the subscales contain economic violence 89%, physical violence 88%, psychological violence 85%, and sexual violence 84%.

We also calculated the reliability coefficient of the scale using the descriptive method. The halving coefficient for the first half of the data (9 items) was equal to 0.89 and for the second half of the data (9 items) was equal to 0.86 and the correlation between the two halves was 0.65.

These findings show the optimal internal consistency coefficient for scale.

**Table 3.** Goodness-of-Fit Measures

SRMR (< 0.1)	RMSEA (< 0.08)	CFI (> 0.9)	GFI (> 0.9)	AGFI(> 0.85)	CMIN/DF (< 3)
0.07	0.07	0.97	0.88	0.84	2.84



**Figure 1.** Confirmatory factor analysis results

**Discussion**

The present study was conducted due to the lack of standard tools for measuring violence against women in Iran to construct and validate a scale for measuring violence against women in Iran. This scale was made based on a review of sources and interviews with women with 18 items. After designing the items, the content validity of the scale was confirmed using CVR and CVI calculation. The WHO Domestic Violence Scale has been used to assess the validity of the scale convergence. The results showed that there is a positive and significant correlation between the two scales of researcher-made and domestic violence WHO. Therefore, the convergence validity of the researcher-made scale is confirmed.

The validity of the scale structure was investigated by exploratory factor analysis (principal component method and orthogonal rotation by varimax method) and confirmatory factor analysis. Findings from exploratory factor analysis showed that the 4 factors formed

in this analysis explain 69.48% of the variance of the scale of violence against women. Items 1 to 5 were related to the physical violence component, items 6 to 10 were related to economic violence, items 11 to 14 were related to sexual violence, and items 15 to 18 were related to the psychological violence component. This finding is partly due to the 5-factor model (1- emotional, 2- verbal, 3- sexual, 4- mild physical and 5- severe physical) in Fardin et al. study.

Five-factor model (1- physical, 2- sexual, 3- Accusation or humiliation, 4-mockery and 5-economic) in Pişkin et al. study. Five-factor model (including 1-cyber-violence, 2-verbal, 3-physical, 4-psychological and 5-sexual violence) in Abilleira et al. study. Three-factor model (including 1-physical, 2-sexual and 3-psychological) Ford-Gilboe et al (2016), 4-factor model (including 1-physical abuse, 2-sexual, 3-psychological and 4. control) in Kalokhe et al., and Ernst et al. studies (48-53).

The economic dimension questions of this research are in line with the economic dimension questions of the Pişkin et al. scale (49), physical violence dimension questions of this study are consistent with the physical dimension questions of Pişkin et al., Abilleira et al., and Ford-Gilboe et al. scales (49,50,52).

This dimension is also consistent with the mild and severe physical dimension questions of the Fardin et al. scale and the questions of the physical harassment dimension of the Kalokhe et al. scale (48,51).

Emotional dimension questions of this study with questions of emotional and verbal dimensions of the Fardin et al. scale, accusation and ridicule dimensions of Pişkin et al. scale, verbal and psychological dimension questions of Abilleira et al., Ford-Gilboe et al. scale psychological dimension questions, and Kalokhe et al. scale psychological dimension questions are consistent(48-52). The sexual dimension questions of this study are consistent with the sexual dimension questions of the Fardin et al., Pişkin et al., Abilleira et al., Ford-Gilboe et al., and Kalokhe et al. scales (48-52).

The alignment of the researcher-made scale of violence with other scales shows that the scale of violence against women in the present study has considered all aspects related to violence against women. It can be said that the scale of violence measures different dimensions of violence. Therefore, it is suggested that this scale be used as a suitable tool in future studies.

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Research limitations include not determining the cutting point for research tools and sampling in one of the southern cities of the country.

As a result, generalization of research results to other cities in the country should be done with caution and in future research, the cut-off point for this scale should be calculated.

Another limitation is related to the content of the scale items, which is about personal and confidential issues of individuals because the Responsive is likely to be cautious in completing the scale and thus damage the validity of the research.

## Conclusion

In general, the validity and reliability of the Violence Against Women Scale has been confirmed in the present study, and this scale can be used to assess violence against women aged 15 to 45 years in research.

The scale could also be useful in screening women victims of violence and Increase research into violence.

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