

Prevalence of Sexual Dysfunction among Reproductive-age Women in Iran: A Systematic Review and Meta-analysis

Ashraf Ghiasi (MSc)^{1*}, Afsaneh Keramat (PhD)²

¹ PhD Student in Reproductive Health, Student Research Committee, Shahroud University of Medical Sciences, Shahroud, Iran

² Professor, Department of Reproductive Health, School of Nursing and Midwifery, Shahroud University of Medical Sciences, Shahroud, Iran

ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Review article</p>	<p>Background & aim: Sexual dysfunction is one of the most common problems in women which negatively affect their quality of life, self-esteem, and interpersonal relationships. The prevalence of this problem varies in different studies. Regarding this, this review was conducted to provide a clear picture of the prevalence of sexual dysfunction among reproductive-age women in Iran using a systematic review and meta-analysis.</p> <p>Methods: The relevant articles published up to April 9, 2017 were searched both in the international including Google Scholar, PubMed, Scopus and national electronic databases such as SID, Iran Medex, Magiran, and Irandoc. The searching process was accomplished using a set of standard keywords. The data were analyzed using RevMan software, version 5.3.</p> <p>Results: The database search resulted in the retrieval of 1,024 articles, 9 cases of which were selected for systematic review. Out of the selected studies, seven articles were eligible to be included in the meta-analysis. According to the results of the reviewed studies, the pooled prevalence rate of sexual dysfunction among the reproductive-age women was estimated as 52% (95% CI: 39-66%). Furthermore, the pooled prevalence of sexual dysfunction in the domains of sexual desire, sexual arousal, lubrication, sexual pain, and orgasm was estimated as 39% (95% CI: 35-42%), 34% (95% CI: 21-46%), 32% (95% CI: 21-43%), 38% (95% CI: 24-51%), and 30% (95% CI: 22-38%), respectively.</p> <p>Conclusion: The results of the retrieved studies demonstrated that sexual dysfunction is a common health problem among the Iranian women of reproductive age. However, more high-quality research is needed in this area.</p>
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Introduction

The World Health Organization defines sexual health as the state of physical, emotional, mental, and social well-being in relation to sexuality, not merely the absence of disease, dysfunction, or infirmity (1). Sexual response is one element of a woman's sexual health and sexual dysfunction refers to a problem that occurs during any phase of the sexual response cycle (2, 3). Female sexual dysfunction (FSD) is defined as a recurrent or persistent absence of sexual desire and sexual arousal, sense of pain during intercourse, and inability to or persistent difficulty in achieving orgasm (4).

Social and cultural barriers, taboos, and misconceptions make the estimation of sexual dysfunction prevalence in women quite difficult (5). However, based on the results of current studies, sexual problems are highly prevalent in women (6). The results of a global study revealed that 39% of women were affected by at least one sexual dysfunction (7). In a population-based study conducted in Iran, the prevalence of FSD was reported as 31% (8).

Sexual dysfunction is also known as one of the causes of emotional tensions and marital conflicts, which can have devastating effects on the quality

* Corresponding author: Ashraf Ghiasi, Student Research Committee, Shahroud University of Medical Sciences, Shahroud, Iran. Tel: 02332395054; Email: a.ghiasi25@gmail.com

of life, self-confidence, mood, and relationships among couples (9). The diagnosis and treatment of sexual dysfunction can play an important role in the enhancement of sexual satisfaction, improvement of quality of life, and also prevention of marital conflicts and their associated consequences (10).

The prevention and treatment of FSD requires the exact estimation of its prevalence in a society. Given the large number of reproductive-age women in the population pyramid of Iran and the importance of sexual function as one of the most important public health issues, the present systematic review was conducted to investigate the prevalence of sexual dysfunction among the reproductive-age women in Iran.

Materials and Methods

The present study was a systematic review and a meta-analysis examining the prevalence of sexual dysfunction among the reproductive-age women in Iran. Databases were searched with no time restriction; in this regard, the articles published up to April 9, 2017 were investigated.

To find the relevant studies, the databases of SID, IranMedex, Magiran, Irandoc, Scopus, and PubMed, as well as the search engine of Google Scholar were used. The searching process was performed using the following keywords: "Female sexual dysfunction", "Female sexual function", "Sexuality", "Prevalence", "Reproductive age", and "Iran", along with all their possible combinations. To ensure that no article is missed, the reference lists of all included articles were also manually reviewed to identify additional articles.

The main criterion for the inclusion of the articles in this systematic review was the selection of cross-sectional studies published in Persian or English investigating the prevalence of sexual dysfunction among the Iranian women of reproductive age. Consequently, the studies conducted on pregnant women, infertile individuals, women with known psychiatric disorders, individuals with chronic diseases, and those with gynecologic malignancies were excluded.

In addition, the articles combining the prevalence of sexual dysfunction in women of reproductive age and menopause age were excluded from this systematic review due to the inability to separate the results related to

the reproductive age. The other exclusion criteria included the use of researcher-made questionnaires and sample size of less than 100 individuals, as well as lack of access to the full texts of the articles.

The selection process was performed in three steps. In this regard, first, the titles of all collected articles were reviewed, and duplicates were removed. Second, the abstracts of all articles that were somehow relevant to the subject of interest were collected. Finally, the studies that investigated the prevalence of sexual dysfunction among the Iranian reproductive-age women were included in the study.

Two reviewers independently performed this process, and disagreements between the researchers were resolved through discussion. The data were extracted from the studies meeting the inclusion criteria included the first author's name, year of research implementation, year of publication, age range and mean age of study participants, sample size, instruments used for assessing sexual function, and prevalence of sexual dysfunction.

The quality of the articles included in this systematic review and meta-analysis was assessed using the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist (11). This checklist is comprised of 22 assessment items with a score range of 0-44. Accordingly, the articles with the score ranges of 0-22, 23-33, and 34-44 were divided into three groups of low-quality, moderate-quality, and high-quality, respectively.

The data were analyzed using the RevMan5.3 software. The meta-analysis in this study was performed via the Random Effects model. The calculation of the standard error was accomplished using the formula of $SEp = \sqrt{p(1-p)/n}$.

Results

The initial search query led to the retrieval of a total of 1,024 articles. After the exclusion of duplicates and irrelevant articles, 17 related articles were remained for full text evaluation. Out of these articles, one, one, two, and four articles were removed due to small sample size, lack of access to the full text, use of researcher-made questionnaires, and impossibility of the separation of the results associated with reproductive-age

women, respectively (Figure 1).
Out of the nine articles included in this systematic review, three and two cases had

been conducted in the city of Tehran (12, 13, 14) and Sari (15, 16), respectively. The other studies had been carried out in the cities of

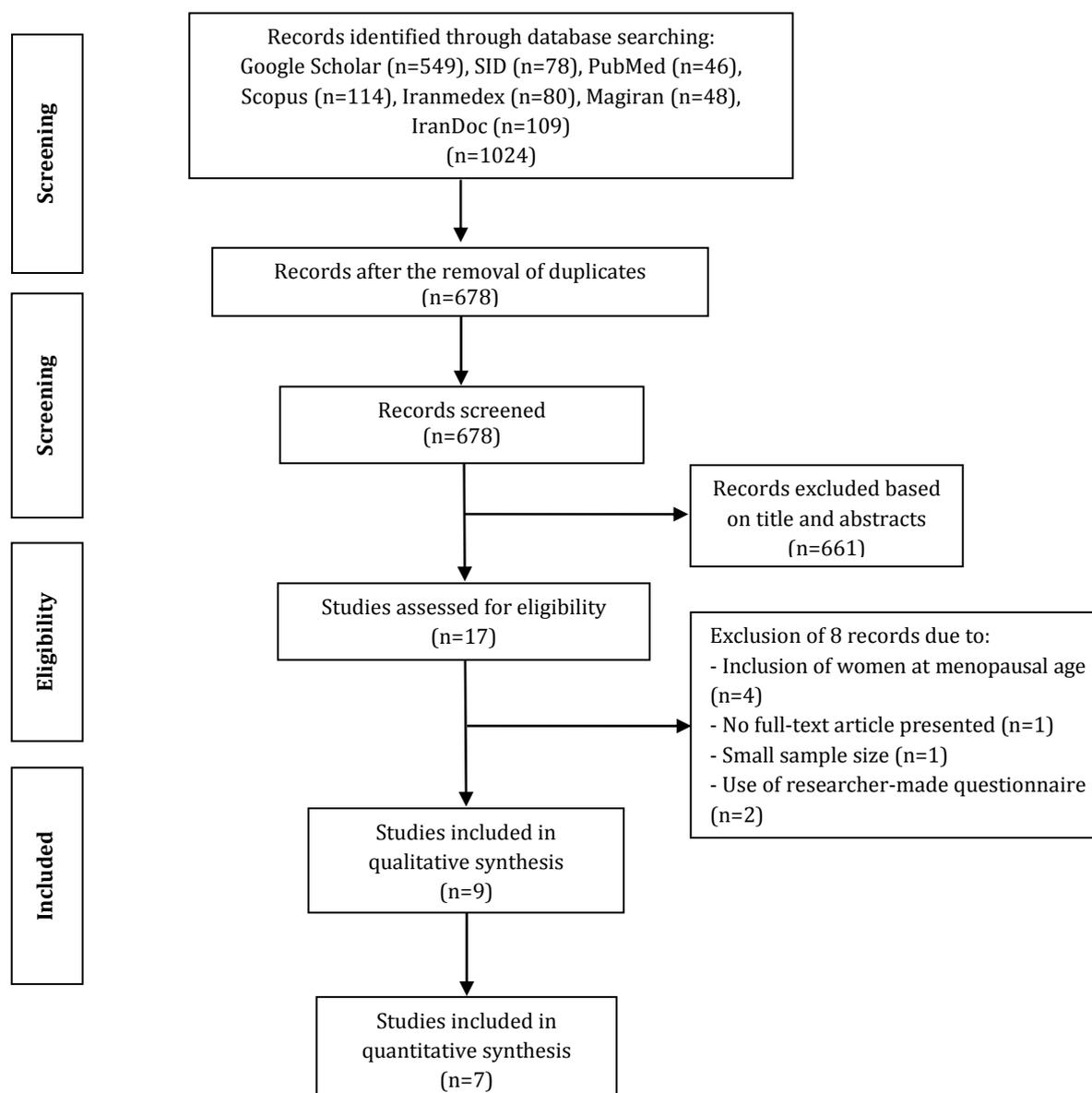


Figure 1. PRISMA flow diagram of study selection process

Ilam (17), Tabriz (18), and Dezful (19), as well as in Qazvin, Kermanshah, Golestan, and Hormozgan provinces (20). The articles had been also published between 1999 and 2015, and the total sample size was 4,032 individuals with averagely 448 samples per study. The smallest and largest

sample sizes were related to the articles performed by Ramezani et al. (120 individuals) and Hosseini Tabaghdehi et al. (899 individuals), respectively (13, 15).

In the investigations conducted by Shokrollahi et al. (14) and Khaki-Rostami et al. (16), the Brief

Sexual Function Index for Women and Arizona Sexual Experiences Scale had been used to assess

sexual function in women.

Table 1. Characteristics of the included studies

First author - Publication year	Participants	Mean age	Age range	Instrument	Sampling procedure	Prevalence rate of dysfunction
Shokrollahi P, 1999 ¹⁴	300 healthy women, who sought services at family planning centers in Tehran	31.3	16-53	*BSFI-W	Sexual dysfunction=38% Desire disorder=15% Arousal disorder=17% Lubrication disorder=15% Vaginismus=8% Dyspareunia=10% Orgasmic disorder=46% Sexual dissatisfaction=49%
Ramezani M, 2012 ¹³	120 women who referred to the health centers of Shahid Beheshti University of Medical Sciences	30.29±4.3	18-35	**FSFI, a total score under 28 indicated FSD	Multiple-stage sampling	Sexual dysfunction=64.2% Desire disorder= ... Arousal disorder= ... Lubrication disorder= ... Pain disorder=36.7% Orgasmic disorder=16.7% Authority Deprivation=15.6% Abandonment=8.4% Sexual dissatisfaction=20.8%
Bahrami N, 2012 ¹⁹	250 reproductive age women who attended to health centers in Dezful	34.7±6.4	20-55	FSFI, a total score under 26 indicated FSD	Convenience sampling	Sexual dysfunction=64.6% Desire disorder= ... Arousal disorder= ... Lubrication disorder= ... Pain disorder= ... Orgasmic disorder=... Sexual dissatisfaction=21.4%
Continuous of Table 1.						
Hoseini Tabaghdehi M, 2012 ¹⁵	899 reproductive age women who referred to the Health Centers of Sari City	28.3±6	16-53	FSFI	Multi-stage sampling	Sexual dysfunction=45.2% Desire disorder=39.6% Arousal disorder=35.5% Lubrication disorder=39.8% Pain disorder=47.3% Orgasmic disorder=42.7% Sexual dissatisfaction= 2.4%
Ramezani Tehrani F, 2014 ²⁰	784 married women living in urban areas of 4 provinces of Iran	33.5±6.9	18-45	FSFI, a total score of 23 or lower indicated FSD	Multistage probability cluster sampling	Sexual dysfunction=27.3% Desire disorder=35.6% Arousal disorder=39.9% Lubrication disorder=18.9% Pain disorder=56.1% Orgasmic disorder=27.3% Sexual dissatisfaction=15.2%
Mohammad-Alizadeh S, 2014 ¹⁸	532 women of reproductive age who attended the primary health centres of Tabriz	30.9±7.1	15-49	FSFI, ...	Two-stage cluster sampling	Sexual dysfunction=66% Desire disorder=37% Arousal disorder=44% Lubrication disorder=28% Pain disorder=30% Orgasmic disorder=25% Sexual dissatisfaction=31%
Jaafarpour M, 2013 ¹⁷	400 married women who attended the primary health centres of Ilam	28.2±2.3	18-50	FSFI, a total score of less than 28 was considered	Simple random sampling	Sexual dysfunction=46.2% Desire disorder=45.3% Arousal disorder=37.5% Lubrication disorder=41.2% Pain disorder=42.5%

	University of Medical Sciences			as FSD		Orgasmic disorder=42% Sexual dissatisfaction=44.5%
Amirkhani Z, 2012 ¹²	384 married women who referred to Boo-Ali, Amir-Al-Momenin and Javaheri hospitals in Tehran	28.6±7.1	15-45	FSFI, a total score of 16 or lower indicated FSD	Simple random sampling	Sexual dysfunction= ... Desire disorder=35.9% Arousal disorder=10.9% Lubrication disorder= ... Pain disorder=14.3% Orgasmic disorder=25.2% Sexual dissatisfaction=8%
Khaki-Rostami Z, 2015 ¹⁶	363 newly married women who attended the primary health centres of Sari	25.7±4	+18	***ASEX	Multiple-stage sampling	Sexual dysfunction=22.3% Desire disorder=3.6% Arousal disorder=12.7% Lubrication disorder=7.7% Orgasmic disorder=16% Orgasm dissatisfaction=11.6%

BSFI-W: Brief Sexual Function Index-Women, FSFI: Female sexual function index, FSD: female sexual dysfunction, ASEX: Arizona Sexual Experience Scale

The researchers of the other studies had utilized the Female Sexual Function Index (FSFI) (12, 13, 15, 17, 18, 19, 20). Based on the reviewed studies, the overall prevalence of sexual dysfunction among the reproductive-age women in Iran ranged within 22.3% (in the city of Sari) to 66% (in the city of Tabriz) (16, 18).

The prevalence of sexual dysfunction in the domain of sexual desire ranged from 3.6% in the article by Khaki-Rostami et al. to 45.3% in the study by Jaafarpour et al. (16, 17). The lowest (10.9%) and highest (44%) prevalence rates of sexual dysfunction in the domain of sexual arousal were respectively found in the research performed by Amirkhani et al. and Mohammad-Alizadeh-Charandabi et al., respectively, in the city of Tabriz (12, 18).

The lowest (14.3%) and highest (56.1%) prevalence rates of the dimension of sexual pain disorder were observed in the studies by Amirkhani et al. and Ramezani Tehrani et al., respectively (12, 20). Furthermore, the prevalence of sexual lubrication disorder varied from 7.7% in the article conducted by Khaki-Rostami et al. to 41.2% in the investigation carried out by Jaafarpour et al. (16, 17).

The highest prevalence rate of orgasmic disorder (42.7%) was in the study by Hosseini Tabaghdehi et al. conducted in the city of Sari,

and the lowest prevalence rate of this disorder (16.7%) was reported in the study by Ramezani et al. in the city of Tehran (15, 13). The prevalence of sexual dissatisfaction in the articles reviewed was between 2.4% in the study by Hosseini Tabaghdehi et al. and 49% in the study carried out by Shokrollahi et al. (15, 14) (Table 1).

In this study, a meta-analysis was performed on seven articles using the FSFI. The retrieved studies reported no data regarding the prevalence of sexual dysfunction in some dimensions. In this regard, the overall prevalence of sexual dysfunction and the prevalence of orgasmic disorder were reported in six articles. Five studies examined the prevalence of sexual desire disorder, sexual arousal disorder, and sexual pain disorder. Additionally, the prevalence of sexual lubrication disorder was dealt with in four manuscripts.

The overall prevalence of sexual dysfunction in reproductive-age women was estimated as 52% (95% CI: 39-66%) (Figure 2). The prevalence rates of sexual dysfunction in the dimensions of sexual desire, sexual arousal, sexual lubrication, sexual pain, and orgasmic disorder were obtained as 39% (95% CI: 35-42%), 34% (95% CI: 21-46%), 32% (95% CI: 21-43%), 38% (95% CI: 24-51%), and 30% (95% CI: 32-38%), respectively (Figure 3).

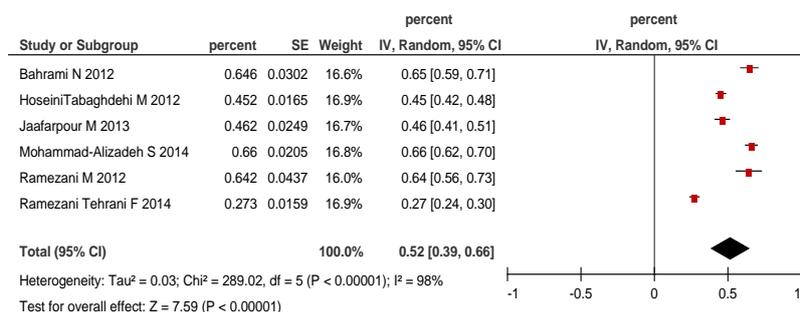


Figure 2. Forest plot of the prevalence of sexual dysfunction among reproductive-age women in Iran

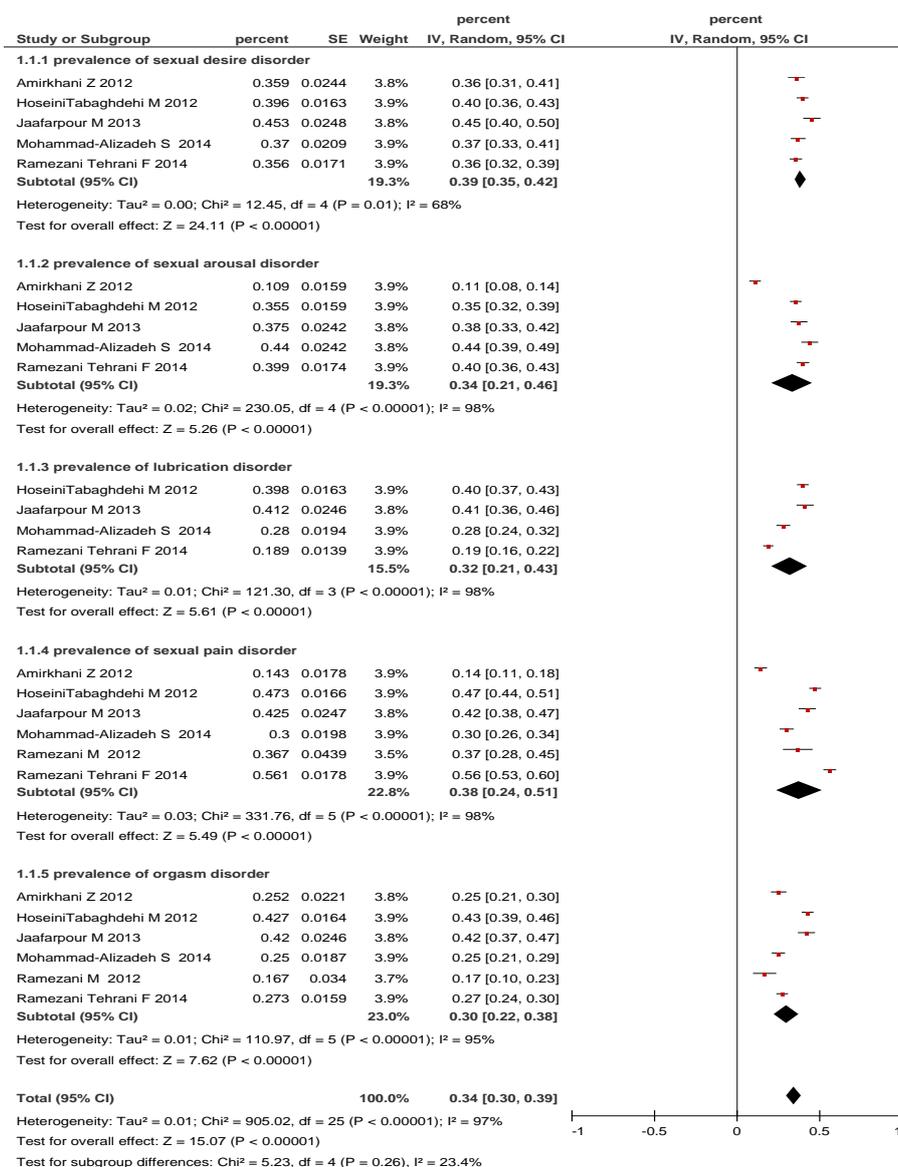


Figure 3. Forest plot of the prevalence of sexual dysfunction domains among reproductive-age women in Iran

Table 2. Assessment of the quality of reviewed studies according to STROBE criteria

S. NO	Study details	STROBE items																				Total score			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		21	22	
1	Shokrollahi P, 1999	□	□	□	□	□	□	θ	□	θ	◇	□	◇	□	□	□	□	θ	□	◇	◇	◇	□	33	
2	Ramezani M, 2012	□	□	□	□	□	□	θ	□	θ	θ	□	◇	□	□	□	□	◇	◇	□	θ	◇	◇	□	31
3	Bahrami N, 2012	□	□	□	□	□	□	θ	□	θ	θ	□	θ	□	□	□	□	◇	θ	□	□	◇	◇	θ	29
4	HoseiniTabag hdehi M, 2012	□	□	□	□	□	□	θ	□	θ	□	□	◇	□	□	□	□	θ	□	θ	◇	◇	□	33	
5	Ramezani Tehrani F, 2014	□	□	□	□	□	□	θ	□	θ	□	□	◇	□	□	□	□	□	◇	□	□	◇	◇	□	36
6	Mohammad-Alizadeh S, 2014	□	□	□	□	□	□	θ	□	θ	θ	◇	◇	□	□	□	□	□	θ	□	◇	◇	◇	θ	29
7	Jaafarpour M, 2013	□	□	□	□	□	□	θ	□	θ	□	□	◇	□	□	□	□	□	θ	□	□	◇	◇	□	35
8	Amirkhani Z, 2012	□	□	□	□	□	□	θ	□	θ	θ	◇	◇	□	□	□	□	◇	θ	□	◇	◇	◇	θ	28
9	Khaki-Rostami Z, 2015	□	□	□	□	□	□	θ	□	θ	□	□	◇	□	□	□	□	□	θ	□	◇	◇	◇	□	34

1, title, and abstract; 2, background/rationale; 3, objectives; 4, study design; 5, setting; 6, participants; 7, variables; 8, data sources/measurement; 9, bias; 10, study size; 11, quantitative variables; 12, statistical methods; 13, participants (groups); 14, descriptive data; 15, outcome data; 16, main results; 17, other analyses, discussion; 18, key results; 19, limitations; 20, interpretation; 21, generalizability, other information; 22, funding

2(□), good description; 1(◇), partial description; 0(θ), no description

Quality of Articles

The quality of the articles included in this study was assessed using the STROBE checklist. According to the criteria in this standard checklist, the articles had high-to-moderate quality (Table 2).

Discussion

The present systematic review and meta-analysis investigated the prevalence of sexual dysfunction exclusively among the reproductive-age women in Iran. Out of the nine studies included in this systematic review, seven articles using the FSFI were included in the meta-analysis process. According to this meta-analysis, the overall prevalence of sexual dysfunction among the reproductive-age women in Iran was estimated as 52% (95% CI: 39-66%).

In a study conducted in China (2006), the overall prevalence of sexual dysfunction was reported as 43% (21) that is relatively equal to the value obtained in this study. In an investigation performed by Echeverry et al. (2010) carried out in Columbia in order to examine the prevalence of sexual dysfunction among the women aged 18-40 years, the overall prevalence of sexual dysfunction was reported as 30% (22), which is lower than the value found in the present study. In another study, the Egyptian women aged 16-49 years had a sexual

dysfunction prevalence of 69% (23), which is higher than the value observed in this study.

According to the findings of the present study, the highest and lowest prevalence rates of different dimensions of sexual dysfunction in reproductive-age women were respectively related to sexual desire and orgasmic disorder that were obtained as 39% (95% CI: 35-42%) and 30% (95% CI: 32-38%), respectively. In the study carried out by Elnashar et al. (22), the highest and lowest prevalence rates of sexual dysfunction were reported in the dimensions of sexual desire and orgasmic disorder, respectively.

In a study conducted by Zhang et al. (24), the dimension of sexual desire had the highest prevalence, while pain during intercourse had the lowest prevalence. In an investigation performed by Oiomu et al. (25), sexual dysfunction in the dimensions of orgasmic disorder and pain during intercourse had the highest and lowest prevalence rates, respectively. Diversity among the results of different studies may be due to the various definitions of sexual dysfunction, use of different tools for the measurement of sexual dysfunction, different age composition of the studies, and adoption of different data collection strategies (20, 26).

Besides, cultural taboos and misconceptions may lead to the underestimation of the prevalence rate of sexual dysfunction in different

communities (20). The prevalence of sexual dissatisfaction in the studies assessed in this systematic review was within 2.4-49%, revealing that the women examined in different studies had a moderate level of sexual satisfaction.

However, educational, cultural, and social factors, as well as religious beliefs, could be considered as barriers to women to easily demonstrate their sexual dissatisfaction. One of the limitations of the present study was that some of the included studies reported no data regarding the prevalence of sexual dysfunction in one or more dimensions, which inevitably led to the exclusion of these studies from the meta-analysis process. The cross-sectional nature of the investigations was another limitation of this systematic review.

Conclusion

The results of the reviewed studies were indicative of the prevalence of sexual dysfunction among the reproductive-age women in Iran. However, more high-quality research is needed in this area.

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Conflicts of interest

None declared.

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