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Review

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Infertility and female sexual dysfunction: A literature review

Garyfalia Bitsis[1], Ekaterini Domali[1], Eirini Drakaki[1], Peter Drakakis[1,2], Sofoklis Stavros[2]

[1]First Department of Obstetrics and Gynecology, IVF Unit, Alexandra Hospital, Medical School of the National and Kapodistrian University of Athens, Greece, [2]Third Department of Obstetrics and Gynecology, IVF Unit, University Hospital "Attikon", Medical School of the National and Kapodistrian University of Athens, Greece

Corresponding Author

Sofoklis Stavros, Third Department of Obstetrics and Gynecology, IVF Unit, University Hospital "Attikon", Medical School of the National and Kapodistrian University of Athens, 1 Rimini street, Chaidari, Athens, Greece, e-mail: sfstavrou@gmail.com

Abstract

Female sexuality and fertility have been increasingly studied during the past decades. Although infertility was always viewed as a medical condition and treated by doctors, female sexual dysfunction was thought to be a psychological disorder until the late 90s. As a result, it is not until the beginning of 20th century that literature largely indicated that women diagnosed with infertility are more likely to experience sexual dysfunction. Both entities seem to be munltidimensional and complex conditions. Consequently, their treatment needs to include investigation of all the related aspects, such as the psychological assessment of the couple. The aim of this study is to review the literature on the complex relationship between infertility, its treatment and sexual dysfunction and to investigate the necessity of assessment of sexual function in women facing infertility. Scientific research published in the english language was used. The search for suitable studies was conducted with the research databases PubMed, ScienceDirect, Scopus using the keywords: sexual dysfunction, infertility, infertile couple, female sexuality. Overall, these studies revealed that sexual satisfaction is strongly impaired by the consequences of infertility. Furthermore, sexuality and fertility share many organic and non-organic risk factors that need to be profoundly investigated in the future.

Key words: sexual dysfunction, female infertility, infertile couple, female sexuality

Introduction

Fertility is a fundamental component of women's quality of life as it still seems to reflect feminine identity and adequacy of their social role. According to the World Health Organization (WHO), infertility is defined as the failure to conceive after one year of unprotected sexual intercourse in women younger than 35 year and after 6 months in women older than 35 years old.[1] It is estimated that up to 15% of couples experience infertility. It can be grouped into three categories based on the origin of its causes: female ifertility, male infertility and idiopathic infertility. Female infertility is generally affected by the

impaired function of reproductive organs including infections, traumas and congenital disordes, by endocrine disorders, systemic clinical entities, health-risk behaviors and psycological factors.[1,2]

Although it should be viewed and treated as a couple's problem, infertility has a different impact on each sex. Unfortunately, nowadays infertility is still a stigma, especially for women. More specifically, regardless of the beliefs and values of different social backgrounds throughout the world, the inability of childbearing remains a strong life-stressor that affects negatively women's self-respect. In particular, as motherhood remains one of the stronger gendered expectations, the infertile women face great psychological pressure and distress in order to procreate. Commonly, these cultural expectations provoke tendency to self-isolation due to guilt for the 'inadequacy' to conceive.[3] Following a diagnosis of infertility, family planning becomes an obsessive aim. As a result, sexual intercourse loses its spontaneity. Furthermore, its frequency and timing are determined by the authorised medical team. This may lead to lack of intimate sexuality between the sexual partners and loss of the erotic value of the coitus. So it stands to reason that infertility has a great emotional impact on the infertile partners, especially women, and impair their sexual function.

Female sexuality is not yet fully elicidated. Several models of sexual arousal have attempted to contextulize female sexual funtion. As far as female sexual dysfunction is concerned, it is defined by the Diagnostic and Statistical Manual of Mental Disorders as the reccurent or persistent complaint regarding four different aspects of female sexual life: female sexual interest/hypoactive sexual desire disorder, female sexual arousal disorder, female orgasmic disorder/anorgasmia, genito-pelvic pain/penetration disorder including vaginismus. The main criterion to reach this diagnosis is the duration of the problem• it should last more than six months.[4] Sexual disorders seem to be very common with 43% prevalence in females. This percentage may be higher (up to 90%) among women with infertility.[5]

Aim-Objectives

This review tries to unfold the multifactoral link between female infertility and female sexual disorders. All the selected articles focus on 3 main questions:

- Is female sexual function impaired due to infertility?
- Are there organic enteties that affect both female fertility and sexual function?
- Is fertility treatment risk factor for female sexual dysfunction?

Materials and methods

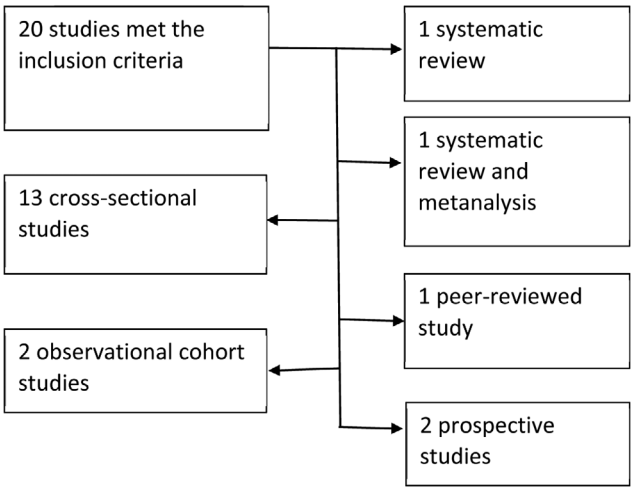
A literature search was performed for publications from 2008 to 2023 via the electronic databases PubMed, ScienceDirect and Scopus. The exclusion and inclusion criteria were decided by concesus. Therefore, in our search the included articles were written in English language using the following key words: sexual dysfunction, female infertility, infertile couple, female sexuality. The authors of the review excluded the case-reports, editorials, debates, breef communications, non-peer-reviewed articles, literature reviews, studies with cross-cultural dimensions. All the selected studies were highly citated (over 40 citations each) and used only validated questionnaires and research instruments. In addition, they were analysed in their full-lenght version.

The result of the selection was 20 articles. One systematic review and one meta-analyses were selected. The rest concerned cohort studies. Table 1. outlines the studies selected via online research.

Results

The analysis of the retrieved studies contributed to a better understantding of the comlex relarionship between female infertility and sexual dysfunction. Table 2. summarizes our findings.

Table 1. Bibliography research findings.



The bibliography research reveals a link between female infertility and sexual dysfunction. According to Khademi et al., the majority of infertile Iranian women seems to face some kind of sexual disorder after the diagnosis of infertility. He supports that the most affected domain of sexual function was the arousal-sensation one.[2] The arousal disorder was also determined as the most frequent dysfunction by Aggarwal by the usage of FSD.[5] Nelson seems to disagree on this result. The increasing duration of infertility, as well as secondary infertility have a negative correlation with the appearance of female sexual dysfunction.[3] The studies by Oskay, Iris, Tanha and Bakhtiari had similar findings.[6-9] Furthermore, high education level and respectable family income are congruent with better female sexual function. However, this relationship was proved to be weak. Another Khademi's intresting finding was the absence of correlation between erectile dysfunction and female sexual disorders.[2]

Nelson's multivariete analysis notes the existence of depressive symptoms in infertile women. Keskin's study seem to agree with the above outcome. Contraty to Khademi's results, Nelson reports that male factor of infertility, per example impaired erectile functioning, is a risk factor for female sexual dysfunction.[3]

Moreover, Furukawa made an interesting and controversial observation. Although the other studies impied that infertility has little or no impact on the domain of pain, this study proved that dyspareunia has no link with female infertility.[10] But, contrary to the findings of Keskin, Furukawa shows that the rates regarding sexuality, pain during coitus and depressive disorder of healthy women and women seeking fertility treatment had no difference.[10,11] On the contrary, Winkelman proved that female infertility is a vital risk factor for sexual dysfunction.[12]

Regarding women undergoing fertilirty women or using in vitro fertilization, all the retrieved studies agree that in the long term, infertility and the related emotional distress lead to the loss of sexual confidence and sexual drive. As a result, women's quality of life is affected and any sexual dysfunction could be installed. Nevertheless, Bayar reports that at the beginning of fertility treatment, couples and especially women, experience an improvement of their sexual function.[13]

Also, the selected systemic reviews confirm that infertility is correlated with low levels of sexual satisfaction in women.[4,14]

Table 2. Research findings.

AUTHORS	MATERIAL AND METHODS	RESULTS	ASSESMENT TOOL *
Khademi et al. (2008)[2]	Cross-sectional study. The sexual life of 100 infertile couples was assessed.	Infertility affects negatively female sexual function. Their correlation is multifactoral. Thus, the male factor of infertility makes no integral difference in female sexual function.	SFQ
Nelson et al. (2008)[3]	Cohort study. 121 infertile couples participated. The analysis of the sexual and psychological consequences of infertility on women.	Infertile women tend to manifest sexual dysfunction.	FSFI SEAR CES-D
Hentschel et al. (2008)[15]	Cross-sectional study. Sexual function of 96 women undergoing assisted reproductive treatment, compared with 119 women seeking for surgical sterilization.	Women at the beginning of fertility treatment scored higher at the domains of satisfaction and orgasm.	FSFI
Oskay et al. (2010)[6]	Cross-sectional study. 616 women were devided into a fertile and an infertile category. It investigated the sexual function.	Infertility diagnosis impairs female sexual function.	FSFI
Keskin et al. (2011)[11]	Cross-sectional study. 122 primary infertile and 51 secondary infertile women participated. Sexual function was evaluated	Women with secondary infertility seem to have worst results.	FSFI BDI
Iris et al. (2012)[7]	Cross-sectional study. 174 infertile women and 635 fertile women were incorporated in the study.	The onset of the sexual dysfunction is dependent on the duration of infertility.	FSFI
Heredia et al. (2012)[16]	Cohort study. Several aspects of the quality of life of 61 women was evaluated.	The QoL is dependant on the applied ART medication and ART type. Female mental and physical status are also affected by infertility.	SF36 FertiQoL
Furukawa et al. (2012)[10]	Cross-sectional study. 75 infertile women and 210 fertile women were incorporated in the study.	Dyspareunia has no significant difference between the two categories.	FSFI PHQ-9
Aggarwal et al. (2013)[5]	Cross-sectional study. 267 infertile women and 233 fertile women were recruited and their sexual function was compared.	Infertile women experience more frequently sexual dysfunction compared to the fertile group of women	FSFI
Bayar et al. (2014)[13]	Cross-sectional, prospective study. 45 infertile couples were investigated for sexual dysfunction while undergoing infertility treatment with clomiphene citric.	Women reported that almost all aspects of their sexual life were improved after treatment.	ASEX
Yeoh et al. (2014)[17]	Cross-sectional study. 150 females and 119 males, members of infertile couples undergoing ART treatment participated.	Female and male sexual function are strongly linked.	MVFSFI
Tanha et al. (2014)[8]	Cross-sectional study. 191 women with primary infertility and 129 women with secondary infertility composed the study population. It estimated sexual function.	Infertile women suffer from sexual dysfunction. Women with secondary infertility are more negatively affected than those with primary infertility.	FSFI
Smith et al. (2015)[18]	Cross-sectional study. 136 women undergoing IVF assessed their sexual life.	All domains of sexual function of women undergoing IVF were proved impaired.	SFQ FertiQoL

Table 2. Research findings *(continued)*.

AUTHORS	MATERIAL AND METHODS	RESULTS	ASSESMENT TOOL *
Bakhtiari et al. (2016)[9]	Cross-sectional study. 236 women looking for fertility treatment were were interviewed concerning sexual dysfunction.	Predictor factors for emerging sexual dysfunction are age, marital satisfaction and mental illness.	FSFI
Berger et al. (2016)[18]	Peer-reviewed publications from 1980 to 2016. The study aimed to describe the relationship between the infertility and sexual dysfunction. In addition, it tried to approach possible managment strategies of sexual dysfunction in infertile couples.	The management of sexual dysfunctions should be part of the treatment of the infertile couple. The psychosocial background is an integral risk-factor for the development of female sexual disorders. There are now promising pharmacological interventions for women with low sexual desire.	-
Winkelman et al. (2016)[12]	Cross-sectional study. 382 women seeeking for infertility treatment were questioned for their sexual habits.	Infertility affects remarkably female sexual function.	FPI
Mendonca et al. (2017)[14]	Systematic review and meta-analysis. The link between female sexual dysfunction and infertility were examined.	The studied subjects are related.	BISF SFQ SHQ FSFI
Shahraki et al. (2018)[20]	Cross-sectional study. 78 women with primary infertility and 115 healthy controls participated. It studied the sexual quality of life in women suffering from infertility.	Sexual dysfunction in women is accompanied with deterioration of their emotional state and their sexual quality of life.	FSFI SQOL-F BDI
Facchin et al. (2019)[21]	Observational study. 269 infertile patients. It tried to define if the female sexual function could be negatively affected by the infertility-related distress.	Sexual function was more impaired in women with higher level of infertility-related distress	FSFI FSDS FPI
Starc et al. (2019)[4]	Systematic Review	Most studies infered that infertile women were less satisfied with their sexual life.	FSFI Mell-Krat

*SFQ: Sexual Function Questionnaire, SEAR: modified Self-Esteem and Relationship Questionnaire, FSFI: Female Sexual Function Index, BDI: Beck Depression Inventory, SF36: quality of life questionnaire- short form 36, FertiQoL: quality of life questionnaire, ASEX: Arizona Sexual Experience Scale, MVFSFI: Malay Version of Sexual Function Index, CES-D: Center for Epidimiological Studies Depression Scale, FPI: Fetrility Problem Inventory , BISF: Brief Index Of Sexual Functioning, SHQ: Sexual History Questionnaire, PHQ-9: Patient Health Questionnair-9, SQOL-F: sexual quality of life- Female, FSDS: Female Sexual Distress Scale-Revised , Mell-Krat: Mell- Krat scale

Discussion

In recent years, female sexual dysfunction and female infertlity seem to be strong life-stressors. Therefore, these issues have aroused the interest of the scientific society worldwide,

Reganding to our research, all the selected sources used validated quastionnaires in order to assess each study population. The majority of the studies (13 out of 20) used the FSFI. Thus, we could infer that it is not only an assessment tool that evaluates fully the perspectives of female sexual function, but it is also easily comprehensible regardless of the educational level or cultural origin of the questionned women. So, despite the existence of several translated versions of FSFI, more widespread use of this questionnaire could be proposed.

Furthermore, it is an undeniable fact that many of the selected studies have been conducted in Turkey, Iran and India.[2,5,6] On the one hand, this observation supports our thesis regarding the FSFI use. On the

other hand, it is an integral limitation. The different cultural, social and religious characteristics of each people could lead to altered perspective and expression of female sexuality.[4]

Although there is enough information to prove that sexual dysfunction could be the emotional impact of the infertility diagnosis on women, there is limited data that show impact of sexual insatisfaction on couples' ability of reproduction. In addition, there is insufficient knowledge regarding female organic entities that link those conditions such as endometriosis or hyrothyroism.

Conclusion

The correlation between female sexual dysfunction and infertility is reciprocal and undeniable. In addition, secondary infertility impairs more profoundly female sexual satisfaction than primary infertility. Eventually, the increasing duration of infertility has a negative effect on female sexuality.

Although, nowadays we have a better understanding of fertility and sexuality, additional and widespread studies should take place in order to unfold this comlex linkage.

Disclosure of interest

All authors declare any financial interest with respect to this manuscript.

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