J Kermanshah Univ Med Sci. 2018 September; 22(3):e81611. doi: 10.5812/jkums.81611.

Published online 2018 September 23. **Research Article**

# Dimensions of Sex-Related Excellent Marital Quality Among Infertile Couples: A Qualitative Study

Mahdi Khanabadi [1], Seyed Mojtaba Yassini-Ardekani [2, *], Kiumars Farahbakhsh [1] and Masoomeh Esmaeli [3]

[1]Department of Consultation, School of Education Sciences and Psychology, Allameh Tabataba'i University, Tehran, Iran
[2]Research Center of Addiction and Behavioral Sciences, Shahid Sadooghi University of Medical Sciences, Yazd, Iran
[3]School of Education Sciences and Psychology, Allameh Tabataba'i University, Tehran, Iran

[*]*Corresponding author*: Research Center of Addiction and Behavioral Sciences, Shahid Sadooghi University of Medical Sciences, Abuali Ave., Safaeh, Yazd, Iran. Tel: +98-3538247085, Fax: +98-3538247087, E-mail: yassiniard@yahoo.com

**Received** 2018 July 03; **Revised** 2018 August 07; **Accepted** 2018 August 14.

## Abstract

**Background and Objectives:** The quality of life in infertile couples depends on many factors, including dimensions of their sexual relationship. The present study aimed to identify and explain dimensions of sex-related high quality of life in infertile couples.
**Methods:** In the present qualitative study, data were collected through semi-structured exploratory interviews with 15 infertile couples selected purposively from clients presenting to infertility treatment centers in Yazd. Data saturation was reached in the second interviews. Data were encoded and analyzed by thematic analysis method.
**Results:** Based on the answers, dimensions of sex-related quality of marital life among infertile couples were categorized in 74 initial concepts, 9 items and 3 themes of "healthy attitude toward sex", "enriching sex", and "Managing the effect of infertility on sexual satisfaction".
**Conclusions:** Based on the results obtained and the dimension of sexual relation in Woods' conceptual framework, and for a satisfactory sexual life despite infertility, infertile couples should raise their knowledge and pay greater attention to enriching this dimension of their relationship to achieve sexual compatibility along with infertility.

*Keywords:* Dimensions of Sexual Relationship, Marital Quality, Infertile Couples, Qualitative Study

## 1. Background

Sexual desires have three main dimensions, namely "sexual self-concept", "sexual relationships", and "sexual function" (1). Sexual self-concept means how one rates one's adequacy as a man or a woman in one's masculine or feminine roles, and includes "body image", "sexual self-schema", and "self-esteem". Sexual relationships are a part of interpersonal relationships, in which a person shares his/her sexual desires with another person. Sexual function relates to the individual's ability to exchange sexual pleasure and healthy functioning within the physical and psychological sexual cycle (2).

At its best, sex can bring men and women much pleasure and satisfaction, and it is a sensitive part of human life; as such, many experimental studies have reported a positive and significant correlation between sexual satisfaction and marital quality (3), and better marital quality predicts a more stable marital life (4). The results of a few longitudinal studies have shown that sexual satisfaction is a predictor of marital life stability (5). Research findings have shown that there is a positive and significant relationship between quality of marital life and physical and mental health (6), and sexual satisfaction can have a mediating role between physical health and the high quality of marital life (7).

Stresses, including infertility, can directly and indirectly affect the quality of couples' marital life (8). Although there may be no serious emotional problems between infertile couples, infertility often and to a large extent affects the quality of their marital life (9). A high marital quality implies better, happier, more successful and satisfactory marital life, and among infertile couples, this variable depends on many factors, including dimensions of sexual relationships (10). According to the World Health Organization, sexual relationship is not synonymous with sexual intercourse, and its purpose is not merely to experience orgasm, but it is a desirable physical, sensual, and psychological relationship that brings about love and intimacy between couples (11).

The results of a series of relevant studies show that

marital and sexual satisfaction in infertile couples are rather affected by infertility, especially in countries where girls are raised to become mothers (11). Another study reported discontinuation of sexual relationship and subsequent reduction in sexual satisfaction among infertile couples, and that sex was more of a mechanical performance and not sensual (12). In another study, researchers reported that reduced sexual satisfaction is one of the main problems in infertile couples, especially women, which may affect every aspect of their marital life and even their treatment process (13). Although like other women, infertile women can experience the cycle of sexual response in desire, arousal, and orgasm stages, some women suffer problems in these stages following diagnosis, and more of them during infertility treatment (14).

The effect of infertility on a couple's sexual relationship and satisfaction depends on gender, duration of infertility, and treatment success (2). For instance, men report lower sexual satisfaction, especially when they are infertile, while women do so following unsuccessful assisted reproductive therapy (15). In a study conducted in Iran to compare sexual satisfaction in fertile and infertile women, researchers concluded that there is no significant difference between the two groups, and that both groups have moderate sexual satisfaction (16). Moreover, infertile women's sexual function is positively correlated with sexual function of their husbands, and thus, it seems that sexual function and satisfaction remain good in couples with good sexual function and satisfaction before diagnosis of infertility, but women who had dissatisfactory sexual function before diagnosis are seriously affected by stresses of infertility (14).

Therefore, although many studies mention the negative effects of infertility on infertile couples' sexual function and relationship, some other studies do not confirm such differences. Some researchers argue that not only infertility and its treatment do not negatively affect sexual function and satisfaction of infertile couples, but also sharing negative feelings induced by stresses of infertility brings husbands and wives closer, and improves their relationships (17, 18). Sexual activity and satisfaction have a major role in making couples intimate. Couples' dissatisfactory sex leads to disappointment, deprivation, feeling of insecurity, reduced mental health, and thus reduced marital satisfaction, and breakdown of life (14). The value of qualitative methodology in assessing various aspects of infertility including sexual satisfaction is better recognized every day because it avoids a strict framework for collecting quantitative data, and that the quantitative methodology limits participants' ability to actively take part in the research on unpredictable issues (19). The present study was conducted in Iranian society because few studies specifically addressed the subject of sexual relationship in infertile couples. Hence, the present study aimed to determine and explain dimensions of sex-related excellent marital quality among infertile couples.

## 2. Methods

For the qualitative understanding of sex-related excellent marital quality, the present study used a qualitative approach to discover and adapt the actual responses to the real world issues in a way that is not possible with quantitative approaches. Given that the present study aimed to enter the living world of the participants and assess their experiences, the present study used a qualitative approach (20). The study population comprised all infertile couples attending the infertility research center in Yazd, whose records were available and they could be contacted, but were unable to have a biological child during the study due to treatment failure. Samples were selected by purposive sampling in cooperation with Yazd infertility treatment clinic from among the infertile couples that met the inclusion criteria (criteria that could be observed and assessed in their records). They were then contacted and their informed participation was assessed. After an introductory interview, semi-structured interviews were conducted. This process continued with others until theoretical saturation of data was reached. Data reached saturation in the second interview. The inclusion criteria ensured the level of marital quality desired by the researcher. Nonetheless, prior to the final selection, the RDAS scale was used for initial assessment of couples' marital quality, as defined in the study, and also GHQ-28 was used to assess general health of the study population. An effort was made to include subjects with different types of infertility (female infertility, male infertility, infertile men and women, and unknown infertility). Given the study objectives, the inclusion criteria were Persian speaking Iranian couples, infertile by definition, and receiving infertility treatment, being in their first marriage, with minimum of five years since their infertility diagnosis, no children, no acute or chronic physical diseases other than infertility, rating their marriage high quality, score of 35+ in marital quality scale, with completed information and consent forms, and favorable general health according to GHQ-28 score. The participants were identified by infertility treatment center authorities based on the inclusion criteria, and entered the study after necessary arrangements.

Data were collected using semi-structured interviews, which are one of the most common interview techniques used in qualitative studies. In these interviews, all respondents are asked similar questions, and they are free to answer in any way they wish, but the researcher is responsible for encoding and classification of answers. Furthermore, a series of prepared initial questions are asked face-

to-face and assessed with flexibility (21). Based on the study objectives, the following questions were considered as the main interview axes: "the effect of infertility on sexual relationship", "managing the effect of infertility on sexual relationship", and "strategies for sexual satisfaction", and given the nature of semi-structured interviews, and based on answers given, further questions are asked for greater clarification. The process included exploration and assessment of a series of initial questions prepared according to views expressed by a number of experts and asked face-to-face in an interview. Interviews were conducted according to a prepared guideline. The study objective was explained at the outset of each interview, and it was emphasized that interviews were used for the study purposes only and the subjects' identity would not be revealed in reports or published articles. Once informed consent form was signed by the participants, permission was obtained for recording interviews, and if refused, only notes were taken. At the end of each interview, interviewees were asked to add any further points they had. Interviews were conducted in the infertility center's psychology room. The study participants were 15 couples, and each interview lasted between 70 minutes and 90 minutes (based on participants' explanations, patience, and interest). Each interview was carefully transcribed, and after assessment, further questions were asked if necessary.

The clients participated in the study with the knowledge of the objectives and the right to withdraw. The participants were assured of confidentiality of data, and were asked permission to record interviews. The participants were referred to by numbers in the study report in order to protect their identity (Participant 1, 2 ...). Data obtained from transcribed interviews were analyzed using thematic analysis method, which is based on deductive analysis in which the researcher reaches an analytical methodology through classification of data and identifying patterns within and across the data (21). The stages included the following: (1) Transcription: recorded interviews were typed verbatim; (2) Review and familiarization with interview text: The texts were reviewed several times to gather a general understanding of the subject; (3) Cutting the text into sentences, lines and paragraphs: Interview text was categorized according to the subject and content provided, in line-by-line, sentence-by sentence, and paragraph-by-paragraph; (4) Attaching a conceptual code (conceptual statement) to each line, sentence, or paragraph (that contained the crude interview text); (5) the three stages of encoding based on thematic analysis method: (a) crude (initial) concepts, (b) categories, (c) themes.

Validation of the study data was assessed using Lincoln validity index (22). To ensure trustworthiness of data, each interview was given to participants again to confirm its correctness, and necessary changes were implemented. For confirmability of data, the researcher attempted not to include their assumption in the process of data collection. To ensure dependability, experts (advising and consulting professors) advised and monitored the study, and the interview text was made available to professors and an expert in qualitative studies to assess encoding of data. To increase transferability, the four types of infertility (infertile man, infertile woman, both infertile, and unknown infertility), people with different education and socioeconomic levels, and those with different durations of infertility (at least five years) were included. Now, the study tools are briefly described as follows:

• Revised Dyadic Adjustment Scale (RDAS): This revised form was developed by Busby et al. in 1995, and is used to assess the quality of marital relationships (23). Using discriminant analysis, the cut-off-point was found 2.84 for this scale, and higher scores meant a good marital quality, and lower scores meant poor marital quality. Also, sensitivity and specificity of the questionnaire were found 74.12% and 78.47% respectively. Usefi reported Cronbach's alpha and split-half coefficients in the entire sample for the 14 items and the four factors extracted by gender as $> 0.7$, which suggests internal consistency of the questionnaire items (24).

• General Health Questionnaire (GHQ-28): Clinicians and researchers often use self-reporting questionnaires to screen for symptoms and monitor the effects of medical interventions. One such tool is GHQ, which is highly valid and reliable. Various studies conducted in Iran have confirmed reliability of this questionnaire with Cronbach's alpha from 0.88 to 0.91 (25), and reported its sensitivity between 83% and 88%, its efficiency 76%, and its overall classification error estimation from 2.8% to 19% (26). This self-administered questionnaire is used in assessing psychological and emotional disorders. Based on its guidelines, higher scores suggest poor mental health, and scores exceeding 24 points are considered as symptoms of illness (25).

The present study received the code of ethics in research from Yazd Reproductive Sciences Research Institute (IR.SSU.RSI.REC.1396.11).

## 3. Results

Thematic analysis was used to analyze the data. Of the extracted codes in data collection stage, important and repetitive concepts were identified according to the relationships between codes and concepts and based on the type of data by identifying similarities and differences. A total of 15 couples participated in the present study, whose demographic details are presented in Table 1.

Table 1 shows that the study participants were selected from different social strata, cities, and education levels,

**Table 1.** Participants' Demographic Details

| No. | Participant/City | Age (y) | Education | Occupation | Duration of Infertility (y) | Type of Infertility | Treatment Failures |
|---|---|---|---|---|---|---|---|
| 1 | Woman/Kerman | 34 | Advanced diploma | Employee | 14 | Unknown | IVF and IUI |
| | Man/Kerman | 37 | Diploma | Driver | | | |
| 2 | Woman/Abadan | 48 | Primary school | Housewife | 25 | Both | Medication and ART |
| | Man/Abadan | 48 | Primary school | Driver | | | |
| 3 | Woman/Yazd | 37 | Diploma | Housewife | 14 | Female factor | Medication and IVF |
| | Man/Yazd | 42 | Diploma | Self-employed | | | |
| 4 | Woman/Eghlid | 31 | Bachelor's degree | Employee | 8 | Unknown | IVF twice |
| | Man/Eghlid | 34 | Diploma | Drive | | | |
| 5 | Woman/Esfahan | 36 | Bachelor's degree | Employee | 12 | Male factor | Medication |
| | Man/Ardekan | 39 | Master's degree | Employee | | | |
| 6 | Woman/Yazd | 31 | Diploma | Housewife | 9 | Male factor | IVF twice |
| | Man/Yazd | 34 | Advanced diploma | Military | | | |
| 7 | Woman/Yazd | 23 | Advanced diploma | Housewife | 5 | Male factor | Acupuncture and IVF |
| | Man/Yazd | 23 | Advanced diploma | Employee | | | |
| 8 | Woman/Yazd | 42 | Bachelor's degree | Housewife | 10 | Female factor | Medication, acupuncture and IUI |
| | Man/Yazd | 62 | Master's degree | Engineer | | | |
| 9 | Woman/Yazd | 33 | Master's degree | Employee | 6 | Male factor | Acupuncture and varicose surgery |
| | Man/Yazd | 35 | Bachelor's degree | Journalist | | | |
| 10 | Woman/West Azerbaijan | 35 | Bachelor's degree | Accountant | 10 | Female factor | Medication, IVF, IUI |
| | Man/West Azerbaijan | 43 | Bachelor's degree | Employee | | | |
| 11 | Woman/Ahvaz | 25 | High school | Housewife | 6 | Both | Medication, IUI |
| | Man/Ahvaz | 35 | Diploma | Manual worker | | | |
| 12 | Woman/Ahvaz | 26 | Diploma | Housewife | 6 | Unknown | Medication, IVF, IUI |
| | Man/Ahvaz | 29 | High school | Farmer | | | |
| 13 | Woman/Yazd | 25 | Diploma | Housewife | 5 | Female factor | Medication, IVF, IUI |
| | Man/Yazd | 26 | Primary school | Mechanic | | | |
| 14 | Woman/Mahabad | 29 | Bachelor's degree | Employee | 5 | Female factor | Medication, IUI |
| | Man/Bafgh | 28 | Bachelor's degree | Engineer | | | |
| 15 | Woman/West Azerbaijan | 37 | High school | Housewife | 7 | Female factor | Medication, IUI |
| | Man/West Azerbaijan | 43 | Primary school | Manual worker | | | |

that they were 23 - 62 years old with duration of infertility varying from 5 to 25 years. Effort was made to select the participants with different types of infertility (including 40% infertile women, 26.7% infertile men, 20% unknown infertility, and 13.3% both infertile). Analysis of data produced 74 initial concepts in 9 categories, and ultimately, the themes relating to dimensions of sexual relationship that contributed to maintaining and improving the quality of marital life of participating infertile couples included "healthy attitude toward sex", "enriching sexual relationship", and "managing the effect of infertility on sexual satisfaction".

According to the results presented in Table 2, data analysis of the first theme (healthy attitude toward sex) produced 40 initial concepts, and of course, some of these concepts are briefly cited, and four categories including "importance of sex", "taking care of sex", "realization of sex", and "knowledge of healthy sex", which ultimately produced "healthy attitude toward sex" as the main theme. The subthemes comprising this main theme are now identified and explained as follows:

The category of "importance of sex" is formed with five initial concepts. The participating couples attached great

**Table 2.** Themes, Categories, and Some of the Most Important Initial Concepts

| Main Initial Concepts | Categories | Themes |
|---|---|---|
| Sex as part of making love, considering sex worthwhile, regrading good sex as a result of intimacy, sleeping next to each other every night, comfortable talks about sex, sexy chats, both sides initiating sex alternately, freely expressing sexual needs to spouse, mutual sexual amenability, having sex with spouse shamelessly, attention to sexual differences between man and women | Attaching importance to sex; taking care of sex; demanding sexual rights; acquiring knowledge about healthy sex | Healthy attitude to sex |
| Making an effort for sexual satisfaction, good sexual feeling toward each other, similarity of man's and woman's talks about sexual satisfaction, admiring each other's sex organs, playing sexual pranks on each other, touching each other's sex organs in unexpected time and place, not restricting sex to intercourse | Mutual satisfaction with sex; sexual happiness; expanding the range of sex with spouse | Enriching sex |
| Compatibility of male and female libido, having sex based on readiness of both sides, taking a leave from prescribed sex, having sex for pleasure and not for conception | Sexual compatibility; controlling the effect of infertility on sex | Managing the effect of infertility on sex |

importance to the subject of sex in their marital relationship, and believed that sex has a small but important role in marriage. Sex is valuable for feeling of happiness, and a good sexual relationship is the outcome of the intimacy between husband and wife, and it is part of couples' relationship.

"*Sex is important to my wife and me; and more so to myself. In marital life, sex has a role of a starter in cars, which is small and weighs nothing, but the car will not start if it doesn't work properly. Sex is not everything in marital life, but it leaves its effect in other parts of life if it is not adequate*" (26-year-old man, couple 13).

The category of "taking care of sex" consists of 17 initial concepts. Participants acknowledge that they felt obliged to sleep in the same bed every night, and never separate, ask each other about the quality of their sex and comfortably talk about this part of their relationship, feel a healthy commitment toward enjoying sex both themselves and their spouse, and talk to each other about satisfaction with sex, complement on each other's body, and not include their marital differences in sex, touch their bodies in bed even when they are mad with each other, wake each other up in the middle of the night for kisses and cuddles, make a responsible effort to sexually satisfy their spouse, observe personal hygiene and try to smell good and dress well at home, and decorate their bedroom together, thank each other after sex, and sometimes ogle each other lustfully and whisper sexual words in each other's ears, not just at night, but during the day as well, purchase nightgowns together, and look after their sexual relationship like a flower.

"*Smelling my wife's forehead clams her. We thank each other for any sexual relation, and ask each other about sex and like to satisfy each other more. We complement on each other's genitals. We have no particular differences in this area*" (23-year-old man; couple 7).

The category of "realization of sex" contains 13 initial concepts. Participants were able to freely express their sexual needs to their spouse, and considered satisfaction of sexual needs as their right, and this applied to both men and women. They had maintained their self-esteem in relation to sex despite infertility problems; they personally tried to satisfy their sexual needs with their spouse's, and expected their spouse to physically and sexually stroke them and not just satisfy their sexual needs, considered shyness in sex and not stating sexual needs a fault, both alternately initiated sex with their spouse, and were optimistic about their efficacy in sex, they were not ashamed to state their sexual preferences to their spouse, they easily and nicely asked their spouse to observe their appearance and hygiene and did not shy away from repeating this, and in short, behaved responsibly toward satisfying sexual desires and satisfaction.

"*I suggest it myself when I feel the need. We have no restriction in talking in bed, and tell each other whatever comes to mind. Whenever I want sex, I let it known, and don't wait for him to initiate it. I believe sexual relationship between husband and wife should be very open. I let my husband know which part of my body I like him to caress*" (36-year-old woman; couple 5).

The category of "knowledge about healthy sex" was formed with five initial concepts. Participants argued that they were aware of the differences between men and women in the cycle of sexual relationship and accounted for them, and by participating in individual counseling or educational classes, tried to boost their own and their spouse's knowledge of a healthy sex, and share the information they received. They observed the foreplay and post-play rules in sex, and refrained from watching pornographic movies to increase libido or create variation in sex, and distinguished between sex and sexual satisfaction in their relationship.

"*We caress each other before and after sex. We didn't know its importance at first, and learned it later. I go to counseling. I realized in counseling classes that men and women have different sexual needs. That is why I have sex with my husband even when I have little desire to have sex. I share whatever I learn in these classes with my husband*" (25-year-old woman; couple 11).

According to the results presented in Table 2, analysis of data relating to the second theme "enriching sex" produced 22 initial concepts (some of which are referred to below), and three categories including "mutual sexual satisfaction", "sexual happiness", and "expanding the range of sex with spouse", which ultimately produced the main concept: "enriching sex". The subthemes that make up this main theme are now addressed:

The category of "mutual sexual satisfaction" was formed with six initial concepts. Participants showed responsible effort and commitment to create a mutual sexual satisfaction; a kind of a good sexual feeling toward each other, they did not bother or harass each other during sex (no sexual abuse), refrained from sex when it was unpleasant or physically threatening for one of the partners, mutual enjoyment of sex was their main objective, there was some kind of consistency when they talked about sexual satisfaction and methods of creating it, and they ultimately tried to have a kind of psychological satisfaction in their sex.

"*After coming to terms with infertility, sexual satisfaction has increased, and intimacy is now more meaningful. We are generally satisfied with intimate stages. My husband definitely asks me if I had enjoyed sex, and how I feel. He does it again if I was not satisfied. My husband is not overenthusiastic about sex and does not hurt me during sex. He doesn't force me when I am not ready*" (26-year-old woman; couple 12).

The category of "sexual happiness" was formed with 10 initial concepts. Participants played sexual pranks and told each other sexy jokes; gave their sex organs nice and sometime funny names, considered woman's asking her husband to have sex exciting, and had sex in memory of their own marriage on the night of their relatives' marriage, read sexy stories together, and touched each other's sex organs parts in an unexpected time and place, talked about the sex they had afterward, ate their favorite snacks and giggled.

"*I compliment on my wife's private. We have had many memorable sexual relationships. Yet, even after 10 years, we still sexually desire each other. We joke a lot with each other during sex. We eat fruits before and after sex and talk with each other*" (43-year-old man; couple 10).

The category of "expanding the range of sex with spouse" consisted of six initial concepts. Participants acknowledge that they considered all sexual activities besides intercourse important, and their sexual relationship was not limited to intercourse. They showed variations in sexual behaviors, and caressed and massaged each other's genitals for sexual stimulation, and occasionally had sex on the phone or by texting when they were away from each other and even at home.

"*Mostly caressing, cuddling and kissing; and most of the time we send sexy text messages to each other. Sometimes my wife comes up with dirty jokes and we laugh together. We are comfortable talking about these things. We sometimes sex chat by texting each other, and we have relationships in this way since I work in another town*" (34-year-old man; couple 6).

According to the results presented in Table 2, analysis of data from the third theme, namely "managing the effect of infertility on sexual satisfaction" produced 12 initial concepts (some of which will be referred to), and two categories of "sexual compatibility" and "controlling the effect of infertility on sexual satisfaction", which ultimately led to the main theme "managing the effect of infertility on sexual satisfaction". The subthemes that make up this main theme are now identified and explained below:

The category of "sexual compatibility" included four initial concepts. The cycle of sexual relationship in participating infertile couples had become normal over time. They had realistic expectations from sex, given the particular infertility circumstances, and if one of the partners was not physically or psychologically ready, they delayed sex. Husband and wife had reached an understanding over time in terms of sexual desire, and in short, given their circumstances, they made the decision about having sex.

"*There are differences between us in libido and reaching orgasm. In early marriage, I wanted sex three times per week, but he only wanted it once. I no longer trouble him or blame him, I understand that his libido also goes up and down due to tiredness or stress. I adapt myself to these conditions*" (29-year-old woman; couple 14).

The category of "controlling the effect of infertility on sexual relationship" is comprised of eight initial concepts. To control the effect of infertility on sexual satisfaction, participating infertile couples sometimes temporarily ignored the treatment, or in their words "took a leave from treatment", and tried to rest more and pay greater attention to nutrition to perform the prescriptive sex. They had accepted the compulsive prescribed sex, but sometimes they had sex only for pleasure, and not for conception. They had accepted a degree of reduced pleasure and satisfaction gained from prescribed sex, and consulted specialists and counselors to control the effect of infertility on sex.

"*Prescribed sex is difficult, but we accepted it. I read porn stories, or asked my wife to tart up more, so we could have the prescribed sex, and concentrated more on this issue, so we could have sex in this way. During the prescribed sex period, I try to rest more and focus on nutrition. Sometimes we paused treatment or had sex for pleasure*" (35-year-old man, couple 9).

## 4. Discussion

In a qualitative study on sexual experiences of infertile women, Kohan et al. found five main themes: "turmoil in

feminine body image", "disappointment with sex", "sacrificing sexual pleasure for fertility", "confusion in sexual relationship during infertility treatment", and "effort to support marriage". Their results showed that infertility affects various dimensions of sexual life of infertile couples (27). Some studies on marital relationships have shown good quality and stability of marital relationships among infertile couples (28) while others have reported that compared to couple presumed to be fertile, infertile couples are more or at least equally satisfied (29) with their lives (30). Some other studies have reported lower marital quality and satisfaction in this group of couple compared to the control group (31). Many studies have reported a positive and significant relationship between satisfaction with sex and the marital quality (3, 32, 33). High levels of sexual satisfaction can lead to an increased quality of marital life in infertile couples and contribute to marital stability (4).

The present study results in relation to the first theme namely "adopting a healthy attitude toward sex" concur with those of other studies (34, 35). Nelson et al. believe that wrong and unhealthy attitudes toward sex can adversely affect the couple's entire relationship, and the range of such attitudes extends from the importance of the relationship to taking care of sex with spouse (34). In the present study, infertile couples who had a healthy attitude toward sex with their spouse also attached great importance to this part of their relationship, and protected it in a responsible way. In a study conducted in India, Augustus et al. concluded that sexual dysfunction among infertile couples has a relationship with inadequate knowledge about sex, sexual stimulation and sexual function (35). They also found that more than 50% of participants had ineffective beliefs, which had reduced realization of sex with their spouse, such that those with a high quality of marital life and sexual satisfaction with their spouse considered it their natural rights to have sex with their spouse, and were somewhat selfish in demanding their sexual needs met. The results obtained by Bokaie et al. showed that sociocultural issues can largely affect the attitude of Iranian infertile couples (36). Attitude is a combination of three elements: cognitive (individual's information and beliefs about sex), emotional (the role of motivation in sexual behavior), and behavioral (readiness to behave in a particular way in dealing with the issue of sex) (37). Notably, the present study results in relation to the first theme showed that despite the influence of sociocultural factors on attitude of this group of couples toward sex and the pressures caused by infertility and its treatment process (38), participating couples were able to maintain a healthy attitude in all of its three dimensions including cognitive (acquiring knowledge about healthy sex), emotional (attaching importance to sex), and behavioral (the right to have sex and protecting sexual relationship). In a qualitative study on infertile couples' supportive needs, Jafarzadeh-Kenarsari et al. concluded that these couples need support especially in social, financial, spiritual, and informational support, all of which fall in the main theme of help and support (39). They also found that an important part of the information infertile couples needed to increase their knowledge to adopt a healthy attitude toward sex was the knowledge about healthy sex, taking care of sexual relationship, understanding the importance of this relationship and how to take care of it.

The present study results with regard to the second theme, namely "enriching sexual relationship" agree with those obtained in previous studies (40) and (41). In their qualitative study on the effect of infertility on couple's relationship, Bokaie et al. reached two main themes: "response in sexual cycle" (including libido, stimulation, and orgasm), and "factors relating to satisfaction with sexual function" (including sexual enrichment and sexual intimacy) (42). According to the present study results, given the undeniable effect of infertility on the cycle of sexual relationship and the stress borne by infertile couples, it seems that helping to create mutual sexual satisfaction and intimacy, increasing sexual happiness, and expanding the range of sexual behaviors among infertile couples can enrich their sexual relationship. According to McCarthy and Bodnar, sex is more than the physical act of intercourse, and is focused on relationship, self-identity, and the common experience of profound enjoyment and intimacy, which can reduce tensions and stresses (43). The aim of sexual enrichment is to develop the quality of this relationship, and not to increase frequency of intercourse or repeatedly experiencing climax (44). The results of previous studies show that infertile couples have fewer intercourses than normal couples (45, 46). The present study results also showed that participants created several sex options, and did not consider it synonymous with intercourse. Development of sexual interactions and exchanges in marital relationships not only contributes to satisfaction with sex, but also with life (47). In their study, Tao et al. concluded that the optimal sexual satisfaction implies better mental and physical health and higher quality of life as the outcome of marital satisfaction (48). The results of some studies show a positive and significant relationship between sexual satisfaction and marital intimacy (41). Heiman et al. concluded that there is a relationship between couples' sexual activeness and increased sexual happiness (49). Participating couples in the present study attached importance to mutual sexual satisfaction, and made an effort to increase their satisfaction by injecting excitement to their sex through healthy behaviors. For these couples, a kind of sensual and emotional give and take, and physical caressing, led to an experience of sexual happiness regardless of frequency of intercourse or orgasm.

The present study results with respect to the third theme, namely "managing the effect of infertility on sexual satisfaction" concur with the results of (50) and (51) studies. In their qualitative study on the sexual behavior of infertility on couple's relationship, Bokaee et al. arrived at four themes associated with women's sexual behavior: "The effect of infertility medications on couples' sexual behavior", "the effect of ART", "scheduled sex during infertility treatment", and "psychological effect of infertility on sexual behavior" (52). The present study results also showed the importance of infertile couples' effort to control psychological effects of infertility through sexual amenability along with management of these effects in partnership. In their study, Leiblum et al. concluded that sexual amenability of infertile couples is highly important, because of the effects that infertility has on libido, and sexual function and pleasure (50). Since infertility can affect the healthy cycle of sex (libido, stimulation, and orgasm) due to scheduling and preventing self-arousal, violation of privacy by medical team, and the fact that sex reminds them of their inability to bear children (53), infertile couples are faced with the challenge of managing the effect of infertility on this part of their relationship because sexual satisfaction of husband and wife is among top issues in their life, and sexual amenability and balance in the man's and woman's sexual libido are among the most important factors for overall satisfaction with marital life and its success (54). In a comprehensive review of studies conducted on factors associated with marital satisfaction among infertile couples, Samadaee-Gelehkolaee et al. concluded that sexual satisfaction has a highly important relationship with overall satisfaction with marital life in infertile couples, and should be planned to control the effect of infertility on sexual satisfaction and to create a kind of sexual amenability in infertile couples (51). Hence, infertility can reduce couples' sexual satisfaction such that severely reduced libido and changes in reaching orgasm are among common problems of infertile couples (55). Furthermore, sexual dysfunction can generally reduce the quality of marital life (15), thus, they should create an optimal level of sexual satisfaction in their relationships and manage adverse effects of infertility. Infertility-induced sexual problems are affected by the couples' treatment of each other; therefore, managing the effects of infertility on couple's sexual satisfaction and function seems imperative. In the present study, participating couples were able to create a kind of sexual amenability in their relationships, and control the negative effects of infertility on their sexual relationships.

### 4.1. Conclusion

In a review of studies conducted on the effect of infertility on infertile couples' sexual relationship, Tao et al. based on the Wood's conceptual framework, reported that infertility and its treatment process can lead to changes in sexual self-esteem, sexual relationship and sexual function, and thus many infertile couples have problems in various sexual dimensions (2). The effect of infertility on their sexual and marital life can also affect their quality of life, and these two variables (sexual satisfaction and quality of marital life) can affect each other. Hence, based on the results obtained, infertile couples can increase and enrich their sexual satisfaction by utilizing knowledge and skills in different sexual dimensions, also learn the skills needed for a satisfying sexual relationship through training and counseling. While managing the adverse effects of infertility on their sexual satisfaction, they can also prevent the incidence of sexual dysfunction. The infertility treatment center professionals should not just aim at making infertile couples fertile, and should also consider the psychological and marital problems of the couples in their treatment-intervention programs, especially in the area of sexual relationship and its dimensions cited in the present study.

## Acknowledgments

The present study is an extract from a PhD thesis in counseling focused on "The quality of marital life of infertile couples" from Allameh Tabataba'i University, Tehran and in collaboration with Yazd Infertility Treatment Center. The researchers wish to express their appreciation to all participants and personnel of Infertility Center and Yazd Reproductive Research Center.

## References

1. Woods NF. Toward a holistic perspective of human sexuality: Alterations in sexual health and nursing diagnoses. *Holist Nurs Pract*. 1987;**1**(4):1–11. [PubMed: 3648053].
2. Tao P, Coates R, Maycock B. The impact of infertility on sexuality: A literature review. *Australas Med J*. 2011;**4**(11):620–7. doi: 10.4066/AMJ.20111055. [PubMed: 23386877]. [PubMed Central: PMC3562919].
3. Young M, Denny G, Luquis R, Young T. Correlates of sexual satisfaction in marriage. *Can J Hum Sex*. 1998;**7**(2):115–27.
4. Yeh HC, Lorenz FO, Wickrama KA, Conger RD, Elder GH Jr. Relationships among sexual satisfaction, marital quality, and marital instability at midlife. *J Fam Psychol*. 2006;**20**(2):339–43. doi: 10.1037/0893-3200.20.2.339. [PubMed: 16756411].
5. Ahmed AU, Veroff J, Douvan E, Hatchett SJ. Marital instability: A social and behavioral study of the early years. *J Marriage Fam*. 1996;**58**(4):1045. doi: 10.2307/353998.
6. Robles TF, Slatcher RB, Trombello JM, McGinn MM. Marital quality and health: A meta-analytic review. *Psychol Bull*. 2014;**140**(1):140–87. doi: 10.1037/a0031859. [PubMed: 23527470]. [PubMed Central: PMC3872512].
7. Galinsky AM, Waite LJ. Sexual activity and psychological health as mediators of the relationship between physical health and marital quality. *J Gerontol B Psychol Sci Soc Sci*. 2014;**69**(3):482–92. doi: 10.1093/geronb/gbt165. [PubMed: 24470175]. [PubMed Central: PMC3983915].

8. Ledermann T, Bodenmann G, Rudaz M, Bradbury TN. Stress, communication, and marital quality in couples. *Fam Relat*. 2010;**59**(2):195–206. doi: 10.1111/j.1741-3729.2010.00595.x.
9. Doyle M, Carballedo A. Infertility and mental health. *Adv Psychiatr Treat*. 2018;**20**(5):297–303. doi: 10.1192/apt.bp.112.010926.
10. Jalil T, Muazzam A. Emotional intelligence as a predictor of marital adjustment to infertility. *Int J Res Stud Psychol*. 2013;**2**(3):45–58.
11. Bokaie M, Simbar M, Yasini Ardekani SM, Alavi-Majad H. [How infertility effects on sexual function of infertile couples?]. *J Adv Nurs Midwifery*. 2015;**25**(91):47–56. Persian.
12. Ramazanzadeh F, Noorbala AA, Abedini N, Naghizadeh MM. Emotional adjustment in infertile couples. *Iran J Reprod Med*. 2009;**7**(3):97–103.
13. Sattarzadeh N, Bahrami N, Ranjbar-Koochaksaraee F, Qojazadeh M. [Comparison of sexual satisfaction and depression among fertile and infertile couples referring to Alzahra Medical Center]. *J Qazvin Univ Med Sci*. 2010;**14**(2):6–11. Persian.
14. Bokaie M, Simbar M, Yasini-Ardekani SM, Alavi-Majd H. [Does infertility influence couples' relationships? A qualitative study]. *J Qualitat Res Health Sci*. 2017;**6**(1):63–77. Persian.
15. Smith NK, Madeira J, Millard HR. Sexual function and fertility quality of life in women using in vitro fertilization. *J Sex Med*. 2015;**12**(4):985–93. doi: 10.1111/jsm.12824. [PubMed: 25639162].
16. Noorani-Saededdin SH, Joneidi E, Shakeri MT, Mokhber N. [Comparison of sexual satisfaction in fertile and infertile women referring to Mashhad public centers]. *J Rep Inf*. 2009;**4**(10):269–77. Persian.
17. Piva I, Lo Monte G, Graziano A, Marci R. A literature review on the relationship between infertility and sexual dysfunction: Does fun end with baby making? *Eur J Contracept Reprod Health Care*. 2014;**19**(4):231–7. doi: 10.3109/13625187.2014.919379. [PubMed: 24901746].
18. Martins MV, Peterson BD, Almeida V, Mesquita-Guimaraes J, Costa ME. Dyadic dynamics of perceived social support in couples facing infertility. *Hum Reprod*. 2014;**29**(1):83–9. doi: 10.1093/humrep/det403. [PubMed: 24218401].
19. Hasanpoor-Azghdy SB, Simbar M, Vedadhir A. The social consequences of infertility among Iranian women: A qualitative study. *Int J Fertil Steril*. 2015;**8**(4):409–20. [PubMed: 25780523]. [PubMed Central: PMC4355928].
20. Asayesh MH, Farahbakhsh K, Salimi Bajestani H, Delavar A. [Explanation of Experiences and Emotional Reactions in Women Victims of Infidelity: A Qualitative Study]. *J Qual Res Health Sci*. 2018;**6**(4):355–72. Persian.
21. Sadooghi M. [Criteria of evaluation qualitative research]. *Methodol Soc Sci Hum J*. 2008;**14**(56):55–72. Persian.
22. Tabatabaee A, Hasani P, Mortazavi H, Tabatabaeichehr M. [Strategies to enhance Rigour in qualitative research]. *J North Khorasan Univ Med Sci*. 2013;**5**(3):663–670. Persian.
23. Busby DM, Christensen C, Crane DR, Larson JH. A revision of the dyadic adjustment scale for use with distressed and nondistressed couples: Construct hierarchy and multidimensional scales. *J Marital Fam Ther*. 1995;**21**(3):289–308. doi: 10.1111/j.1752-0606.1995.tb00163.x.
24. Usefi N. [An Investigation of the Psychometric of the Marital Quality Scale, Revised Form(RDAS)]. *J Res Clin Psychol Counsel*. 2011;**1**(2):183–200. Persian.
25. Taqavi SMR. [A study of the validity and reliability of general health questionnaire (GHQ)]. *J Psychol*. 2002;**5**(4):381–98. Persian.
26. Hassan Shahi MM, Ahmadian K. [Mental health survey of psychoactive drugs-dependent patients]. *Quart J Fundament of Mental Health*. 2003;**6**(24):131–9. Persian.
27. Kohan S, Ghasemi Z, Beigi M. Exploring infertile women's experiences about sexual life: A qualitative study. *Iran J Nurs Midwifery Res*. 2015;**20**(1):34–9. [PubMed: 25709688]. [PubMed Central: PMC4325411].
28. Sydsjo G, Ekholm K, Wadsby M, Kjellberg S, Sydsjo A. Relationships in couples after failed IVF treatment: A prospective follow-up study. *Hum Reprod*. 2005;**20**(7):1952–7. doi: 10.1093/humrep/deh882. [PubMed: 15790605].
29. Abedi G, Darvari SH, Nadighara A, Rostami F. [The relationship between quality of life and marriage satisfaction in infertile couples using path analysis]. *JMUMS*. 2014;**24**(117):184–93. Persian.
30. Wischmann T, Scherg H, Strowitzki T, Verres R. Psychosocial characteristics of women and men attending infertility counselling. *Hum Reprod*. 2009;**24**(2):378–85. doi: 10.1093/humrep/den401. [PubMed: 19049994].
31. Wang K, Li J, Zhang JX, Zhang L, Yu J, Jiang P. Psychological characteristics and marital quality of infertile women registered for in vitro fertilization-intracytoplasmic sperm injection in China. *Fertil Steril*. 2007;**87**(4):792–8. doi: 10.1016/j.fertnstert.2006.07.1534. [PubMed: 17222834].
32. Edwards JN, Booth A. Sexuality, marriage, and well-being: The middle years. In: Rossi AS, editor. *Sexuality across the life course*. Chicago: University of Chicago Press; 1994.
33. Lawrance K, Byers ES. Sexual satisfaction in long-term heterosexual relationships: The interpersonal exchange model of sexual satisfaction. *J Per Rel*. 1995;(2):267–85. doi: 10.1111/j.1475-6811.1995.tb00092.x.
34. Nelson CJ, Shindel AW, Naughton CK, Ohebshalom M, Mulhall JP. Prevalence and predictors of sexual problems, relationship stress, and depression in female partners of infertile couples. *J Sex Med*. 2008;**5**(8):1907–14. doi: 10.1111/j.1743-6109.2008.00880.x. [PubMed: 18564149].
35. Agustus P, Munivenkatappa M, Prasad P. Sexual functioning, beliefs about sexual functioning and quality of life of women with infertility problems. *J Hum Reprod Sci*. 2017;**10**(3):213–20. doi: 10.4103/jhrs.JHRS_137_16. [PubMed: 29142451]. [PubMed Central: PMC5672728].
36. Bokaie M, Simbar M, Ardekani SM, Majd HA. Women's beliefs about infertility and sexual behaviors: A qualitative study. *Iran J Nurs Midwifery Res*. 2016;**21**(4):379–84. doi: 10.4103/1735-9066.185579. [PubMed: 27563321]. [PubMed Central: PMC4979261].
37. Rigcheshme MZ, Mirzaian B, Hasanzade R, Shahidi M. [Comparing sexual attitudes of fertile and infertile couples]. *JMUMS*. 2012;**21**(1):271–81. Persian.
38. Pakgohar M, Vizheh M, Babaee GH, Ramezanzadeh F, Abedininia N. [Effect of counseling on sexual satisfaction among infertile women referred to Tehran Fertility Center]. *J Fac Nurs Midwifery*. 2008;**14**(1):21–31. Persian.
39. Jafarzadeh-Kenarsari F, Ghahiri A, Habibi M, Zargham-Boroujeni A. Exploration of infertile couples' support requirements: A qualitative study. *Int J Fertil Steril*. 2015;**9**(1):81–92. [PubMed: 25918596]. [PubMed Central: PMC4410041].
40. McCabe MP, Cummins RA, Romeo Y. Relationship status, relationship quality, and health. *J Fam Stud*. 2014;**2**(2):109–20. doi: 10.5172/jfs.2.2.109.
41. Naghdi-Babaee S, Ghahari S. Effectiveness of communication skills training on intimacy and marital adjustment among married women. *Int J Med Res Health Sci*. 2016;**5**(8):375–80.
42. Bokaie M, Simbar M, Yassini Ardekani SM, Alavi-Majad H. [Does infertility influence couples' relationships? A qualitative study]. *J Qual Res Health Sci*. 2017;**6**(1):63–77. Persian.
43. McCarthy BW, Bodnar LE. The equity model of sexuality: Navigating and negotiating the similarities and differences between men and women in sexual behaviour, roles and values. *J Sex Rel Ther*. 2005;**20**(2):225–35. doi: 10.1080/14681990500113229.
44. World Health Organisation. The World Health Organization quality of life assessment (WHOQOL): Position paper from the World Health Organization. *Soc Sci Med*. 1995;**41**(10):1403–9. doi: 10.1016/0277-9536(95)00112-k.
45. Khademi A, Alleyassin A, Amini M, Ghaemi M. Evaluation of sexual dysfunction prevalence in infertile couples. *J Sex Med*. 2008;**5**(6):1402–10. doi: 10.1111/j.1743-6109.2007.00687.x. [PubMed: 18086173].
46. Millheiser LS, Helmer AE, Quintero RB, Westphal LM, Milki AA, Lathi RB. Is infertility a risk factor for female sexual dysfunction? A case-control study. *Fertil Steril*. 2010;**94**(6):2022–5. doi: 10.1016/j.fertnstert.2010.01.037. [PubMed: 20206929].
47. Desai MD, Patoliya HM. Sexual satisfaction and life satisfaction among married couples. *JIAAP*. 2012;**38**(3):265–70.
48. Tao P, Coates R, Maycock B. Investigating marital relationship in infertility: A systematic review of quantitative studies. *J Reprod Infertil*.

2012;**13**(2):71–80. [PubMed: 23926528]. [PubMed Central: PMC3719332].
49. Heiman JR, Long JS, Smith SN, Fisher WA, Sand MS, Rosen RC. Sexual satisfaction and relationship happiness in midlife and older couples in five countries. *Arch Sex Behav*. 2011;**40**(4):741–53. doi: 10.1007/s10508-010-9703-3. [PubMed: 21267644].
50. Leiblum SR, Aviv A, Hamer R. Life after infertility treatment: A long-term investigation of marital and sexual function. *Hum Reprod*. 1998;**13**(12):3569–74. [PubMed: 9886552].
51. Samadaee-Gelehkolaee K, McCarthy BW, Khalilian A, Hamzehgardeshi Z, Peyvandi S, Elyasi F, et al. Factors associated with marital satisfaction in infertile couple: A comprehensive literature review. *Glob J Health Sci*. 2015;**8**(5):96–109. doi: 10.5539/gjhs.v8n5p96. [PubMed: 26652079]. [PubMed Central: PMC4877237].
52. Bokaie M, Simbar M, Yassini Ardekani SM. Sexual behavior of infertile women: A qualitative study. *Iran J Reprod Med*. 2015;**13**(10):645–56. [PubMed: 26644793]. [PubMed Central: PMC4668352].
53. Pedro A. Coping with infertility: An explorative study of South African women's experiences. *Open J Obstet Gynecol*. 2015;**5**(1):49–59. doi: 10.4236/ojog.2015.51008.
54. Salehy Fadardy J. [The development and validation of marital satisfaction questionnaire on a sample of students of ferdowsi university]. *Psycho-therapical Novelties*. 1999;**4**(13, 14):84–108. Persian.
55. Mirblouk F, Asgharnia DM, Solimani R, Fakor F, Salamat F, Mansoori S. [Comparison of sexual dysfunction in women with infertility and without infertility referred to Al-Zahra Hospital in 2013 - 2014]. *Int J Reprod Biomed (Yazd)*. 2016;**14**(2):117–24. Persian. [PubMed: 27200426]. [PubMed Central: PMC4869153].