Effect of Life Style Modification on Sexual Dysfunction Among Infertile Women

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Abstract:

Background: Sexuality is a basic human need. It is among the extremely important & complex facets of a woman's existence. Relationship between infertility and sexual dysfunctions can be mutual as sexual dysfunctions can be a cause of infertility or can be triggered by infertility. **Aim:** of the study to evaluate effect of life style modification on sexual dysfunction among infertile women. **Methods: Sample:** purposive sample of 60 infertile women, **Research Design**: quasi-experimental with a pre-post-test design was adopted. **Study setting:** This study was conducted at the assisted reproductive technology unit (ART unit) & outpatient gynecological clinic at Women's Health Hospital, Assiut University. **Study tools**: including structured interviewing questionnaire, Arabic version of female sexual dysfunction index & follow up sheet. **Results:** the investigation outcomes revealed that before intervention (90%) of the studied women suffer from sexual dysfunction while after intervention, female sexual dysfunction was significantly improved (P < 0.01), as its percentage decreased to (3.3%). A strong statistically significant association was found between sexual dysfunction and both educational attainment **(p=0.009)**,and profession **(p=0.004)**. **Conclusion:** life style modification was effective in improving sexual dysfunction among infertile women as before intervention majority of the studied women were experience sexual dysfunction while after intervention female sexual dysfunction was significantly improved**. Recommendations:** Adopting healthy lifestyle patterns should be taken into account for all women who experience sexual dysfunction to help them have positive & satisfying sexual relationship.

Keywords: Infertility, Life style modification & Sexual dysfunction.

Introduction:

Infertility is a serious health issue affecting large portion of the world's population. It is the inability to conceive after a year of frequent sexual relation without the use of contraception. Studies from developing countries have revealed that one in each four women is infertile **(Wang et al., 2022)**.

Sexuality is a basic human need. It is among the extremely important & complex facets of a woman's existence. One of the most crucial aspects of marriage is having a happy, safe, and fulfilling sexual connection, which is a main component for the durability & stability of a marital life **(Velten et al., 2021)**.

Relationship between infertility and sexual dysfunctions can be mutual as sexual dysfunctions can be a cause of infertility or can be triggered by infertility. SD is identified as disorders of orgasm, libido, arousal & dyspareunia. Various factors can lead to sexual dysfunction including: couples' age, educational level, duration of marriage, living with other people in the same house, intimate partner violence and insufficiency of income **(Anil et al., 2022)**.

Healthy lifestyle behaviors play crucial roles in the general health and wellbeing of individuals & significant factor to consider with infertile women, it includes nutrition, stress management, health responsibility, mental development, physical activity and interpersonal relationships. Also studied have showed a significant association between healthy lifestyle patterns & success of the infertility treatment **(Emokpae & Brown., 2021)**.

Significance of the study:

Infertility is a complicated health issue that affects both emotional and physical well-being. According to world health organization (WHO), female infertility is the 5th most severe disability globally. Infertile couples face numerous challenges such as financial strain due to the high costs of treatment, sexual dysfunction and psychological distress including anxiety, social stigma and depression. These individuals may also face domestic violence and feelings of failure **(Hamidzadeh et al., 2023)**.

Twelve percent of Egyptian couples struggle with infertility. Primary infertility affects 4.3% of women, whereas secondary infertility affects 7.7% of them. Since there are more than 25 million women in Egypt

between the ages of 15 and 49, at least 3 million of them are infertile. **(Baiomy et al., 2023).**

Women's sexual health has traditionally been a taboo subject as it is closely related to a community's religious and culture values. In recent years, women's sexual dysfunction has emerged as a crucial health issue as many countries reported its high prevalence, of 40.0-76.9% **(Salamon et al., 2020).**

Four out of ten women who are of reproductive age have at least one FSD domain. The incidence of sexual dysfunction in Malaysia varies from 25.8% to 29% while in Egypt; a study was done to assess violence and sexual dysfunction among infertile Egyptian women in Ismailia. It revealed that the vast majority of the studied women had sexual dysfunction **(Ghoneim et al., 2021).**

Aim of the study

This study aimed to evaluate effect of life style modification on sexual dysfunction among infertile women.

Research hypothesis:

The research hypotheses for this study are:

H1: Life style modification will be effective in reducing sexual dysfunction among infertile women.

Subjects and methods:

Study design:

This research adopted quasi-experimental with a pre-post-test design.

Setting:

Study's setting includes the assisted reproductive technology unit (ART unit) &outpatient gynecological clinic at Women's Health Hospital, Assiut University.

Sample:

The following inclusion criteria were used to recruit 60 infertile women into a purposive sample for the study.

Inclusion criteria:

The following inclusion criteria were used to enroll women who complained of infertility (primary or secondary):

a) Women between the ages of 18 and 45.

b) Willing to take part in the research.

Exclusion criteria:

Women who had erratic marriages were excluded.

Sample size:

The sample was computed using the subsequent equation:

$$n = \frac{[DEFF * Np(1-p)]}{[(d2/Z21 - \alpha/2 * (N-1) + p * (1-p)]}$$

DEFF (Design effect) = 1
N (population) = 240
p (Hypothesized %) = 5%+/-5

d (tolerated margin of error) = 0.05
Z (level of confidence) = 1.96
α (Alpha)= 0.05

$$n = \frac{[1 * 240 * 5\% +/-5 (1-5\% +/-5)/ [(0.05)2}{[(1.96)21 - 0.05 * (240-1) + 5\% +/-5 (1-5\% +/-5)]}$$

n= 57 increases to 60 women.

Tools of the Study:

Tool I: A structured interview questionnaire:

After examining relevant literature, the researcher develops it and uses to gather the following information:

Personal data of participating women, including: women's telephone number, age, residence, educational level, type of family, occupation, age at marriage, height, weight, body mass index (BMI), duration of marriage & circumcision.

Infertility-related data of women, which included: cause, duration, & type of infertility, and duration of treatment.

Tool II: Arabic version of the Female Sexual Dysfunction Index (FSDI) (2000):

It is a short self-reported measure that was created by Rosen R. et al. (2000), verified by Anis et al. (2011), and translated into Arabic. It is a brief test used to assess women's sexual function. It is made up of 19 statements that together represent the six areas of sexual dysfunction: orgasm (3 item), desire (2 item), pain (3 items), lubrication (4 items), arousal (4 items) & satisfaction (3 items)

Tool III: Follow up sheet:

Follow up sheet was intended to evaluate the efficacy of healthy life style modifications on improving sexual dysfunction. This follow up was carried out after three months from the first visit.

Validity & reliability of the tools:

Tools' validity and reliability were examined before the start of the investigation. To verify the content validity, a team of five maternity nursing specialists reviewed the study tools. The panel's assessment of the phrases' clarity and suitability for the material was taken into consideration while making the modifications.

The Alpha Cronbach's test was used to assess reliability for Tool II (r = 0.921 for Tool III, 0.887).

Procedure:

Three stages were involved in the execution of this study: the administrative, preparation, and implementation stages.

Firstly, administrative stage:

An official consent was acquired from the dean of Faculty of Nursing Assiut University to conduct the study and from the manager of Woman's Health Hospital Assiut University to proceed with the study and gather data.

Secondly preparation stage included:
Tool development:
The researcher thoroughly examined all of the available literature about the current investigation, including medical textbooks and local, national, and worldwide journals, scientific magazines and internet resources in order to give a clear picture about the subjects and to develop the tools for data collection.

Pilot study:
Following the design and refining of the research instruments, a pilot study was conducted on 10% (6) of women in January 2023 to assess the practicality and clarity of the items & also to estimating the amount of time required to gather data. Following a pilot study, no changes were made to the instruments; hence the pilot research's sample was added to the overall sample.

Thirdly Implementation stage:
Data collection was carried out through three phases:

Assessment phase:
The study was conducted over six months from the first of January 2023 to the end of June 2023 through three days per week from the study setting started from 9am to 1pm daily except the weekend and public holidays with maximally 3 women per day. The investigator attended one day at outpatient Gynecology clinic sand 2 days per week at ART unit at Women's Health Hospital, Assuit University to collect data.

At initial visit:
- The investigator greeted & welcomed women and introduced herself to them.
- The investigator describes the purpose & scope of the study to each woman, an oral informed consent was taken from every woman to participate in the study and to ensure anonymity of the questionnaire (Confidentiality).
- Each woman was interviewed by the investigator in face-to-face interview separately in nursing office to collect the personal data & infertility data.
- Then investigator asks women to answer the questionnaire (Arabic version of the Women Sexual Dysfunction Index) that was translated into Arabic to obtain the necessary data which indicate the presence of sexual dysfunction. It took about 15 minutes to fill questionnaire

Implementation phase:
This phase included counseling and health education for each participant separately which took about 20 minute. After finishing the questionnaire, the investigator provided health education to each woman about:
1. Infertility (definition, causes, types, management).
2. Sexual dysfunction (definition, causes, symptoms & how to offer come it).

3. Healthy Life styles modifications including: proper nutrition, exercise, physical activity, adequate sleep, stress management, regular checkup.
4. Guidelines to improve marital life.

At the end of session, the investigator gave the women a booklet consisted of (20 pages) written in Arabic language about healthy life style pattern & guidelines for improving sexual dysfunction.

-Investigator gave all women a card for follow-up, this card contains (the date of next visit, the investigator contact number for medical consultation and ensure a follow up visit.

Follow up phase:
Each woman participated in the study was followed up by telephone until the time of the subsequent visit to encourage them following the healthy life style behaviors regarding proper nutrition, exercise, physical activity, adequate sleep, stress management and regular checkup.

At the subsequent visit:
The questionnaire (post-test) included Arabic version of the Women Sexual Dysfunction Index, was refilled by each woman to evaluates effect of style modifications on improving sexual dysfunction through face to face interview in the follow up visit to outpatient gynecological clinic & ART unit at Women's Health Hospital, Assiut University after 3 months of assessment. Women who neglected the second visit were followed up by telephone.

Ethical consideration:
The Research Ethics Committee of Assiut University Faculty of Nursing granted ethical approval for this study on November 27, 2022. The study followed common ethical principles in clinical research. There were no risks for study participants during application of the research. Oral consent was obtained from participants or guidance that is willing to participate in the study after explaining the nature and purpose of the study. Study participants have the right to refuse to participate or withdraw from the study without any rational. Study participant's privacy was considered during collection of data. Confidentiality and anonymity was assured.

Statistical design:
The statistical software known as the statistical package for social scientific programs (SPSS) version 26 was utilized to code, tabulate, and analyze the acquired data in order to evaluate the homogeneity of the data. In the descriptive analysis, the quantitative variables were described using mean ± standard deviation (SD), frequency, and percentages, while the qualitative variables were described using frequency and percentages. The method used was the Pearson correlation coefficient. Less than 0.05 for probability (P-value) was deemed significant, and less than 0.001 for highly significant results.

Results:

Table (1): Distribution of the studied women according to their personal data (n=60):

personal data	N	%
Age groups/ years		
<30 year	25	41.7
30-35 years	20	33.3
>35 years	15	25.0
Age mean±SD	**31.38±5.59**	
Residence		
Rural	40	66.7
Urban	20	33.3
Educational level		
Illiterate& read and write	13	21.7
Preparatory school	12	20.0
Secondary school	25	41.7
University	10	16.7
Occupation		
Worker	12	20.0
House wife	48	80.0
Age at marriage/ years		
<25 years	43	71.7
25 or more	17	28.3
Mean of Age at marriage/ years	**22.0±5.27**	
Type of family		
Necular	13	21.7
Extended	47	78.3
Duration of marriage/ years	**9.27±5.85**	
Weight/kg	**72.82±12.17**	
Height/cm	**161.67±6.14**	
BMI		
Healthy weight	18	30.0
Over weight	26	43.3
Obese	16	26.7
History of Circumcision		
No	3	5.0
Yes	57	95.0

Table (2): Distribution of the studied women according to their current infertility data (n=60):

Current infertility data	N	%
Types of infertility		
Primary	33	55.0
Secondary	27	45.0
Cause of infertility		
Female factor	35	58.4
Male factor	25	41.6
Duration of infertility		
Less than 3 years	16	26.7
From 2 to 5 years	15	25.0
More than 5 years	29	48.3
Duration of treatment		
Less than 3 years	18	30.0
From 2 to 5 years	14	23.3
More than 5 years	28	46.7

Table (3): Distribution of the studied women is according to mean and SD of total score regarding sexual dysfunction in pre and post-intervention (n=60):

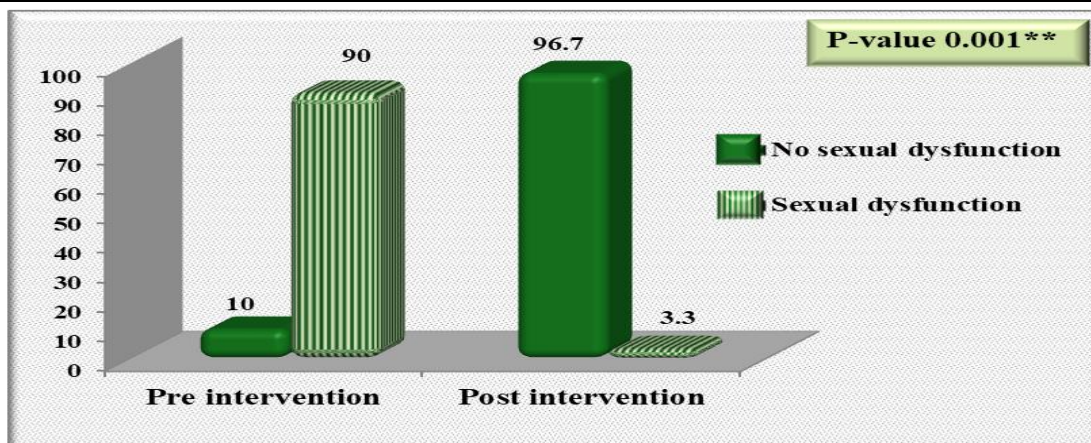| Items	Pre-intervention Mean ±SD	Post-intervention Mean ±SD	p-value
Desire	7.37±0.919	5.03±1.46	0.001**
Arousal	14.40±1.806	9.77±3.17	0.001**
Lubrication	16.25±2.59	11.40±3.38	0.001**
Orgasm	11.30±1.046	8.65±2.58	0.001**
Satisfaction	11.83±1.251	9.55±3.31	0.001**
Pain	7.77±0.865	8.32±2.01	0.001**
Total sexual dysfunction	**68.86±5.907**	**52.72±13.44**	**0.001****

Figure (1): Distribution of the studied women according to their level of sexual dysfunction in pre and post-intervention (n=60).

Table (4): Relationship between level of sexual dysfunction and their personal data before intervention (n=60):

Socio-demographic data	Level of sexual dysfunction				P-value
	No		Yes		
	N(4)	%	N(56)	%	
Age groups/ years					
<30 year	2	50.0	23	41.1	0.276
30-35 years	0	0.0	20	35.7	
>35 years	2	50.0	13	23.2	
Residence					
Rural	3	75.0	37	66.1	0.714
Urban	1	25.0	19	33.9	
Educational level					
Illiterate& read and write	0	0.0	13	23.2	**0.009****
Preparatory school	1	25.0	11	19.6	
Secondary school	0	0.0	25	44.6	
University	3	75.0	7	12.5	
Occupation					
Worker	3	75.0	9	16.1	**0.004****
House wife	1	25.0	47	83.9	
Age at marriage/ years					
<25 years	4	100.0	39	69.6	0.193
25 or more	0	0.0	17	30.4	
Type of family					
Necular	1	25.0	12	21.4	0.867
Extended	3	75.0	44	78.6	
BMI					
Healthy weight	1	25.0	17	30.4	0.537
Over weight	1	25.0	25	44.6	
Obese	2	50.0	14	25.0	
History of Circumcision					
No	0	0.0	3	5.4	0.635
Yes	4	100.0	53	94.6	

Table (1): Indicates participant's personal data the mean age and standard deviation is 31.38±5.59. Based on where they lived, 66.7% of the participants were from rural areas, and 41.6% had completed secondary education. While 80.0% of them were not working. Furthermore, the average age of women at marriage was 22.0±5.27, and their average marriage duration was 9.27±5.85. Furthermore, 95.0% of them said they had undergone circumcision, and 78.3% of them said they were part of extended families.

Table (2): Shows that 55.0% of women experienced primary infertility, 58.4% of participant said that female factors were the cause of their infertility, 48.3% of participants were infertile for more than five years, 46.7% of women had infertility therapy for more than five years

Table (3): Shows that the pre- and post-intervention mean and standard deviation of the total score for sexual dysfunction are, respectively, 68.86±5.907 & 52.72±13.44.

Figure (1): Indicated that sexual dysfunction affected (90%) of the studied women before intervention while after intervention, female sexual dysfunction was significantly improved (P < 0.01), as its percentage decreased to (3.3%).

Table (4): Demonstrates a strong statistically significant correlation between sexual dysfunction & both profession (p=0.004), and educational attainment (p=0.009). However, there isn't a statistically significant correlation between age and sexual dysfunction (p=0.276).

Discussion:
Female sexual dysfunction is an umbrella term that encounters multiple facts of sexuality in terms of orgasm, arousal, desire and sexual pain **(Reed., 2022).** To guarantee a satisfying sexual life, women should adopt healthy lifestyles, such as avoid smoking, drugs abuse & excessive alcohol intake, following a balanced diet, practicing a regular physical activity, and use stress-management techniques, even before proposing both pharmaco- and/or psychotherapies **(Mollaioli et al.,2020).** So this study aims to evaluate effect of life style modification on sexual dysfunction among infertile women.

The study's key finding was that implementing life style modification was effective in reducing sexual dysfunction among infertile women as before intervention study's participant were suffering from SD while after intervention female sexual dysfunction was significantly improved, these finding come in line with **Abdelwahab & colleagues (2024)**, who study effect of lifestyle and demographic factors on female sexual function: survey study in sharkia governorate, Egypt. They indicated that both lifestyle and demographic factors have great effect on normal female sexual function. Similar results were found by **Wekker & colleagues (2018)**, who conduct a lifestyle intervention improves sexual function of women with obesity and infertility in Amsterdam. This results disagree with **Alirezaei & colleagues (2022),** who perform The effect of infertility counseling interventions on marital and sexual satisfaction of infertile couples in Iran they recommended that psychological interventions & infertility counseling increase sexual & marital satisfaction of infertile couples. The discrepancy in the findings could be caused by racial and cultural differences, medical and psychological conditions, the effect of socioeconomic factors, clinical definitions of sexual dysfunction, and sample requirements.

Additionally, the current investigation clarified a statistically significant association between sexual dysfunction and both educational attainment and profession, **Banaei & colleagues (2018),** who assess sexual dysfunction and its associated factors after delivery in Iran, found findings that were similar to this one. However, **McCool & colleagues (2018),** who study predictors of female sexual dysfunction: a systematic review and qualitative analysis through gender inequality paradigms, find a strong statistically significant correlation between age, residence, and sexual dysfunction.

Based on infertility statistics, the current study indicated that primary infertility affected half of them. Also half of them stated that infertility was caused by a female factor. These outcomes coincided with those of **Ghaly & colleagues (2019)**. Furthermore, the results of **Okobi (2021),** who confirmed that infertility is caused by male factors, are contradicted by this finding.

The current study's findings regarding the personal data of the participants showed that, a mean age was 31.38±5.59, one-third of them were in the 30 to 35-year-old age range. In terms of education, almost one-third of them had completed secondary school. Besides, the bulk of participants were not working. These outcomes similar to outcomes of **Elkhateeb (2018)**. who assess domestic violence against infertile women in Egypt. Sample selection criteria & size, similarity of society characteristics, traits and attributes are account for the similarity in findings.

In terms of family structure seventy-five percent of women live in large households. Different results are reported by **Rahebi & colleagues (2019),** who study relationship between domestic violence and infertility they report that two-thirds of their sample reside in small households.

Conclusion:

Current investigation reached the conclusion that life style modification was effective in reducing sexual dysfunction among infertile women. Additionally, a strong statistically significant association was existed between sexual dysfunction and both educational attainment and profession.

Recommendations:

▪ Taking effective measures are required to modify the unhealthy lifestyle patterns of infertile women.
▪ Adopting healthy lifestyle patterns should be taken into account for all women who experience sexual dysfunction to help them have positive & satisfying sexual relationship.
▪ Developing healthy lifestyle guidelines would be prudent step in assisting nurses and other healthcare professionals in implementing this aspect in premarital counselling.

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