Nursing guideline for improving sexual functions among infertile women

Azza Abd Elhameed Mohamed, Aziza Ahmed Attia, Hanan Abd Elfattah
Department of Maternity and Gynecological Nursing-Faculty of Nursing, Ain Shams University – Egypt

Abstract

Back ground: Sexual function plays an important role in the quality of life and is determined by both biological and psychosocial factors. Infertile couples report poor sexual functions suggesting a causal relationship between infertility and sexual function, Infertility caused sexual problems such as loss of sexual desire, decrease in frequency of sexual intercourse, pain during sexual intercourse and orgasmic difficulties in women and influencing their interpersonal and marital relationships and satisfaction. **Aim of study** evaluates effect of nursing guideline on improving sexual functions among infertile women. **Subjects and Methods: Design** a quasi-experimental design. **Setting** at Infertility clinic of Ain Shams Maternity University hospital. **The subjects** of the study consisted of a purposive sample of 135 women attending the previous settings. **Tools of Data**: The first tool, A Structured interviewing questionnaire sheet, the second tool, Female Sexual Function Index (FSFI) scale, and the third tool was Sexual Satisfaction and Distress Scale for Women (SSS-W), **main results** of this study revealed that; Nursing Guideline is highly significance improve of sexual functions of infertile women , highly statistical significant relations in female sexual functions index, frequency of sexual intercourse and highly statistical significant relations in Emotional and psychological problems ($p<0.001$).while statistical significant relations in the Life stressors and Statistical significant relations in Dyspareunia and sexual complaint during sexual intercourse. **The study concluded** that, nursing guideline is highly significance improved female sexual functions index of infertile women and sexual satisfaction scale. Through, decrease in dyspareunia and sexual complaint, improvement of Emotional and psychological status. **Recommendation:** studying the sexual function should be included as part reproductive health programs for woman. Raising awareness to women's sexual problems and Sex education of couples before marriage is very important for the quality and stability of family basis and raising awareness and education of nurses to perform efficient interventions to improve the sexual health of infertile women to improve quality of life.

Keywords: Sexual Satisfaction, Infertile Women

Introduction

Sexual health is a critical aspect of quality of life and is also influenced by medical conditions, particularly when gynecological disorders are involved, such as gynecological cancer or infertility (**Candy et al., 2016**). Infertile couples Have lower sexual function in orgasm, arousal, and desire dimensions **(*Marci*, 2012).**

Sexual and reproductive health are mentioned in the United Nations Sustainable Development Goals, and they represent a target in the post-2015 agenda **(United Nations General Assembly, 2015),** a sign of increasing global awareness and initiative in moving forward on

global sexual health issues, including education, care and rights, health-care providers should accelerate and promote progress of sexual health to be more inclusive and comprehensive (**Khosla et al., 2015).**

The bio psychosocial approach recognizes that biological includes hormone levels and hormonal changes that affect libido, or medical problems that affect genital sexual response, psychological include self-esteem and body image, mood symptoms, like depression, interpersonal include general satisfaction in the woman's relationship with husband, which is closely tied to overall sexual satisfaction, as well as quality of communication in the relationship. Sociocultural factors include the woman's attitudes about menopause and aging, as well as religious, cultural, and other social values regarding sex. All these factors can affect female sexual function; all play a role in determining an individual's health, in relation to sexual functioning. These factors interact with each other in a dynamic system over time. **(Holly,Thomas , et al., 2016)**

Infertility affects between 3.5 and 16.7% of the couples in developed countries and between 6.9and 9.3% of the couples in developing countries **(Bianchini, Navarro, et al., 2018**).

Infertility, as an emotional shock can even have an impact on couples' communication, and sexual skills. Overall, infertility, as a serious medical problem, can have destructive effects on the quality of life (**Carter, 2011)** through creating psychosocial stress, reduction of life satisfaction, increase of marital conflicts, and decrease of sexual satisfaction and marital satisfaction **(Dana et al, 2013)**

Obstetricians and gynecologists should stress the fact that a creative and romantic dyadic relationship motivates couples to engage in sexual relations and correlates with sexual satisfaction (**Pascoal, 2014).**

Relaxation has effect in decreasing infertile women's stress and, therefore, the improvement in treatment results **(Valiani, 2014).** Supportive intervention to decrease stress in the infertile there are different types of counseling interventions in infertility, two main types of which are individual counseling and group counseling. In decreasing infertile women's perceived stress, group counseling has demonstrated the biggest improvements in decreasing the stress level related to infertility treatments (**Fereshteh, 2017).**

The basis of psychological interventions for the infertile consists of improving the skills for coping with a life without children, lack of dependence on the probability of treatment success, improving the communication between the couple and the couple and the doctor, encouraging them to accept the fact that psychological disorders dispose the individual to medical treatments, and giving support to the management of any change that is needed in lifestyle and future programming. All these issues decrease the individual's stress **(Linnea, 2014).**

Significance of the study

Female sexual dysfunction is a highly prevalent health issue among women .Patient education about sexual function and sexual dysfunction can help to reduce anxiety and enhance communication between couples and clinicians. Sexual problems are common, estimated to affect 22–43% of women worldwide. Infertility leading to social isolation in addition, marital relations may be damaged by the diagnosis of infertility.

Infertility caused sexual problems such as loss of sexual desire, decrease in frequency of sexual intercourse, pain during sexual intercourse and orgasmic difficulties in women have different effects on the life of people by influencing their interpersonal and marital relationships and satisfaction.

Infertility makes an essential challenge to the sexual life and can affect all aspects of life of infertile women**.** It can cause many emotional and psychological disorders, such as sexual dysfunction, depression, hopelessness, feelings of worthlessness and social stigmatization. So this

study will provide in depth knowledge or will fill the gap in the study of this concern in a closed community.

Aim of the Study

The study aims to evaluate effect of nursing guideline on improving sexual functions among infertile women.

Study aim will be achieved through:

1.Assessing sexual functions of infertile women.

2.Design and implementing guideline for improving sexual functions among infertile women.

3.Evaluating women sexual satisfaction after implementing nursing guideline

Research hypothesis

Nursing guideline will highly significant improve of sexual functions of infertile women.

Subjects and Methods

Design: A quasi experimental design was used to conduct this study.

Setting: The study was conducted at Infertility clinic of Ain shams University maternity hospital

Type of sampling and sampling techniques:

Sample type: a purposive sample.

Sample size: Sample size was calculated based on the data of previous year Census report of Ain shams university maternity hospital. The flow rate of infertile women at Infertility clinic at Ain shams University maternity hospital was (2700 infertile women) in the previous years. According to this equation sample size (135) women were included in the study.

$$n = \frac{N \times p(1-p)}{\left[\left[N-1 \times \left(d^2 \div z^2\right)\right] + p(1-p)\right]}$$

Nxp(1-p)	=(2700*(0.103*(1-0.103)/
N-1	=(2700-1)*
d^2/z^2	=0.0025 / 3.8416+
p(1-p)	=0.103*(1-0.103)
N	=135

Sample Inclusion criteria included:

1.Age ranges from 21-45 years.

2.Ability to read and write (For proper and efficient communication)

3.A diagnosis of infertility.

4.Primary or secondary infertility

5.Male factor /female factor infertility (or both), and unexplained infertility

6.Sexually active over the prior 4 weeks.

Sample Exclusion criteria included:

1.Suffering from Infections as STDs.

2.Suffering from mental or Psychiatric disease

3.Having history of Cancers.

4.Second marriage in either of the couples.

Tools of data collection:

There were three tools of Data collection used as follows:

1.A Structured interviewing Arabic questionnaire has 7 parts includes socio

demographic characteristics of women under study (such as age, educational level, occupation, duration of marriage, residence, housing type), personal characteristics of Husband, medical history of woman, Gynecological and obstetric history(such as previous children for women, pregnancy complications, labour complication, gynaecological disorders, and obstetric surgical operation), Psychosocial problems, female sexual history& infertility-related characteristics and current condition of woman.

2.Female Sexual Function Index (FSFI) scale

FSFI is a 19-item questionnaire, which is self-report instrument for assessing different domains of female sexual functions. That is divided into six domains supported by factor analysis: desire (two items); arousal (four items); lubrication (four items); orgasm (three items); satisfaction (three items); and pain (three items) based on the five-point Likert scale ranging from "Almost always" (5) to "Almost never " (1) **(Rosen et al., 2000).** The total score is obtained by adding scores of all domains; scores are obtained by adding the scores of the individual questions that comprise the domain and then multiplying the sum by the domain factor provided in the FSFI for each domain. Response was classified as good if FSFI=30 or more, intermediate if FSFI= 23-29, and poor if FSFI was <23.

3.A Five-Factor Sexual Satisfaction and Distress Scale for Women (SSS-W) Questionnaire a brief, comprehensive and self-report measure of sexual satisfaction and sexual distress. Composed of five domains; contentment, communication, compatibility, relational concern, and personal concern. 30-item (8 positive questions and 22 negative questions) higher values indicate greater satisfaction with lower scores indicating higher levels of sexual distress. Level of agreement/disagreement was designed on a 5-point Likert scale. Ranging from "strongly agree" (5) to "strongly disagree" (1). Negative questions have reverse scores and the total score is obtained from summation of all normal and reversed score of the questionnaire, the higher score shows the greater sexual satisfaction. Full Scale Score = (Contentment + Communication + Compatibility + Relational Concern + Personal Concern **(Meston & trpnell, 2005).**Response was classified as high satisfaction if SSS-W=120 to 150, partial satisfaction if SSS-W = 100 to > 120 and low satisfaction if SSS-W=30 to > 100.

Procedure

Field work:

- An official written approval letter containing the title and clarifying the purpose of the study was obtained from dean of the Faculty of Nursing, Ain Shams University; directed to the director of Ain Shams Maternity University Hospital.
- Data were collected in the period from March 2017 till August 2017 on a sample of 135 infertile women fulfilling inclusion criteria at previously mentioned setting.
- At first the researcher attended the previous mentioned setting then reviewed registration record of infertility unit then all attended women fulfilling criteria were included in the study.
- The researcher explained the questionnaire to studied woman prior to participate in the study; the researcher interviewed each participant individually in a private room.
- At the beginning of interview, the studied woman filled out the demographic information questionnaire.
- Researcher assessed dimensions of sexual function in woman by applied female sexual functioning index scale (FSFI).
- Guideline used as supportive material and given in the form of Arabic nursing guideline
- The Educational tool was provided through booklets to the study group. The material

contained information on sexual problems. Sexual function, including anatomy and physiology of female reproductive organs, explanation of female sexual response cycle, and discussion of various methods to overcome sexual dysfunction. Numerous relaxation and other exercises for improving sexual fitness (such as Kegel exercise) were also discussed.

- A feedback was obtained, and the ending 15 min of interview was devoted to questions and answers.

- The Study group asked 4 weeks after implementing of nursing guideline and educational booklet was given to the study group after collection of the questionnaires to complete the questionnaires to evaluate the women's responses and evaluating women sexual satisfaction after implementing nursing guidelines by applying The Sexual Satisfaction Scale for Women (SSS-W).

Validity and reliability:

The tools for data collection was reviewed for appropriateness of items and measuring the concepts through jury of 3 expertise's in the field of maternity and gynecological nursing and experts at faculty of nursing , Ain shams university to assure content validity of questionnaire then accordingly some questions were modified .

A pilot study

A pilot study was conducted on 10 % of the period to collect study sample on (12 women) attended at infertility unit. It was conducted to evaluate simplicity, clarity, completeness, applicability and feasibility of research process, to find the possible obstacles and problems that might be faced during data collection .then according to necessary modification of data collection plan and tools were done. Those women included in the pilot study were excluded from the main study sample.

Ethical consideration:

The ethical research considerations in this study include the following:

- The researcher obtained consent from the director of Ain Shams Maternity University Hospital and from the nurses for data collection.

- The research approval was obtained from Scientific Research Ethical committee in Faculty of Nursing at Ain Shams University before starting the study.

- The researcher clarified the aim of the study to the women included in the study to gain confidence and trust; written consent will be obtained. The tools of this study will not touching women shyness.

- The researcher ensured that the study doesn't cause any harm during data collection.

- The researcher assured maintaining anonymity and confidentiality of the subject data.

- Each woman was told that she can withdraw at any time from study participation.

Statistical Design

Recorded data were analyzed using the statistical package for social sciences, version 20.0 (SPSS Inc., Chicago, Illinois, USA). Quantitative data were expressed as mean ± standard deviation (SD). Qualitative data were expressed as frequency and percentage.

The following tests were done:

- Chi-square (χ^2) test of significance was used in order to compare proportions between qualitative parameters.

▪ Pearson's correlation coefficient (r) test was used to assess the degree of association between two sets of variables.

▪ The confidence interval was set to 95% and the margin of error accepted was set to 5%. So, the p-value was considered significant as the following:

▪ Probability (P-value)

– P-value <0.05 was considered significant.

– P-value <0.001 was considered as highly significant.

– P-value >0.05 was considered insignificant

Results:

Table (1): shows that the mean age of the studied women was 32.33, regarding residence 53.3% of them were living in Rural areas, regarding occupation 77.8.3% of them were housewife, regarding duration of marriage 45.2% of them were from 5-10 years, regarding Educational level 25.9% of them had secondary education, and 54.1% of them their housing type were tenant.

Table (2): reveals that 52.6% of them had primary infertility, regarding Labor complication 29.6% of them had Cesarean section, regarding Gynecological disorders 20.7% had Tubal occlusion and Vaginal Infections, and regarding Obstetric surgical operation 29.6%.of them had Hysteroscopy**.**

Table (3): presents that 33.3%of them had Vaginal dryness, 27.4% had Dyspareunia, regarding Male sexual dysfunction 26.7% of them their husband had Premature ejaculation, 52.6%of them their Frequency of sexual intercourse from 3-4 times in week, regarding Fertility treatments 83.7% of them take Fertility drugs, regarding Treatment effort 45.9% of them try Several times, regarding Duration of infertility 69.6% of them suffering from infertility from more than 3 years, and 88.1% of them Use of lubricants .

Table (4): reveals that the mean value of score of female sexual functions are Desire, lubrication, Orgasm, Arousal, Satisfaction and Pain 3.78, 3.86, 3.90, 3.92, 3.93, and 4.09 respectively.

Fig (1): shows that total score of female sexual functions index for women are poor, intermediate and good represents 63.7%, 13.3% and 23% respectively.

Table (5): displays that, there is highly statistically significant difference in sexual function after compared to before intervention regarding to female sexual function index (p-value <0.001).

Table (6): shows that there were statistical significant relations between the studied women female sexual functions index and their age, residence, duration of marriage, education level and housing type (p<0.05).

Table (7): this table represents that there are statistical significant relations between the studied women level of sexual satisfaction scores and pregnancy complications and labor complication.

Table (8): this table shows that there are highly statistical significant relations between the studied women level of sexual satisfaction scale and Emotional and psychological problems (p<0.001).while statistical significant relations in the Life stressors as pressure from the family spouse or relatives (p=0.002

Table (1):distribution of women according to their socio-demographic data (N=135).

Socio demographic characteristics of women	No.	%
Age (years)		
21-29 years	57	42.2%
30-38 years	48	35.6%
39- 45 years	30	22.2%
Mean±SD	32.33±6.14	
Education level		
a) Read and write	20	14.8%
b) Primary education	26	19.3%
c) Preparatory education	28	20.7%
d) Secondary education	35	25.9%
e) Technical or middle education	13	9.6%
f) College education	13	9.6%
Occupation		
a) Employee	30	22.2%
b) Housewife	105	77.8%
Duration of marriage (years)		
a) <5 years	32	23.7%
b) 5–10 years	61	45.2%
c) >10 years	42	31.1%
Mean±SD	8.37±1.59	
Residence		
a) Urban	63	46.7%
b) Rural	72	53.3%
Housing type		
a) Owner	34	25.2%
b) Tenant or Leased	73	54.1%
c) Living with relatives	28	20.7%

Table (2): distribution of studied women according to their obstetric and gynecological history (N=135).

Obstetric and Gynecological history	No.	%
Previous children of wife		
One child(secondary infertility)	64	47.4%
None(primary infertility)	71	52.6%
Pregnancy complications		
None	89	65.9%
Gestational Diabetes	4	3.0%
Miscarriage	31	23.0%
Ectopic pregnancy	24	17.8%
Gestational Hypertension	1	0.7%
Stillbirths	13	9.6%
Labor complication		
Cesarean section	30	22.2%
Obstructed labor	4	3.0%
Other	15	11.1%
Gynecological disorders		
Tubal occlusion	28	20.7%
Vaginal Infections	28	20.7%
Intrauterine defects	10	7.4%
Endometriosis	1	0.7%
Pelvic adhesions	9	6.7%
Polycystic ovarian syndrome	49	36.3%
Obstetric surgical operation		
None	78	57.8%
Laparoscopy	31	23.0%
Hysteroscopy	40	29.6%
Dilation and curettage(D&C)	2	1.5%

Table (3):distribution of studied women according to their female sexual history & infertility related characteristics (N=135).

Female sexual history & infertility-related characteristics	No.	%
Sexual complaint during sexual intercourse		
None	63	46.7%
Vaginal dryness, use lubricants for intercourse	45	33.3%
Dyspareunia (difficult intercourse)	37	27.4%
Others	12	8.9%
Male sexual dysfunction		
None	78	57.8%
Prostate disorders	4	3.0%
Hormone problems(testosterone)	12	8.9%
Erectile dysfunction or impotence	16	11.9%
Premature ejaculation	36	26.7%
Frequency of sexual intercourse		
1-2 times in week	8	5.9%
3-4 times in week	71	52.6%
>4 times in week	29	21.5%
1-2 times in month	27	20.0%
Fertility treatments		
None	19	14.1%
Intrauterine insemination (IUI)	12	8.9%
Assisted reproductive technology (ART)	14	10.4%
Fertility drugs	113	83.7%
Treatment effort		
a) First time	73	54.1%
b) Several times	62	45.9%
Duration of infertility (Y)		
a) 1 years	10	7.4%
b) 2-3 years	31	23.0%
c) >3 years	94	69.6%
Mean±SD	3.09±0.59	
Use of lubricants		
Yes	119	88.1%
No	16	11.9%

Table (4): distribution of Studied women according to mean value of their female sexual functions domain scores (N=135).

Female Sexual Function Index (FSFI)	Mean	±SD
Desire	3.78	1.51
Arousal	3.86	1.47
Lubrication	3.90	1.42
Orgasm	3.92	1.25
Satisfaction	3.93	1.68
Pain	4.09	1.45
Total	23.49	7.82

Figure (1): female sexual functions index before intervention among studied women.

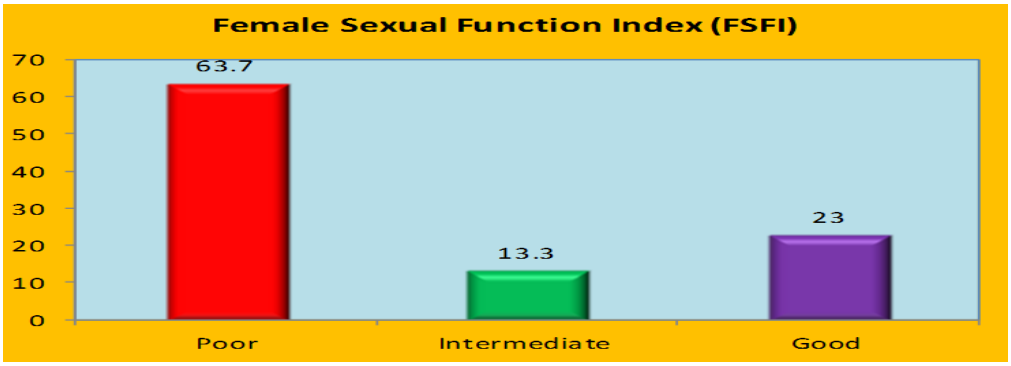

Table (5): Female sexual function index before and after intervention among studied women (n=135).

Female Sexual Function Index (FSFI)		Pre intervention		Post intervention		Chi-square test	
		No.	%	No.	%	x2	p-value
Pain	Poor	27	20.0	11	8.1	10.129	0.006*
	Intermediate	25	18.5	19	14.1		
	Good	83	61.5	105	77.8		
Satisfaction	Poor	89	65.9	13	9.6	92.437	<0.001**
	Intermediate	21	15.6	42	31.1		
	Good	25	18.5	80	59.3		
arousal	Poor	88	65.2	17	12.6	79.393	<0.001**
	Intermediate	26	19.3	55	40.7		
	Good	21	15.6	63	46.7		
lubrication	Poor	79	58.5	12	8.9	76.511	<0.001**
	Intermediate	25	18.5	40	29.6		
	Good	31	23.0	83	61.5		
orgasm	Poor	81	60.0	12	8.9	81.794	<0.001**
	Intermediate	26	19.3	39	28.9		
	Good	28	20.7	84	62.2		
Desire	Poor	72	53.3	14	10.4	62.92	<0.001**
	Intermediate	39	28.9	53	39.3		
	Good	24	17.8	68	50.4		
Total	Poor	86	63.7	13	9.6	85.53	<0.001**
	Intermediate	18	13.3	37	27.4		
	Good	31	23.0	85	63.0		

***p-value <0.05 S;** ****p-value <0.001 HS**

Table (6): Distribution of studied women according to their sexual satisfaction Scale before and after intervention (n=135).

Sexual Satisfaction Scale for Women		Pre intervention		Post intervention		Chi-square test	
		No.	%	No.	%	x2	p-value
Contentment	Low Satisfaction	75	55.6	25	18.5	80.524	<0.001**
	partial Satisfaction	44	32.6	23	17.0		
	high Satisfaction	16	11.9	87	64.4		
Communication	Low Satisfaction	75	55.6	25	18.5	72.474	<0.001**
	partial Satisfaction	45	33.3	30	22.2		
	high Satisfaction	15	11.3	80	59.3		
Compatibility	Low Satisfaction	75	55.6	25	18.5	65.782	<0.001**
	partial Satisfaction	43	31.9	32	23.7		
	high Satisfaction	17	12.6	78	57.8		
Relational- Concern	Low Satisfaction	32	23.7	10	7.4	62.747	<0.001**
	partial Satisfaction	89	65.9	51	37.8		
	high Satisfaction	14	10.4	74	54.8		
Personal- Concern	Low Satisfaction	86	63.7	35	25.9	66.745	<0.001**
	partial Satisfaction	34	25.2	22	16.3		
	high Satisfaction	15	11.1	78	57.8		
Total	Low Satisfaction	69	51.1	25	18.5	70.514	<0.001**
	partial Satisfaction	51	37.8	30	22.2		
	high Satisfaction	15	11.1	80	59.3		

Table (7): Relation between women female sexual functions index and their socio-demographic data (n=135).

Socio demographic characteristics	Female Sexual Functions Index (FSFI)						Chi-square test	
	Poor *(n=86)*		Intermediate *(n=18)*		Good *(n=31)*			
	No.	%	No.	%	No.	%	x2	p-value
1- Age (years)								
21-29 years	33	38.4%	4	22.2%	20	64.5%	16.612	0.002*
30-38 years	28	32.6%	12	66.7%	8	25.8%		
39- 45 years	25	29.1%	2	11.1%	3	9.7%		
2- Residence								
a) Urban	53	61.6%	9	50.0%	10	32.3%	7.990	0.018*
b) Rural	33	38.4%	9	50.0%	21	67.7%		
3- Occupation								
a) Employee	20	23.3%	5	27.8%	5	16.1%	1.040	0.594
b) Housewife	66	76.7%	13	72.2%	26	83.9%		
4- Duration of marriage (years)								
a) <5 years	19	22.1%	5	27.8%	8	25.8%	12.067	0.017*
b) 5–10 years	37	43.0%	4	22.2%	20	64.5%		
c) >10 years	30	34.9%	9	50.0%	3	9.7%		
5- Education level								
a) Read and write	18	20.9%	2	11.1%	0	0.0%	27.507	0.002*
b) Primary education	19	22.1%	5	27.8%	2	6.5%		
c) Preparatory education	17	19.8%	2	11.1%	9	29.0%		
d) Secondary education	17	19.8%	4	22.2%	14	45.2%		
e) Technical or middle education	9	10.5%	0	0.0%	4	12.9%		
f) College education	6	7.0%	5	27.8%	2	6.5%		
6- Housing type								
a) Owner	14	16.3%	7	38.9%	13	41.9%	12.672	0.013*
b) Tenant or Leased	49	57.0%	8	44.4%	16	51.6%		
c) Living with relatives	23	26.7%	3	16.7%	2	6.5%		

Table (8): Relation between studied women female sexual functions index and their psychosocial status of (n=135).

Psychosocial status of woman	Female Sexual Functions Index (FSFI)						Chi-square test	
	Poor *(n=86)*		Intermediate *(n=18)*		Good *(n=31)*			
	No.	%	No.	%	No.	%	x2	p-value
Emotional and psychological problems								
None	33	38.4%	5	27.8%	10	32.3%	0.920	0.631
Anger and mood change	36	41.9%	8	44.4%	12	38.7%	0.168	0.919
Hopelessness feeling	20	23.3%	8	44.4%	6	19.4%	4.273	0.118
Low self-esteem	17	19.8%	7	38.9%	9	29.0%	3.405	0.182
Emotional Stress	10	11.6%	2	11.1%	1	3.2%	1.901	0.387
Life stressors								
None	28	32.6%	2	11.1%	6	19.4%	4.601	0.100
Death of close relatives during the past months	4	4.7%	4	22.2%	0	0.0%	10.778	0.005*
Financial and job problems	26	30.2%	6	33.3%	13	41.9%	1.404	0.496
Distress of medical treatment.	48	55.8%	14	77.8%	20	64.5%	3.252	0.197
Social isolation	8	9.3%	5	27.8%	2	6.5%	6.029	0.049*
Pressure from the family, spouse or relatives	8	9.3%	6	33.3%	2	6.5%	9.351	0.009*

P-value >0.05 NS; *p-value <0.05 S; **p-value <0.001 HS

Discussion

Sexual functioning is a complex bio-psycho-social process, coordinated by the neurological, vascular and endocrine systems. In addition to the biological factors, the psychosocial factors like societal and religious beliefs, health status, personal experience, and socio-demographic conditions, and psychological status of the person/couple play an important role in adequate sexual functioning of a person. In addition, sexual activity incorporates interpersonal relationships. A breakdown in any of these areas may lead to sexual dysfunction **(Ajit, Sandeep, and Sathyanarayana, 2017).** Counseling approach leads to increased sexual satisfaction by decreasing patients' negative affect **(Masomeh & Taravati, 2018).**

Multiple studies have shown a strong positive association between sexual functions and health-related quality of life. A biopsychosocial approach that simultaneously considers physical, psychological, sociocultural, and interpersonal factors is necessary to guide research and clinical care regarding women's sexual function (**Masomeh & Taravati, 2018).**

Infertility is a significant medical problem that most stressful event in the life of the infertile couples. Sexual worries, guilt, and marital problems are often related to infertility.the literature suggests that infertility is more psychologically stressful for women than for men. On the other hand, most of therapeutic procedures are performed on females causing more anxiety and depression **(Gheshlaghi et al., 2014).**

Sexual dysfunction is highly prevalent among midlife women and is associated with lower quality of life, and sexual function declines over the time for many women. Research regarding theoretical models of female sexual response as well as longitudinal cohort data reveals that psychosocial factors, such as relationship satisfaction and sex are keys to women's sexual function at midlife. Researchers and healthcare providers can benefit from a bio psychosocial approach to women's sexual function. By addressing all aspects of women's sexual function, and improve this key component of midlife women's well-being. **(Holly et al., 2016).**

Several researchers have identified effective communication between couples as a vital component of overall relationship satisfaction. Sexual satisfaction is affected by

different factors like education level, economic problems, physical and mental diseases, Self-disclosure about one self when communicating is also associated with relationship satisfaction. Some research suggests that distressed couples have deficient communication skills, which significantly contribute to relationship dissatisfaction. In comparison to satisfied couples **(Gheshlaghi et al., 2014).**

Therefore, this study was conducted to evaluating effects of nursing guideline on improving sexual functions among infertile women. The results of the present study revealed that, less than half of the women were 21-29 years old, half of them living in Urban areas, three quarter of woman were Housewives, less than half of them had duration of marriage 5–10 years, quarter of them had Secondary education, and half of them their Housing type were Tenant. Also, more than third of them their Husband Age were 30–38 years. More than quarter of their Husband had Primary education, less than half of them their Husband occupations were Governmental Employee. And more than half of their Household incomes were sufficient.

In the present study, the sexual satisfaction scores increased significantly and counseling was effective to improving sexual satisfaction score. Implementing nursing guideline highly significant improved of sexual functions of infertile women. This study revealed that more than half of the study group (59.3%) were highly sexual satisfied; only less than of fifth of the study group (18.5%), were low sexual satisfied.

Findings were demonstrated that significant relations between the studied women's level of sexual satisfaction and age. age showed an association with sexual impact scores, those older than 40 years had lower impact scores compared with those younger than 40. Similarly, Hendrickx et al found that although sexual difficulties and sexual dysfunctions increase with age, sexual distress was actually more common in younger women this finding similar to prior studies that have shown that age has a complex relation with sexual dysfunction. Some studies have found higher rates of sexual dysfunction in younger women, whereas other studies have suggested sexual dysfunction is higher in women during the menopause transition **(Hendrickx, Gijs & Enzlin, 2015).**

A significant reverse association was observed between age and sexual satisfaction, some studies support this finding that the lower the age of participants, the more the sexual satisfaction. This contradicted with The results of others study which showed that there was no statistical significant association between sexual satisfaction and some related factors such as age, age difference of couples, length of marriage, and number of children **(Taavoni & Haghani, 2010).** This is agreeing with Nassimi and Mahdavi they showed that there was a negative significant relationship between age and sexual satisfaction **(Heidari, Asskary &Azarkish, 2012).**

The finding implied that lower mean age led to increase in marital satisfaction; however, there are some congruencies between this and other studies. Taavoni et al. found that marital satisfaction had a positive correlation with level of education and age difference of couples among housewives (**Taavoni, Haghani & Shakerian 2010) and (Ziaee T, Jannati Y, Mobasheri E, 2014)** Groot et al. suggested that socio-cultural similarities (e.g. the spouse's age) cause more secure families due to similarities in their life styles and mutual understanding among couple, especially in sexual issues. Their results showed that those with an age difference less than 10 years were more fulfilled with both their marital and sexual life. On the contrary Litzinger and Gordon found that there is no significant relationship between sexual satisfaction and age

difference among spouses (**Groot & Brink, 2002) and (Litzinger & Gordon, 2005).**

A study conducted by Abbasi et al. to assess the changes in the marital satisfaction. They found that the marital satisfaction was at its peak in the early years of marriage and also in the menopause period. In line with this study, **Lodge (2012)** found that marital sex was a cause of conflicts for the couples who were in their midlife because they did not have compatible experiences. Nevertheless, in the later years of marriage, the couples were willing to be more compatible and adjusted in their sexual and marital relationships. This could be due to gaining the experiences by the couples **(Abbasi, Dehghani & Mzaheri, 2012).** The inverse relation between sexual impact and an advanced maternal age because increasing age is associated with higher rates of infertility and worse outcomes for assisted reproductive technology. More likely, younger women could feel a different type of emotional response associated with infertility because it is less common in this age group. Therefore, this emotional stress likely has an even more profound sexual impact than for older women **(Winkelman, Katz & Smith, 2016).**

Based on the findings, there was a significant positive relation between the studied women's level of sexual satisfaction scale and educational level ($p<0.05$). As increase in the level of education was associated with increase in the rate of sexual satisfaction. It is similar to **Ji et al.** They found a positive correlation between education and sexual satisfaction. **Ji and Norling** argue that education can affect the economic stability. When couples are educated they have a greater chance of achieving economic stability, and thus higher marital and sexual satisfaction than couples with less formal education **(Ji & Norling, 2004).** Female with higher educational levels had been associated with less sexual dysfunction For instance. The higher prevalence of sexual dysfunction among the highly-educated women may also result from the fact that they are bolder to discuss sexual matters openly. In short, it has been documented that the higher the level of female education the higher the probability that they can discuss reproductive health issues with men **(Fajewonyomi, Orji & Adeyemo, 2007).**

The results showed that level of education was a significant contributing factor to the sexual function. It is well established that individuals with high education level are healthier and have less sexual problems. Therefore, it seems that the well-educated women were more likely to seek help for sexual dysfunction **(Schomerus, Appel, Meffert, Luppa, Andersen et al., 2013);** this is consistent with **Nassimi and Mahdavi** they showed that there was a positive significant relationship between education and sexual satisfaction **(Heidari, Asskary & Azarkish, 2012).**

Although the finding revealed that there were significant relations between the studied women's level of sexual satisfaction and education level. Conversely, decrease in age, age difference of couples, and length of marriage were associated with increase in the rate of sexual satisfaction. This in line with the results of other studies which indicated that sexual satisfaction was associated with some factors such as the length of marriage, age difference of couples and level of education **(Rahmani, Alahgholi & Merghati, 2009)**. Also this is supported by **Rahmani et al.** who showed the significant association between age difference of couples and marital satisfaction in women. And the finding of another researcher confirmed this result and this finding demonstrated that the rate of marital satisfaction in age groups who had less than three years age difference, was higher than others **(Rahmani et al., 2009).**

The study demonstrated an inverse significant correlation between duration of marriage and marital satisfaction. In other words, marital satisfaction decreased with increased marriage duration and the less the length of marriage, the more marital satisfaction exists among the spouses This result is consistent with the findings of Zare and Al-Attar et al. **(Zare et al., and Al-Attar et al., 2014)**.

Many studies have confirmed the finding of this study, which confirmed that longer duration of marriage was associated with sexual dysfunction **(Pauleta, Pereira & Graça, 2010)** and **(Abouzari-Gazafroodi, Najafi, Kazemnejad et al, 2015).** The finding of this study contradicts those of Jalili's study; he believes that husband's cooperation in house work and his sympathy may increase due to passage of time after marriage. In addition, they gradually learn love making and the changes can lead to increase marital satisfaction (**Jalili, 1996.) and (Shakerian, 2010)** and inconsistent with the results of Barongo et al. 2015 (**Barongo,Okwara,Aloka & Masoka,2015) and (Al-Attar et al., 2014).** This is not supported by **Shahsiah et al.** They explained that at the beginning of a married life, sexual motivations hide marital concerns, like spousal disputes, blaming each other, economic problem, raising children, etc. However, as time passes, problems have accumulated to the point where marriage starts falling apart (**Shahsiah, Bahrami & Mohebi, 2009).** These disagreements between the previous studies seem to indicate that the duration of marriage has different effects on marital satisfaction.

This finding explained that there were highly significant relations between the studied women's level of sexual satisfaction scores and husband education, household income ($p<0.001$), women who her household income sufficient had sexual satisfaction more than who were her household income not enough. Women have financial independence, more self-confidence have a better quality of sex life and consequently feel more satisfied with their sex life. While women with low income feel less sexual satisfaction, which may be lead to less sexual activity **(Mohammad, Mirghafourvand, Asghari, Tavananezhad, & Karkhaneh, 2014).**

There is a clear relationship between obesity in woman and impaired fertility. Women with increased BMI have a higher risk of menstrual disorders. Additionally, weight loss interventions have been shown to improve menstrual cycle regularity, ovulation and fecundity **(Hryhorczuk, Sharma, &Fulton, 2013).**

The study showed the strongest relationship of women's level of sexual satisfaction scale and sexual function index. Sexual functioning was strongly correlated with sexual satisfaction such that a greater degree of functioning was related to greater sexual satisfaction ($P < 0.001$). This is in agreeing with Esposito et al. who found that women with sexual dysfunction had lower scores in all domains of FSFI, compared with patients without dysfunction (**Esposito, Ciotola, Giugliano, Bisogni et al., 2007).** This result was similar to Rezaipour et al. as they notified there was a statistical significant association between orgasm and sexual satisfaction (**Rezaipour, Taghizadeh & Faghihzadeh, 2004 and Taavoni & Haghani,2010)**

The present study demonstrated that highly significant relations between the studied women's level of sexual satisfaction and dysmenorrhea ($p<0.001$). Results of researches hypothesized that pain during intercourse may be significantly higher around the time of menses. Studies of the effect of menstrual cycles on sexual function are limited, but support that sexual functioning assessment may vary with menstrual cycle. Similarly, Nappi et al found that FSFI mean scores were lower in arousal

and orgasm when estradiol and testosterone were lower **(Laughlin-Tommaso, Borah & Stewart, 2015).**

The study show significant relations between the studied women's level of sexual satisfaction and sexual complaint**,** previous studies also have shown that women with deep dyspareunia experience worse sexual functioning. Such women report decreases in number and quality of coituses, overall sexual activity, self-esteem, and sexual satisfaction. Women also can develop negative thoughts about intercourse and might avoid sexual activity, which can negatively affect personal relationships. These in consistence with finding of study that, Women with deep dyspareunia have been found to have lower sexual QoL (SQoL) such as sexual functioning and satisfaction. Deep dyspareunia considerably affects sexual life. In addition, dyspareunia is associated with reduced frequency of sexual intercourse, reduction of sexual desire and arousal, and less orgasmic experiences **(Pluchino, Wenger& Petignat et al., 2016).** This is in matching with King and colleagues who found that women who reported greater distress over a sexual problem also reported greater sexual dissatisfaction. It is possible that these women may be reporting dissatisfaction as a result of their partner's complaints of sexual difficulties (**King, Holt& Nazareth, 2007).**

The study showed significant relations between the studied women's level of sexual satisfaction and coitus count and frequency of sexual intercourse.The results indicated the sexual desire and frequency of coitus in infertile women has reduced significantly after infertility diagnosis .this is in matching with Ramazanzadeh et al who concluded that the sexual desire and frequency of coitus has reduced in 200 male partners of infertile couples after infertility diagnosis **(Ramezanzadeh, Aghssa & Zayeri, 2006) (Naeimeh, Seyed & Yassini, 2009) ,(Kwon & Chang, 2013) And (Brotto, Yong, and Smith et al., 2015) and (Shum et al., 2018).**

The result of the study indicated significant relations between the studied women's level of sexual satisfaction and pregnancy complications and labor complication ($p<0.05$). This result was similar with the results of **(Lemack and Zimmern's ,2000)**study that showed that women with gynecological problems demonstrated a significant reduction in sexual activity. Also, this in line with finding that Present illness is significantly at increased risk of sexual dysfunction. Guilt-feelings connected with previous abortion seem to torture infertile women and also various pressures from relatives **(Fajewonyomi, Orji & Adeyemo, 2007)**.

On the other hand, it has been found that decent relationships between couples can results in dissatisfied marriage relationships and a critical predictor of mother's emotional distress (**Malary, Shahhosseini, Pourasghar & Hamzehgardeshi, 2015).** However, the results of some studies, including Mehrabi et al.'s study has shown that in marital relations, there was not a significant difference in terms of sexual activity between patients with myocardial infarction and healthy people **(Sarhadi, Navidian, Fasihi & Ansari, 2013).**

The study revealed that studied women level of sexual satisfaction is also strongly associated with the quality of communication with their husband and, for those with contentment with their relationship. This association to be bi-directional: sexual problems may impact negatively on the quality of relationships and vice versa (**Erens, Mitchell, Gibson, 2019).**

On the other hand, many studies revealed the relationship between marital satisfaction & communication skills; many studies have confirmed the positive correlation between these two variables that

having communication skills can increase marital satisfaction. The research by Litzinger et al. showed that communication can independently predict marital satisfaction and the couples being more successful in effective communication report higher marital satisfaction **(Litzinger & Gordon, 2005):** In addition many studies indicated that training communication skills has a positive impact on enhancing relationship & boosting couples' agreement (**van, Spitz & Demyttenaere, 2009) (Khawaja, Riahi, Izadimazidi, 2011)** and **(Esmaeilpour, Khajeh, Mahdavi, 2013).**

Several relationship variables have also been linked to sexual satisfaction, including marital satisfaction, commitment, and communication. Many studies have investigated the role of relaxation in decreasing stress, such as the study by Sharma et al. in India, which shows the effect of relaxation against stress, and the study by Mobini et al., which shows the effect of relaxation in decreasing anxiety. Moreover, the study by Valiani et al. has also shown the effect of relaxation in decreasing infertile women's stress and, therefore, the improvement in treatment results **(La Torre, Giupponi & Duffy, 2015).**

Conclusion and Recommendations

Based on the results of the present study, the following can be concluded:

Based on the results of the present study, the following can be concluded; the results support research hypothesis in which implementing nursing guideline highly significant improved of female sexual functions of studied infertile women through: Highly statistical significant in frequency of sexual intercourse and emotional & psychological problems ($p<0.001$). While statistical significant relations in Dyspareunia and sexual complaint during sexual intercourse and the Life stressors as pressure from the family, spouse and relatives. On the other hand, positive correlation between the studied women level of sexual satisfaction scale and female sexual function index.

In the light of study flinging, the following recommendation can be given:

Application of guidelines at infertility clinic at Ain Shams maternity hospital In addition to the need for establishment of sexuality disorder clinics sexual counseling clinics must be established in healthcare centers. This should be a multi-disciplinary clinic, incorporating sex therapist, psychologist, gynecologist, urologist, psychiatrist, social workers, and other trained nursing personnel.

Further researches and future studies suggest studying the issues on sexual function during pregnancy should be included as part of prenatal care and reproductive health programs for every woman. Sex education of couples before marriage seems to be of importance. In addition to pay more attention to women's sexual problems. Conducting studies after education of couples to evaluate the relationship between sexual satisfaction and divorce rate.

Developments of practical strategies in order to provide cultural intervention to improve couples' awareness of their sexual relationship, as well as training in communication skills are essential. Since, sexual dissatisfaction was revealed to be an underlying problem leading to divorcee.

References

Abbasi MA, Dehghani MO, Mzaheri MA. (2010): Trend analysis of changes in marital satisfaction and related dimensions across family life Cycle. Journal of Family Research; 6(1):5-22 (Persian).

Assimakopoulos K, Karaivazoglou K, Panayiotopoulos S, Hyphantis T, Iconomou G, Kalfarentzos F. (2011): Bariatric surgery is associated with reduced depressive symptoms and better sexual

function in obese female patients: a one-year follow-up study. Obes Surg.; 21(3):362-6.

Barongo S, Okwara M, Aloka P and Masoka N. (2015): Association of level of education and marital experience on marital satisfaction among selected marriage in Kisii Township Kisii Country.Research on Human and Social Sciences;5(8): 27-32.

Bokaie M, Simbar M, Mojtaba S, Ardekani Y. (2015): Sexual behavior of infertile women: A qualitative study *in* International Journal of Reproductive BioMedicine 13(10):643-654 · October 2015 *with* 129 Reads Iranian Journal of Reproductive Medicine Vol. 13. No. 10. pp: 645-656,

Candy B, Jones L, Vickerstaff V, Tookman A, King M. (2016): Interventions for sexual dysfunction following treatments for cancer in women. Cochrane Database Syst Rev;2:Cd005540

Carter J, Applegarth L, Josephs L, Grill E, Baser R, Rosenwaks Z. (2011): A cross-sectional cohort study of infertile women awaiting oocyte donation: the emotional, sexual, and quality-of-life impact. Fertil Steril.; 95(2): 711-716.

Dana Sh, Narimani M, Mikaeili N. (2013): Comparison of emotion regulation and emotion control in fertile and infertile women. Intl J Phys Beh Res. ;2(5):250–254. [Google Scholar**]**

Esposito K, Ciotola M, Giugliano F, Bisogni C, Shisano B, Autorino R et al. (2007): Association of body weight with sexual function in women. Int J Impot Res.; 19(4):353-7**.**

Fajewonyomi BA, Orji EO, Adeyemo AO. (2007): Sexual dysfunction among female patients of reproductive age in a hospital setting in Nigeria. Journal of health, population, and nutrition.;25(1):101**.**

General Assembly resolution 70/1 of 25 September(2015). Available under the symbol A/RES/70/1 from http://documents.un.org.

Hendrickx L, Gijs L, Enzlin P. (2015): Age-related prevalence rates of sexual difficulties, sexual dysfunctions, and sexual distress in heterosexual women: Results from an online survey in Flanders. J Sex Med.;12:424–435.

Jin, X., G. Wang, S. Liu, J. Zhang, F. Zeng, Y. Qiu, and X. Huang. (2013): Survey of the Situation of Infertile Women Seeking in Vitro Fertilization Treatment in China. BioMed Research International, Retrieved from http://dx.doi.org/10.1155/2013/179098.

Khosla R, Say L, Temmerman M. **(2015)** :Sexual health, human rights, and law. Lancet;386:725–726

Lemack GE, Zimmern PE. Sexual function after vaginal surgery for stress incontinence: (2000); Results of a mailed questionnaire. Urology. 56:223–7.

Linnea (2014). A Guide for the Psychosocial Treatment of Infertility. Loma Linda University Electronic Theses, Dissertations & Projects. 304. http://scholarsrepository.llu.edu/etd/304

Litzinger S, Gordon KC. (2005): Exploring relationships among communication, sexual satisfaction, and marital satisfaction. Journal of Sex & Marital Therapy; 31(5): 409-424.

Lodge AC, Umberson D. (2012); all shook up: sexuality of mid- to later life married couples. Journal of Marriage and Family. 74(3):428-443.

Malary M, Shahhosseini Z, Pourasghar M, Hamzehgardeshi Z. (2015): Couples communication skills and anxiety of pregnancy: a narrative review. Materia socio-medica.; 27(4):286.

Marci R, Graziano A, Piva I, Lo Monte G, Soave I, Giugliano E, Mazzoni S, Capucci R, Carbonara M, Caracciolo S & Patella A. (2012) Procreative sex in infertile couples: the decay of pleasure? Health Qual Life Outcomes 10, 140.

Mohammad-Alizadeh-Charandabi S, Mirghafourvand M, Asghari-Jafarabadi M, Tavananezhad N, Karkhaneh M. (2014): Modeling of socio-demographic predictors of sexual function in women of reproductive age. Journal of Mazandaran University of Medical Sciences; 23(110):237–242

Pascoal PM, Narciso IdeS, Pereira NM (2014). What is sexual satisfaction? Thematic analysis of lay people's definitions. J Sex Res;51(01):22-30.

Pluchino N, Wenger JM, Petignat P et al. (2016) Sexual function in endometriosis patients and their partners: effect of the disease and consequences of treatment. Hum Reprod Update;22 (06):762–774.

Rahmani A, Alahgholi L, Merghati Khuee E. (2009): How does sexual satisfaction relate to marital satisfaction among Iranians? Int J Obstet Gynecol.;107(2):S558–9**.**

Schomerus G, Appel K, Meffert PJ, Luppa M, Andersen RM, Grabe HJ, Baumeister SE. (2013): Personality-related factors as predictors of help-seeking for depression: a population-based study applying the behavioral model of health services use. Social psychiatry and psychiatric epidemiology.;48(11):1809-17.

United Nations System Task Team on the Post-2015 United Nations Development Agenda (2012). Review of the contributions of the MDG Agenda to foster development: Lessons for the post-2015 UN development agenda. Discussion Note (March). Available from http://www.un.org/millenniumgoals/pdf/mdg_assessment_Aug.pdf.

Valiani Y, Abediyan S, Ahmadi S, Pahlavanzadeh S, Hassanzadeh A. (2010): The effect of relaxation techniques to ease the stress in infertile women Iranian journal of nursing and midwifery research 15(4):259-64 ·

Vanwesenbeeck I, Have MT, de Graaf R. (2014): Associations between common mental disorders and sexual dissatisfaction in the general population. Br J Psychiatry.; 205(2):151-7.

Yazdani F, Elyasi F, Peyvandi, Moosazadeh M, Galekolaee K, Kalantari F, Rahmani Z and Hamzehgardeshi Y. (2017): Counseling-supportive interventions to decrease infertile women's perceived stress: A systematic review Electron Physician.; 9(6): 4694–4702.

Zare Z, Golmakani N, Shareh H et al. (2014): Factors related to marital satisfaction in primiparous women during postpartum period. Journal of Midwifery and Reproductive Health. 2014;2(2):120-127.

Ziaee T, Jannati Y, Mobasheri E, Taghavi T, Abdollahi H, Modanloo M, Behnampour N. (2014): The relationship between marital and sexual satisfaction among married women employees at Golestan University of Medical Sciences, Iran. Iranian journal of psychiatry and behavioral sciences; 8(2):44.