What is the Effect of Unsuccessful In-Vitro Fertilization on Women's Fertility-Quality of Life?

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Abstract: the incidence of IVF failure is estimated to be high and this can raise women's negative emotions, which continued after many unsuccessful IVF procedures and can lead to a many problems. IVF failure results in not only distress but also a negative long-lasting effect on a woman's fertility-quality of life.

Purpose: this study was conducted with the purpose of identifying the effect of unsuccessful IVF on women's fertility quality of life.

Methods: *Research Design:* Exploratory descriptive design. Tools: Two instruments were used throughout the course of this study: (I) interviewing questionnaire, (II) Fertility-quality of life questionnaire.

Main results: Repeated unsuccessful IVF procedure was negatively affecting women's fertility-quality of life.

Conclusion: The current study findings succeeded in answering both study questions.

Recommendations: The current study showed that women had lower levels of fertility-quality of life. This underlines the importance of receiving psychosocial support in a holistic care approach. Assisted reproductive technology nurses should have knowledge to be able to support women during and after treatment cycles.

Keywords: In-Vitro Fertilization, Fertility-Quality of Life.

Operational Definitions:

In vitro fertilization (IVF): a medical procedure in which woman can become pregnant through fertilizing an egg and a sperm outside the body then injecting the resulted embryo to the woman.

Unsuccessful IVF: failure to have a baby after twice intracytoplasmic sperm injection (ICSI) as a long term protocol of IVF procedure.

Fertility Quality of life: It is the degree of satisfaction that the woman feels of her fertility well-being, including herself-perceived fertility health status after repeated unsuccessful IVF procedures.

1. INTRODUCTION

Infertility is a major life health problem to all suffering women. WHO; defined infertility as "a disease of the reproductive system identified by the failure to have pregnancy after twelve months or more of regular unprotected sexual relation." (**WHO, 2017**). Woman can be infertile due to one or more factors as advanced maternal age, ovulation problems, blocked tubes, fibroids of the uterus, endometrial polyps, endometriosis and sometimes unknown causes. (**Lobo, 2012**).

The European Board and College of Obstetrics and Gynaecology published two documents explaining care standards in obstetrics & gynecology, including assisting conception for infertility as: intra-uterine insemination (IUI), zygote intra-fallopian transfer (ZIFT), gamete intra-fallopian transfer (GIFT), assisted hatching, donor eggs and sperms, in-vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI) (EBCOG, 2016).

Many couples are able to conceive and establish a healthy pregnancy by assisted reproductive technologies. One of the widely used techniques is in-vetro fertilization (IVF). Assisted reproductive technologies include laboratory procedures in which the sperm are only mixed with or even injected into the oocyte in a procedure known as intracytoplasmic sperm injection (ICSI) then the resultant embryo is implanted into the female uterus. ICSI technique was first performed successfully on 25 July 1978 and the resultant embryo was Louise Brown (the first test tube baby). Nowadays ICSI is used to treat many causes of infertility among couples, not only female causes infertility but also male causes infertility and sometimes used for unexplained infertility (**Rebar and Catherino, 2016**).

There are many variables that cause IVF treatment to fail. The main are age of the woman, quality of embryo, ovarian response, and implantation. The most important factors needed for IVF success are: healthy egg, normal, functional sperm, and a female uterus that is able to nourish the growing embryo. In addition to these factors, there are many other issues that can affect female chance for pregnancy with any IVF procedure. Some of these issues are: the laboratory environment, the laboratory techniques and the specialists' skills of performing the egg/sperm retrieval and embryo transfer. (**Geranger, 2012**).

The term "fertility- quality of life" is defined as "a female perception of her position in life in the context of the culture and value systems in which she live and in relation to her goals, expectations, values and concerns incorporating fertility concerns and her relationship to salient features of the environment" (**WHO, 2016**).

During the last years, there has been increased interest in the study of fertility aspect of life quality and in the associations between infertility and quality of life. Many recent studies have focused on the fertility-quality of life among female experiencing infertility in different cultures (**Hsu et al., 2013**).

The majority of women suffering from infertility are not satisfied with their life than normal women as infertility is not only a gynecological issue but also a bio-pycho-social health problem which negatively affect women's quality of life. (**Onat, Beji 2012**). Woman with many IVF failures not only suffer psychosocial strain but also can have negative effect on their relationships with others (**Tao, Coates, & Maycock, 2012**).

Significance of the Study:

The results of the World Health Organization survey in 2013 showed that about 48.5 million couples are suffering from infertility around the world. In Egypt; in 2016; about 15% of couples was suffering from this problem. 40% of suffering couples have female related factors of infertility while 40% have male factors and only 20% have a combination of both or an idiopathic infertility *(**Matetakufa, 2014***)*

Couples suffering from infertility tried at first to medically treat it but they usually fail, so the number of women seeking for IVF is dramatically increasing. Although according to the Society of Assisted Reproductive Technologies **(SART) in 2013**, the approximate chance of having a live embryo after IVF procedure is 43% for women under the age of 35, 36% for women aging 35 to 37, 27% for women aging 38 to 40 and 18% for women aging 41 or more (**Ginsburg, and Racowsky, 2014**)

The incidence of unsuccessful IVF is 40-50% (**Malpani, 2017**). Repeated failure can raise women's levels of negative emotions and negatively affect fertility-quality of life. Such effects can continue after many consecutive unsuccessful IVF and result in bio-psycho-social health and financial problems due to repeated IVF procedure. Based on reviewing literature; there is limited studies that examined the effect of unsuccessful IVF on women's fertility-quality of life; so the researchers tried to fill in such gap of knowledge by conducting this study.

Purpose of the Study:

This study was conducted with the purpose of identifying the effect of unsuccessful IVF on women's fertility quality of life.

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Research Questions:

What is the effect of unsuccessful IVF on women's fertility quality of life?

Is there a relationship between socio-demographic data, obstetric history and fertility quality of life?

2. METHODS

Research Design:

Descriptive design used in carrying out the present study **(Polit D, 2017).**

Setting:

The present study was conducted at El Nada IVF center in Benha city, kalioubia governorate. El Nada center consider one of the most important centers in Egypt, also the most famous center in Benha. The number of women's flow at study time was between 350-400 women. It is not only important center for all IVF procedure steps and preimplantation genetic testing but also contains all obstetric needs. Doctor Tarek El Gendy one of the most important obstetric doctors in Egypt, he build El Nada center. Women go to this center firstly to meet the doctor, to know all information about their status or for IVF or for labor or any gynecological problem.

Sample size calculation:

Sample size was calculated at power 80%, confidence level 95% and margin of error 5%. It was 142 infertile females who had two or more previous of IVF failure .The following equation was used:

a) Sample size n = [DEFF*Np(1-p)]/ [(d2/Z21-α/2*(N-1)+p*(1-p)]

b) Hypothesized % frequency of infertility in the population (p): 10.4%+/-5

c) Confidence limits as % of 100 (absolute +/- %) (d): 5%

d) Design effect (for cluster surveys-DEFF)

e) Sample Size (n) for 95% Confidence Levels was 142 women

Sampling:

The sample was 142. The researcher used a purposive sample to select women according to the following inclusion criteria: women with female causes of infertility or combination cause of infertility, women has two or more (ICSI) IVF failure, undergoing another ICSI procedure during the course of the study and agree to participate in the study.

Field work:

The study was carried out in two phase. The preparatory and implementation phases.

The preparatory phase:

An extensive review related to the study area was done including electronic dissertations, available books and articles. A review of literature to formulate knowledge base relevant to the study area also was done. The review of literature section was tested by plagiarism checker software " iThenticate"

The implementation phase:

*   The data collection started in 12 march 2018 and ended in 20 April 2018

*   The researcher applied the implementation phase in the following steps:

The 1ˢᵗ step: the researcher introduced herself to the participants and provided verbal explanation of the study. Verbal agreement was obtained from all participants. Each participant was informed that participation in the study was voluntary and she can withdraw at any time.

The 2ⁿᵈ step: the researcher went to El Nada center 3 days weekly from 10 am to 3 pm (Saturday, Sunday and Tuesday). These days were known to have high flow rate. The researchers introduced 12-20 women per day.

The 3ʳᵈ step: the researcher used questionnaires to assess the effect of unsuccessful IVF on women's fertility quality of life. Each woman was handed the questionnaire and answer it under observation of the researcher. While illiterate women the researcher wrote, their answers and each woman took about 8-10 minute to answer the questionnaire.

The data collection started in 12 March 2018 till 20 April 2018.

Instruments:

Throughout the course of the present study data were collected using the following Instruments:-

- **Instrument I: Semi-structured interviewing questionnaire**: designed by the researcher and was submitted to validity and reliability tests. Included the following parts**:**

- *Part1:* Socio demographic data (name, age, address, years of marriage, occupation, couples level of education and income)

- *Part2:* Obstetric data (number of years of infertility, cause of infertility, number of IVF and types of IVF)

- *Part3:* Medical history (medications used to treat infertility, period of treatment, history of genital tract infection and surgical procedures in genital tract)

- *Part4:* Family history (history of infertility and cause of infertility)

Validity of instrument I:

The tool was developed by the researchers after review of the related instrument tested for its content validity by five qualified experts (Three experts from Faculty of Nursing, two physicians from obstetrics and gynecology department at the Faculty of Medicine) and modifications were incorporated into the instrument.

Reliability of instrument I:

Reliability of the tool was applied by the researcher for testing the internal consistency of the instrument, using test retest reliability and this method was done by administrating the same instrument to the same subjects under similar conditions on one or more occasions. Result from repeated testing's were compared.

- **Instrument II:** Fertility quality of life questionnaire. (adapted from **Boivin J, et al., 2011**)

The instrument was modified by the researchers "paraphrasing some terms" and then submitted to the same jury.

This is the first international valid and self-reported instrument that can be used to assess quality of life of any woman with infertility. It is available in many languages. The instrument include of 36 items that assess core, treatment-related quality of life and overall life and physical health. It includes two parts; core and treatment sections. Core FertiQoL consist of 24 questions covering four subscales of QoL: mind & body, relational, social and emotional domains. The second part is the treatment module, consisting of 10 questions. The FertiQoL is a likert scale, and yields six subscales with a total score ranging from 0 to 100. The higher score on any subscale, the better fertility quality of life a woman have.

Validity and Reliability of instrument II:

Cronbach test for the core and treatment FertiQoL (and subscales) were good and ranging from of 0.72 and 0.92. Sensitivity tests showed that the instrument detected expected relations between quality of life and many factors like support-seeking, gender and parity **(Aarts et al., 2011).**

Administrative approval:

An approval to conduct the study was granted from the ethical committee of Faculty of Nursing. A formal letter from Faculty of Nursing, Menoufia University was submitted to el Nada IVF center at Benha, kalioubia. An officially permission was obtained to carry out the study from the directors of the above-mentioned setting.

Ethical Considerations:

Approaches to ensure ethical issues were considered in the study. Confidentiality was achieved by the use of locked sheets with the name of participants replaced by numbers. All participants were informed that the information they provided during the study would be kept confidential and used only for statistical purpose and after finishing the study, the findings would be presented as a group data with no personal participant's information remained.

Pilot Study:

Piloting was conducted to ensure the applicability of the instruments, the feasibility of the study and estimate the time needed for collecting the data. It was conducted on 10% of the total sample (15). Based on Pilot Study results; the researcher rephrased some questions and sentences then set the final fieldwork schedule. Sample of the pilot study was excluded from the main sample.

Statistical design:

Upon completion of data collection, the collected data were organized, tabulated; each answer sheet was coded and scored. The researcher coded the data into a coding sheet so that data could be prepared for computer use statistically analyzed using SPSS software (statistical Package for the Social Sciences, version 20, SPSS Inc. Chicago, IL, USA). Data were collected, tabulated, statistically analyzed using an IBM personal computer with Statistical Package of Social Science (SPSS) version 22 (SPSS, Inc, Chicago, Illinois, USA). Where the following statistics were applied:

Descriptive statistics: in which quantitative data were presented in the form of mean ($\overline{X}$), standard deviation (SD), range, and qualitative data were presented in the form numbers and percentages.

Analytical statistics: used to find out the possible association between studied factors and the targeted disease. The used tests of significance included:

- Spearman's correlation: is a nonparametric measure of rank correlation. It is appropriate for both continuous and discrete variables, including ordinal variables

-(r) < 0.2= no correlation.   -(r) 0.2 - 0.5= mild correlation.

-(r) 0.5-0.7= moderate correlation.   -(r) > 0.7= strong correlation.

P value of >0.05 was considered statistically non-significant

P value of <0.05 was considered statistically significant

P value of <0.001 was considered statistically highly significant.

3. RESULTS

Table (1): Socio demographic characters of the study participants

Variables	No.(142)	%
Age / years		
- < 20	3	2.10
- 21 – 30	22	15.5
- 31 – 35	37	26.1
- 36 – 40	34	23.9
- 41 - 45	46	32.4
Duration of marriage / years		
- 1 - 4	22	15.5
- 5 – 9	54	38.0
- 10 – 15	31	21.9
- > 15	35	24.6
Women educational level		
- Illiterate	21	14.8
- Read and write	25	17.6
- Secondary	61	43.0
- University	29	20.4
- Postgraduate	6	4.20
Husband educational level		
- Illiterate	18	12.7
- Read and write	29	20.4
- Secondary	68	47.9

-	University	24	16.9
-	Postgraduate	3	2.10
Women occupation			
-	Housewife	116	81.7
-	Employee	22	15.5
-	Heath related career	4	2.80
Husband occupation			
-	Unemployed	11	7.70
-	Employee	80	56.3
-	Craft career	51	36.0
Residence			
-	Rural	107	75.3
-	Urban	35	24.7
Income			
-	Enough	88	62.0
-	Not enough	54	38.0

Table (1) shows the socio demographic data of the study participants. About 32.4% of women were between 41 – 45 years. The majority of women (75.3%) were rural area. About 43.0% of the sample was secondary educated. 81.7 % of women were housewives. Only 62.0% of studied women have enough income.

Table (2): Medical and surgical history among study participants

Variables	No.(142)	%
Medical disease:		
Yes	15	10.5
- Diabetes	5	3.50
- Hypertension	4	2.80
- Heart disease	1	0.70
- Others	5	3.50
No	127	89.5
History of surgery:		
Yes	39	27.5
- Appendectomy	19	13.3
- Tonsillectomy	9	6.30
- Cholecystectomy	2	1.40
- Others	9	6.30
No	103	72.5

Table (2) shows medical and surgical history among study participants. Only 10.6% of participants have medical disease while 89.5% haven't any disease. Only 27.5% of participants have history of surgery.

Table (3): Total fertility quality of life and subscales among study participants

Fertility quality of life	Mean ±SD
Core fertility quality of life	
- Emotional (6 items)	47.7±2.0
- Mind and body (6 items)	45.9±2.7
- Relational (6 items)	70.8±2.0
- Social (6 items)	56.2±2.5
- Total core fertility QoL (24 items)	55.2±1.7
Treatment fertility quality of life	
- Environmental (6 items)	68.9±3.8
- Tolerability (4 items)	46.2±3.8
- Total treatment fertility QoL (10 items)	59.8±7.8
Total fertility quality of life (34 items)	56.6±1.6

Table (3) shows mean and SD of total fertility-quality of life and subscales among studied women. As for core fertility quality of life; the mean and SD of relational fertility quality of life was the highest followed by social, emotional then mind and body (70.8±2.0, 56.2±2.5, 47.7±2.0 then 45.9±2.7). The total core fertility-quality of life was around 55%. Regarding treatment fertility-quality of life; the mean environmental fertility quality of life was the highest followed by tolerability fertility quality of life (68.9±3.8, 46.2±3.8). The total treatment part was around 59%.

Table (3) answered the first research question "What is the effect of unsuccessful IVF on women's fertility quality of life?"

It was found that the total fertility quality of life score of studied women was 56.6. While ideally; the total ranges from 0 to 100, the higher score the better fertility-quality of life a woman have. This means that unsuccessful IVF negatively affected women's fertility quality of life.

Table (4): Spearman correlation between fertility quality of life and socio demographic characters of study participants

Socio demographic characteristics	Fertility quality of life Mean ±SD	Spearman correlation
Age / years		
- < 20	72.3±3.62	
- 21 – 30	46.9±13.8	r
- 31 – 35	61.4±11.2	-0.75
- 36 – 40	60.6±17.4	
- 41 - 45	53.2±18.4	
Duration of marriage / years		
- 1 - 4	58.6±15.7	r
- 5 – 9	57.2±17.7	0.37
- 10 – 15	52.3±11.5	
- > 15	57.8±18.8	
Women educational level		
- Illiterate	52.3±19.2	r
- Read and write	54.3±12.5	0.72
- Secondary	54.5±15.5	
- University	64.7±18.6	
- Postgraduate	61.8±9.60	
Husband educational level		
- Illiterate	50.9±17.3	
- Read and write	53.7±12.4	r
- Secondary	56.2±17.8	0.73
- University	63.9±15.1	
- Postgraduate	67.4±9.33	
Women occupation		
- Housewife	55.2±16.5	r
- Employee	63.1±16.1	0.22
- Heath related career	60.2±10.5	
Husband occupation		
- Unemployed	55.6±11.9	r
- Employee	57.8±17.9	0.53
- Craft career	54.8±15.2	
Residence		
- Rural	55.9±17.1	r
- Urban	58.6±14.9	0.85
Income		
- Enough	59.1 ±17.2	r
- Not enough	52.3±14.5	0.76

Table (4) shows the correlation between fertility-quality of life and socio demographic characteristics of study participants. There was a negative correlation between age and fertility QoL. The higher the age, the lower fertility QoL a woman have. There was a positive correlation between fertility QoL and: woman level of education, husband level of education, residence and income. In other words; the higher education a woman and husband have, the better QoL a woman have. Better fertility QoL was found among urban residents (r=0.85 and those with enough income (r=0.76).

Table (5): Spearman correlation between fertility quality of life and obstetric history of the study participants

Obstetric history	Fertility quality of life Mean ±SD	Spearman correlation
Type of infertility		
- Primary	54.8±15.8	r
- Secondary	62.5±17.7	0.72
Duration of infertility / years		
- 1 - 4	59.8±16.5	
- 5 – 9	58.1±16.0	r
- 10 – 15	53.4±15.0	-0.75
- > 15	53.0±19.6	
Cause of infertility		
- Female factors	55.7±17.6	r
- Combination	58.4±16.8	0.77
Numbers of IVF procedure		
- Two times	57.1±16.4	r
- Three times	55.1±16.9	-0.75
Type of IVF procedure		
- Natural cycle	64.2±15.3	r
- Stimulation cycle	56.3±16.6	0.71

Table (5) shows the correlation between fertility quality of life and obstetric history of study participants. There was a positive correlation between type of infertility, cause, type of procedure used and fertility QoL. Women with primary infertility, female cause infertility and those with stimulation cycle IVF were having lower QoL. There was a negative correlation between duration of marriage, number of IVF procedure and fertility QoL. In other words; the longer the duration of marriage and the more number of IVF procedures; the lower QoL a woman have.

*Tables (4 and 5) answered the second research question "*Is there a relationship between socio-demographic data, obstetric history and fertility quality of life?*"*

There was a correlation between some socio-demographic characteristics, obstetric variables and fertility QoL.

4.   DISCUSSION

The findings of the current study succeeded to answer both research questions. Findings are discussed in the following sequences: 1- General findings" Socio-demographic data" 2-findings related to distribution of fertility quality of life core part among study participants" 3- Correlation between fertility quality of life domains and socio demographic characteristics 4- Correlation between fertility quality of life domains and obstetric history of the study participants.

Regarding socio-demographic characteristics, it is astonishing to note that about one third of women were at the age of 41 – 45 years. This may be interpreted as IVF treatment is the most suitable infertility treatment for women at that age. This result comes in agreement with Karaca et al (2016) who studied " the effect of IVF failure on quality of life and emotional status in infertile couples" and stated that age group was >35 years. On the other hand, this finding is contradicted with Yakout, Talaat and Fayad (2016) who conducted a study named "emotional problems of young infertile Egyptian females" and reported age group below 30 years. The contradiction is seen to be due to the purposively selected sample of young females by Yakout, Talaat and Fayad (2016).

The present study revealed that nearly half of the participants have secondary education and about three fourths of them were from rural areas. This may be interpreted as rural residents always prefer to have only secondary education and then got married.

The current study showed that the majority of women were housewife. This comes in agreement with Yakout, Talaat and Fayad (2016) who studied "emotional problems of Young infertile Egyptian females" and stated that most of the studied females were housewives (97%). On the other hand Karaca et al (2017) conducted a study named "Effect of IVF failure on quality of life and emotional status in infertile couples" and reported that 61.7% of participants were employed as the entire sample were urban residents.

Concerning obstetric history; the majority of participants had primary infertility and repeated IVF procedure. This can be rationalized as childless woman repeats IVF procedure and insists to become a mother more than woman with secondary infertility that had other baby. This finding comes in agreement with Yakout, Talaat and Fayad 2016 who studied "emotional problems of young infertile Egyptian females" and Keren (2016) who studied "Perceptions of Infertility and Quality of Life among Women Treated with IVF". Both studies reported that most of studied women (71.3% and 69.5%) were childless and had primary infertility. Moreover; Dong and Zhou (2016) studied "comparison of fertility quality of life between urban and rural infertile couples" and reported 52.6% of participants in rural area had primary infertility and 55.9% of participants in urban area had primary infertility.

As regard to the cause of infertility, the current findings showed that about one third of studied women had female cause of infertility while two thirds had combined cause of infertility. This finding comes in agreement with Karaca et al (2016) in a study named "effect of IVF failure on quality of life and emotional status in infertile couples". Karaca et al (2016) reported the same result of participants who had female factors infertility. In addition to Dong and Zhou (2016) studied who studied "Comparison of fertility quality of life between urban and rural infertile couples" and reported that one third of participants had female factors infertility in rural and urban areas but combined causes of infertility were nearly equal in both areas

As for core fertility quality of life; the present study revealed that quality of life was lower in emotional, mind and body aspects. This finding comes in agreement with Yakout, Talaat and Fayad 2016 who conducted study named "emotional problems of young infertile Egyptian females" and stated that infertility imposed significant stress on studied subjects.

Concerning treatment quality of life; the mean environmental fertility quality of life was higher one followed by tolerability fertility quality of life. This can be rationalized as couples with a history of IVF failure were less affected from the treatment environment as they may be familiar with the treatment steps from the previous cycle. Moreover; the desire of couples to be parents was higher than the memories of IVF-failure. The aforementioned factors increased the tolerability of the new IVF treatment cycle. This finding comes in agreement with Kahyaoglu Sut H, Balkanli Kaplan P (2014) who studied "Effect of IVF failure on quality of life and emotional status in infertile couples" and showed that the couples with a history of IVF failure were less affected from the treatment environment when compared to the couples without previous IVF failure.

As regard to the correlation between fertility quality of life domains and socio demographic characteristics. There was a negative correlation between age and mean fertility quality of life as poor fertility quality of life was found among older age women. This can be rationalized by the fact that maternal age plays an important role in increasing the success rate of IVF procedure. Moreover; with age advance; the chance of giving birth to a live baby decreases. Bearing in mind these factors; the quality of life in general becomes poor. The DHS 2016 shows that the percent of secondary infertility increased by age in Egypt.

Current study showed that there was a positive correlation between educational level and fertility quality of life. High fertility quality of life score was noticed among highly educated women and husband. There was a positive correlation between fertility quality of life and income. This may be interpreted by the idea that educated husbands and wives had more understanding about IVF treatment. This understanding affected self-confidence and behavior then in turn fertility quality of life. Higher education level and income make a positive impact upon the fertility QoL. Higher educational level may overcome the negative effect of increased duration of infertility. Keramat *et al*. published that higher family monthly income is associated with better social support and better quality of life [13].

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5. CONCLUSION

The current study findings succeeded in answering both study questions. Question 1: What is the effect of unsuccessful IVF on women's fertility quality of life?

It was found that the total fertility quality of life score of studied women was 56.6. While ideally; the total ranges from 0 to 100, the higher score the better fertility-quality of life a woman have. This means that unsuccessful IVF negatively affected women's fertility quality of life.

Question 2: Is there a relationship between socio-demographic data, obstetric history and fertility quality of life?

There was a correlation between some socio-demographic characteristics, obstetric variables and fertility QoL.

There was a negative correlation between age and fertility QoL. There was a positive correlation between fertility QoL and: woman level of education, husband level of education, residence and income. There was a positive correlation between type of infertility, cause, type of procedure used and fertility QoL. There was a negative correlation between duration of marriage, number of IVF procedure and fertility QoL.

6. RECOMMENDATIONS

The current study showed that women had lower levels of fertility-quality of life. This underlines the importance of receiving psychosocial support in a holistic care approach.

Assisted reproductive technology nurses should have knowledge to be able to support women during and after treatment cycles.

Counseling to women experiencing IVF failure may be greatly benefit to them.

Ongoing supportive counseling may be helpful for some women.

Discussion of available future treatment options or treatment cessation assists in decision-making.

Referral to suitable supporting organizations may be helpful.

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