Effect of Counseling About Assisted Reproductive Technology on Reducing the Levels of Anxiety for Infertile Women

Hanaa S. Ahmed[1], Essam El Deen R Abdel hafeze[2] & Amal F Arief[3].
1. Nursing Specialist, at Abnoub Secondary Nursing School, Assuit, Egypt.
2. Assistant Professor of Obstetrics and Gynecological Faculty of Medicine, Assiut University, Egypt.
3. Lecture of Obstetrics and Gynecological Nursing Faculty of Nursing, Assiut University, Egypt.

Abstract

Background: It is well known that counseling has a positive effect on infertile women in reducing some aspects as anxiety and stress and, also increasing the Pregnancy rate. **The aim** of this study was to assess the effect of counseling about assisted reproductive technologies on reducing the levels of anxiety for infertile women. **Research design:** Quasi experimental Research-design (pre & post) test was used to carry out this study.**Subjects:** The sample consisted of (200) women who met the criteria of selection that was involved in the study at Banoon center for infertility treatment at Assiut city. **Tools:** A structured interview questionnaire and the State- Trait Anxiety Scale to assess effect of counseling of infertile women about assisted reproductive technologies on their level of anxiety. **Results:** It was observed that one third of studied women had mild/normal state of anxiety before counseling compared with two thirds of them had mild/normal state of anxiety after counseling. **Conclusion**s: Efficient counseling about assisted reproductive technologies by well trained personnel can reduce high level of anxiety. **Recommendations:** Counseling program to reduce stress/anxiety should be incorporated in assisted reproductive technology programs in the study region.

Keyword: Assisted Reproductive Technologies, Anxiety, Counseling & Infertility.

Introduction

Infertility is defined by the World Health Organization (WHO) and others as inability of a non-contraceptive using, non-lactating woman to have a live birth after 12 months or more of regular sexual intercourse **(Alhassan et al., 2014)** In the United States the reproductive endocrinologists, who specialize in infertility, consider infertility as couple eligible for treatment or a woman under 35 has not conceived after 12 months of contraceptive-free intercourse. Twelve months is the lower reference limit for time to pregnancy considered by WHO **(Cooper, et al., 2010).**

Demographers tend to define infertility as childlessness in a population of women of reproductive age, where as the epidemiological definition refers to "trying for" or "time to" a pregnancy, generally in a population of women exposed to a probability of conception **(Gurunath, et al., 2011).**

Psychological condition consequences of infertility as depression which plays a significant role in the life of an infertile person and could subsequently affect the mutual relationship and the quality of life of a couple.

(Alhassan et al., 2014) Infertile couples may be considered mentally healthy in general; several studies indicate that coping with infertility is associated with periodically heightened levels of psychological symptoms of distress, depression and anxiety **(Yoon Frederiksen, 2015).**

Fecundity has become a growing problem for many couples trying to conceive more than 10% of the childbearing population has resorted to to conceive in USA. Being involuntarily childless and going through various assisted reproductive technology procedures imposes considerable stress on the couple, and childlessness is often perceived as a life crisis where the emotional strain equals that found for traumatic events**. (Yoon Frederiksen, et al., 2015)**

Mouzon, et al., (2012), reported that Infertility is a topic that has received increased attention in Western Societies in recent years, and the need for Medically Assisted Reproduction technologies appears to be increasing among women and men trying to conceive.At many countries around the world, the number of treatment cycles are increasing.

Assisted Reproductive Technologies or reproductive aiding technologies like In Vitro Fertilization (IVF) and Intra Cytoplasm Sperm In-ejection (ICSI) are complex & considered the most stressful techniques used to treat infertility , a Previous studies reported that the prevalence of some psychological symptoms as depression and anxiety among infertile female is relatively high (12% to 23%) **(Hassan, 2016).**

Couples experience more stress and anxiety when they are not properly informed, and when they are not provided with effective counseling about treatment plan. They demonstrated that all of these conditions have a negative effect on the success of the procedure.

Maternity nurse can play an integral role in the care of their couples undergoing assisted reproductive technology treatment from both a medical and psychological perspective through counseling process through which couples are given the opportunity to explore their thoughts, emotions, reactions and believes with an impartial and empathetic professional who understands the issues involved **(Hashim et al., 2012).**

Nurses who are with the couples for most of the treatment period provide primary support, and may supply the highlight information about each stage of the procedure. They play an important role in helping couples who experience assisted reproductive technology to achieve improved physical, psychological and social well-being and succss **(Terzioglu, 2016).**

So the researcher evalauated the effect of counseling about assisted reproductive technologies on the level of anxiety for infertile women.

This work aimed to assess effect of counseling about assisted reproductive technology on the level of anxiety for infertile Women.

Significance of the study
The population of the world has been increasing, evident by high fertility trends. The joy of every marriage is for the couple to procreate and raise children of their own. Globally, infertility affects at least about one of six couples and affects on the developing countries than the developed ones **(Alhassan et al., 2014).**

Studies showed that anxiety and depression during pregnancy can increase several complications such as spontaneous abortion, preeclampsia, preterm labor and low birth weight fetus **(Flores, et al., 2013)** Thus, evaluation of anxiety during pregnancy in general and in ART pregnancies particularly is important because of its side effects on both mothers and their child. Moreover, it is even necessary to eliminate stress for successful infertility treatments **(Coelho, et al., 2011).**

Some research supports the benefits of psychological interventions in reducing psychological symptoms in both infertile women and patients undergoing painful procedure. It has been shown that counseling interventions led to significant decrease in anxiety and depression and increase in the chance of pregnancy in infertile couples **(Fianza et al., 2014).**

Negative psychological consequences of childlessness are common and morbid in Northern, Upper Egyptian infertile women. Furthermore infertility and psychological distress are associated in acomplex way, which has to be taken a care by nurses and the clinicians to the quality of life of the women undergoing infertility treatment **(Hassan et al, 2016).**

Aim of the study
This study was aimed to:
-Assess the effect of counseling about assisted reproductive technologies on reducing level of anxiety for infertile women.
Research hypothesis:
-Counseling about assisted reproductive technologies will decrease the levels of anxiety for infertile women**.**

Subjects & Methods
Research Design
Quasi experimental research (pre and post test) was used to carry out this study.
Technical design
Setting
The study was conducted at Banoon center for infertility treatment in Assiut city. It is a private center which provides treatment of gynecological diseases, laboratory investigations. It has also a department of in vitro fertilization, ICSI and embryo transfer unit.
Sample
According to sample size which using Epi-info statistical package. The sample was estimated to be (200) infertile women.

$$Ss = \frac{Z^2*(P)*(1-P)}{C^2}$$

Z=Z value (e.g.1.96 for 95% confidence level)
P=Percentage picking a choice, expressed as decimal
c=confidence interval, expressed as decimal (e.g., .04= ±4
Subjects
The subjects of this study were (200) women who met the inclusion criteria of the study.
Inclusion criteria
All infertile women undering assisted reproductive technologies who agree to participate in the study.
Exclusion criteria
1- All women who suffering from history of psychiatric disorders
2- All women who suffering from certain medical condition as (Hypertensive, diabetic, renal disease, cardiac or hepatic diseas………)
Tools for Data collection
The first tool: Demographic data and clinical data were developed by the researcher through a structured interviewing questionnaire after reviewing of the related national and international literature
The second tool: State- Trait Anxiety Scale **(Speilberger et al., 2010)** Consists of 40 items, split

into 2 multiple choice subscales of 20 items for each point.

The first questionnaire measures states of anxiety (S-anxiety), consisting of (20) questions that address how respond feel at the moment,

The second subscale consists of (20) questions that measures trait anxiety (T-anxiety), on how respond generally feel, using items that measure general states of calmness, security, and confidence.

First tool: Astructured Interviewing Questionnaire

After reviewing of the related national and international research related to the current topic demographic data were developed by investigator and reviewed by supervisors to collect the following data:-

Part I: Demographic Data

It included name, age, and level of education, residence, occupation and duration of marriage.

Part II: clinical data

1- **Menstrual history**

It included: Age at menarche, duration, interval, and rhythm of menstrual cycle, menstrual abnormalities and the type of these abnormalities.

2- **Obstetric history**:

This included previously natural conceived or not, number of gravidity, number of abortion, number of living children and time since last delivery or abortion.

3- **Surgical history**

This part included type of previous operation if present was assessed by asking patient if this operation abdominal or vaginal and time since last operation.

4- **Data related to infertility**

It included: type of infertility (Primary, secondary), years since the diagnosis of infertility were discovered, causes of infertility (male, female or combined) and Previously attempt for assisted reproductive Techologies such as IVF, ICSI other, Number of failed attempt 0f IVF and Number of successful attempt of IVF.

5- **Current medications usage**

It included usage of any medication, name or type of medication, duration of usage and whether this medication related to infertility management or not.

Second tool

The State- Trait Anxiety Scale is validated Arabic version scale **(Speilberger et al., 2010)** is validated Arabic version scale **(Abdel-Khalek, 1989)** Consists of 40 items, split into 2 multiple choice subscales of 20 items for each point.

The first questionnaire measures states of anxiety (S-anxiety), consisting of (20) questions that address

how respond feel at the moment, including items that measure subjective feelings of calm, tension, apprehension, nervousness, worry, and other questions that assess autonomic nervous system activity. State of anxiety scale items are rated on a 4 point (1 = not at all, 2 = somewhat, 3 = moderately so, and 4 = very much so).

The second subscale consists of (20) questions that measures trait anxiety (T-anxiety), on how respond generally feel, using items that measure general states of calmness, security, and confidence. Items were rated on a4 point (1 = almost never, 2 = sometimes, 3 = often, and 4 = almost always).

The total score for each subscale (S-anxiety and T-anxiety) is the addition of response scores for the 20 items, and ranges from 20-80, with higher scores indicating greater anxiety. To determine the level of anxiety,

Tertiles were formed to Categorize anxiety and were labeled as

Mild anxiety (≤39).

Moderate anxiety (40– 46).

Severe anxiety (> 46).

Women were assessed by using state-trait anxiety before and after counseling. After counseling used State anxiety scale to assess the effect of counseling on state of women's anxiety, while trait-anxiety used only before counseling to explore women's generally feel.

Administrative design

An official permission was obtained from the manager of Banoon Center for infertility treatment and ethical approval was obtained from ethics committee of Faculty of Nursing, Assiut University also an approval was obtained from the Dean of Faculty of Nursing. These letters included the purpose and nature of the study which were explained for taking their approval to carry out the study which explain that the researcher was interviewed the participant face to face to answer questionnaire to assess the anxiety level and providing counseling about the assisted reproductive technology.

Ethical considerations

1- Research proposal was approved from Ethical Committee in Faculty of Nursing.

2- There was no risk for study subject during application of research.

3- The study was following common ethical principles in clinical research.

4- oral consent was obtained from patient or guidance that is willing to participate in the study

5- Confidentiality and anonymity was assured.

6- Study subjects have the right to refuse to participate and /or to withdraw from the study without any rational at any time.
7- Study subject privacy was considered during collection of data.

Pilot study

A pilot study was carried out on 10% of the study sample (20) women to test the clarity of the questions in the study tools and to estimate the time needed for interview to examine if any modifications or explanations needed in the questions. The necessary modifications which done were based on the results of the pilot study. The sample of pilot study was excluded from the total sample.

Procedure

All women attending the center, which met the criteria of selection, were involved in the study. An interview with women was conducted within 3 days per week/6hours from 8 am to 1 pm. Every interview with the women took about 30 minutes, oral consent obtained from all the participant women. The research time was one year .These letters included the purpose and nature of the study which was explained for taking their approval to carry out the study. Two hundred women using the questionnaire after its final modifications according to the functions of the pilot study. The researcher introduced herself to the women, greeted them then explained to them the aim of the study and its nature. All infertile women were interviewed in separate room without presence of the husband. Women were individually interviewed by investigator in face to face interview. Data was collected.

After filling the demographic data sheet, the researcher provided each woman by knowledge about assisted reproductive technologies such as (IVF, ICSI). Women were given an information about the reasons for IVF, steps of IVF,side effects experienced by couple during IVF,the success rates of IVF process,factors that control the success rate of IVF process.Also a women was given information about ICSI, the reasons for resorting ICSI ,steps of ICSI ,the different between IVF, ICSI and how to know the woman of pregnancy after the completion of the operation of IVF or ICSI.

These data provided into a booklet for women. Its contents were developed by the researcher and were revised by supervisors of the study. The booklet was explained in Arabic language.

Statistical design

Data was analyzed by using the statistical package for social science (SPSS) version 21. Continuous data was expressed as frequency, percentage, mean and standard deviation. Discrete data were expressed as frequency, percentage, comparison between variable which was done using Chi- square test, T test. Probability (P. value) less than 0.05 was considered significant and less than 0.001 was considered highly significant

Limitions of the study

1- Some ladies were worry.
2- The time is sometimes not enough because most women have some investigations.
3- The dates of women's attendance at the center.

Results

Table (1): Distribution of the studied women according to their Socio-demographic characteristics.

Items	No =200	%
Residence		
Urban	70	35.0
Rural	130	65.0
Age		
Less than 30 years	118	59.0
30-35 year	41	20.5
more than 35 years	41	20.5
Mean ±SD(range)	29.9±5.9(20-43)	
Educational level		
Illiterate	25	12.5
preparatory school	29	14.5
Secondary	76	38.0
University	70	35.0
occupation		
House wife	173	86.5
Employed	27	13.5

Table (2): Distribution of the studied women according to their infertility history.

Items	No	%
Types of infertility		
primary	140	70.0
Secondary	60	30.0
duration since the diagnosis of infertility		
<5 years	104	52.0
5-10 years	69	34.5
More than 10 years	27	13.5
Mean ±SD(range)	6.2±4.26(0.5-25)	
Causes of infertility		
Femal causes	72	26
male causes	97	48.5
unknown causes	17	8.5
More than on causes	5	2.5
Previously attempt of IVF		
Yes	55	27.5
No	145	72.5
Number of failed attempt of IVF	44	80.0
Number of Successful attempt of IVF	11	20.0
Duration since last attempt of IVF		
<1 year	8	14.5
1-5 year	44	80.0
>5 years	3	5.4

Table (3): Distribution of the studied women according to their state of anxiety before counseling.

State Anxiety (before counseling)	Mean ±SD(Range)	No	%
Mild	33.12±5.48(20-40)	68	34.0
Moderate	48.02±4.71(41-56)	93	46.5
Severe	64.85±6.03(57-78)	39	19.5
Total	46.23±12.47(20-78)	200	100.0

Table (4): Distribution of the studied women according to their trait of anxiety before counseling.

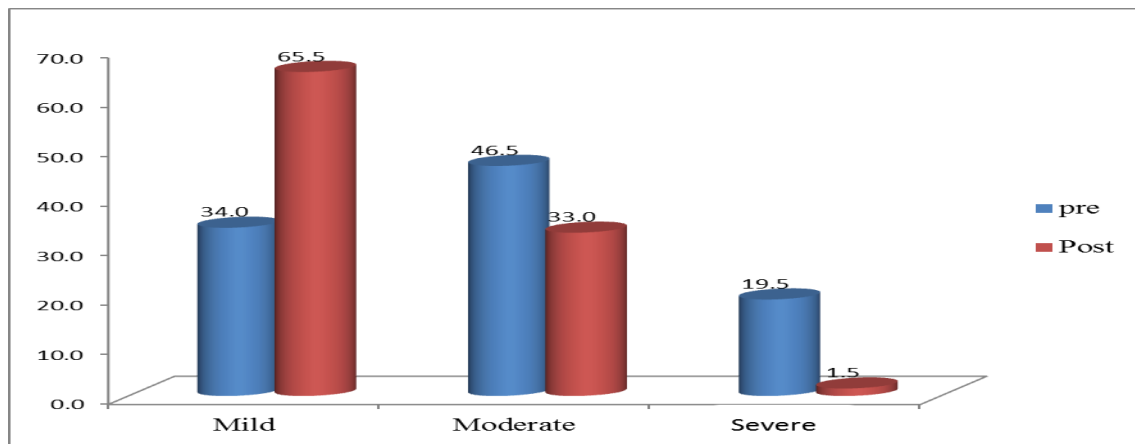| Trait of anxiety	Mean ±SD(Range)	No.	%
Mild	36.91±2.7(30-40)	46	23.0
Moderate	48.02±4.33(41-56)	112	56.0
Severe	62.48±4.17(57-72	42	21.0
Total	48.6±9.38(30-72)	200	100.0

Figure (1): Effect of counseling on women's state of anxiety.

*Chi-square test ** Significant difference at p. value<0.01*
*Independent t-test ** Significant difference at p. value<0.01*

Table (5): Relation between demographic data and mean scores of anxiety among studied women before and after counseling.

| socio-Demographic characteristics | States of anxiety | | p.Values |
| | before | after | |
	Mean± SD	Mean± SD	
Residence			
Urban	46.39±12.1	34.87±10.06	0.531
Rural	46.15±12.7	35.81±10.8	
Age			
Less than 30 year	46.85±12.98	35.38±9.91	
30-35 year	47.07±10.0	36.51±10.59	0.717
more than 35 year	43.63±13.0	34.73±10.11	
Educational level			
Illiterate	44.36±12.5	33.76±11.47	
preparatory school	44.24±11.83	35.69±8.8	0.674
Secondary	48.61±11.92	36.41±9.95	
University	45.16±13.13	35±10.22	
occupation			
House wife	46.26±12.7	35.05 ±10.07	0.128
Employed	46.07±11.03	38.22±9.71	
Duration of marital life			
< 1 year	35.5±12.02	24±5.66	
1-5 year	44.17±12.09	34.3±9.09	0.096
Morr than 5 yeats	47.7±12.53	36.4±10.53	

*Independent t-test ** Significant difference at p. value<0.01*

Table (6) Relation between clinical data and mean scores of anxiety of the studied women before and after counseling.

items	States of anxiety		
	before	after	p.values
	Mean± SD	Mean± SD	
Types of infertility			
primary	45.33±11.96	33.82±9.08	<0.001*
Secondary	48.35±13.45	39.35±11.18	
duration since the diagnosis of infertility			
<5 years	44.14±12.5	35.07±10.11	
5-10 years	48.51±11.6	35.14±9.56	0.399
More than 10 years	48.48±13.1	37.93±11.1	
Causes of infertility			
tube causes	47.35±16.7	32.15±9.43	
Ovarian causes	48.41±11.9	35.83±10.97	
Uterine causes	46.96±12.5	36.09±9.06	0.772
male causes	46.36±11.7	35.88±10.17	
unknown causes	40.12±9.67	34.82±10.75	
More than on causes	49±12.35	34.8±6.1	
Previously attempt of IVF			
Yes	47.2±12.14	36.11±10.3	0.587
No	45.87±12.61	35.24±9.99	
Successful attempt of IVF			
No	46.89±12.98	36.11±10.1	0.995
yes	48.45±8.29	36.09±11.55	
Duration since last attempt of IVF			
<1 year	47±10.23	36.25 ±12.3	
1-5 year	46.93±12.21	36.11±10.29	0.997
>5 years	51.67±19.4	35.67±7.37	

*Independent t-test ** Significant difference at p. value<0.01*

Table (1): Shows the distribution of studied women according to their sociodemographic characteristics; regarding women's age, less than two thirds of the studied sample (59 %) under 30 years. Regarding women's education more than one third of the samples (38.0%) had secondary school education and most of the samples (86.5%) were housewives, regarding residence; more than two thirds of the women (65.0%) were living in rural areas.

Table (2) This table illustrates distribution of the studied women according to their clinical data, It was observed that more than two thirds of studied women (70%) had a primary infertility. about half of studied women (52%) had duration of infertility less than 5 years. According to the causes of infertility, it was observed that about half of them (48.5%) had male causes.

Table (3): Illustrates distribution of the studied women according to their state of anxiety before counseling. It was observed that 46.5% of them had moderate state of anxiety, while 34% of them had a

mild state of anxiety and 19.5% of them had a sever state of anxiety.

Table (4): Illustrates distribution of the studied women according to their trait of anxiety before counseling. It was observed that more than half of them 56% had a moderate trait of anxiety, while 23% of them had a mild trait of anxiety while 21% of them had a severe trait of anxiety.

Figure (1): Shows a statistical significant difference between state of anxiety level before and after counseling. It was observed that deacreasing level of anxiety for women after reciving counseling. It was noticed that, 19.5% had a severe level of anxiety and became 1.5% after counseling with statistical significant relation (p value <0.001>.

Table (5): This table shows that, there is no a statistical significant difference between states of anxiety of studied women before and after counseling and their place of residence, age of women, education level and duration of marital life of them. But there is

statistical significant difference between state anxiety and occupation.

Table (6): This table shows that, there is a statistical significant difference between states of anxiety of studied women before and after counseling and there types of infertility.

Discussion

Infertility counseling is proposed as an integral part of a multidisciplinary approach. It has been strongly recommended by various Health care agances, medical and community associations in order to help infertile people for better treatment results. In the recent years, infertility counseling has become a specialist form of counseling requiring professional experts and qualifications **(Van den Broeck, et al., 2010).**

Invitro fertilization is psychologically and emotionally stressful process in mangement of infertility. Stress or anxiety before, during and after the IVF treatment is multidimensional. There is also a chronic source of stress caused by the threat of permanent infertility and lose of hope **(Ahmed et al., 2016)**.

The present study was conducted to assess the effect of counseling about assisted reproductive technology on the level of anxiety for infertile women. This aim was highly significantly achieved through the present study findings within the frame of hypothesis which was infertile women who received counseling would have improved level of anxiety.

Regarding to the personal characteristics of the infertile women, it was found that more than half of women were less than 30 years, with mean ± SD of age 29.9±5.9, most of them were housewives and more than one third of them had secondary educated, the present study also found that more than two thirds of sample were living in rural area and these characteristics are relevant to the subjects of many related researches.

The present study found that more than half of women had infertility duration less than five years and the mean duration of infertility were 6.2±4.26 years., with mean ± SD of age 29.9±5.9 which disagree with **(Ahmed et al., 2016)** who reported in their study which counducted in Yemen to evaluate the distribution of infertility causes in patients attending allow In Vitro Fertilization (IVF) center for infertility treatment, he found that the mean age of women was 27.41 ± 4.93 (21-40) the mean duration of infertility was2.38±1.93 years. This finding in the present study may be due to more than half of women were less than 30 years

It was observed that more than two thirds of studied women had primary infertility. This result is agree

with **Mallikarjuna et al., (2015)** who found that majority of cases had primary infertility. This reflects that young couples had a high level of awarness about early management where they diagnosed with infertility in young age which improves result of IVF. Also, it was observed that less than one third had secondary infertility. This finding disagrees with **Ramadan et al., (2018)** who reported in their study which conducted in the Gynecology clinic at Benha University Hospital Egypt, who found that, 45.2% had a primary and more than half had a secondary infertility among the infertile women.This difference may be aresult of difference in the sample size.

As regared causes of infertility, it was observed that the main causes of infertility were male causes (48.5%) followed by ovarian (14.5%), this finding agrees with **(Ahmed et al., 2016)** who found that male infertility still the common causes of infertility

The results of the present study regarding level of state of anxiety before counseling showed nearly half of studied women had a moderate level of anxiety and nearly one fifth of them had a severe anxiety. This result agrees with **Seyyedeh et al., (2013)** who reported in their study which conducted in Iran to estimate an overall prevalence rate of their depression.

among infertile couples that (40%) of infertile women experienced anxiety and disagrees with **Kishanth (2014)** who reported in their study which conducted in Pondicherry city that , more than half infertile women were having a severe degree of anxiety. This finding could be due to that most of the sample had first attempt of assisted reproductive technologies or may be due to the main causes of infertility which reflect their egnorance about different step in management& treatment from results.

Also in the current study, the average state of anxiety before counseling was high when compared with state anxiety after counseling this finding may be due to that most of the sample had a primary infertility and (72.5%) of the sample had first attempt of assisted reproductive technologies .This result agrees with **Terzioglu (2016)** who reported in their study which conducted in Turkey to Investigate the effectiveness of counseling on assisted reproductive techniques, he found that average state anxiety before counseling (pretest) was high compared with those after counseling and agrees with **Tokmak et al., (2015)** who reported in a study which conducted in China that, psychotherapy and counseling interventions lead to significant decreases in anxiety among women undergoing hysterosalpingography.

The present study observed that there was no significant association between the level of anxiety

among infertile women and the seciodemographic characteristic (place of residence, age of women, education level and duration of marital life).This result disagrees with **Hassan (2016)** who reported in a study which conducted in northern upper Egypt that, the infertile women exhibited higher statistically significant between levels of anxiety and sociodemographic variables (age, level of educational, occupational status, occupation type, age at marriage, and family income adequacy) this difference may be due to variation in levels of residence in Egypt. It can also be explained by family and community.

behavior towards the infertile women in rural areas. Also, this finding of the present study is consistented with **Kishanth et al., (2014)** who reported in their study which conducted in Pondicherry city hospital, that there was no significant association between the level of anxiety among infertile women and the demographic characteristic.

This study observed that the majority of infertile women were housewives and had high prevalence of anxiety compared with employed women. These findings are not congruent with *Kishanth et al (2014)* he revealed that, more than half of the studied subjects were working.The employed had the highest prevalence anxiety and tension when compared with the unemployed, because in the present study most of the studied women were housewives.

The present study found that there is no statistical significant difference between states of anxiety of studied women before and after counseling and the duration since the diagnosis of infertility may be result of most of the sample had a primary infertility. This finding disagrees with **Ramazanzadeh et al., (2012)** who reported in a study which conducted in Iran that, women who had experienced infertility for a long or medium range of time presented a significantly lower state of anxiety and there was a trend of decreasing psychological stress with lengthening of infertility time.

Also it was observed that there is no statistical significant difference between states of anxiety of studied women before and after counseling and causes of Infertility because that the main causes of infertility was male causes. This finding agrees with **Mert Kazandi & Collegues (2010)** who reported in their study which conducted in Turkish that, there were no significant differences with respect to infertility reasons for ratios of anxiety, state and trait anxiety were not associated with infertility.

The present study found that there is no statistical significant difference between states of anxiety of studied women before and after counseling and duration of Previously attempt of IVF,this result

agrees with **Reis, et al., (2013)** who reported in a study which conducted in Portugal that, couples who are pursuing assisted reproductive technologies treatment for the first time show higher levels of state anxiety compared to couples who are undertaking assisted reproductive technologies repeatedly, which suggests that detailed knowledge of the medical procedures and techniques can work as an element for reducing immediate anxiety.

It was found that there is no statistical significant difference between states of anxiety of studied women before and after counseling and number of failed attempt of IVF, this result agree with **Pasch et al., (2016)** who reported in their study that higher level of anxiety was found in women who failed to achieve a pregnancy via IVF procedure. Also it was observed no statistical significant difference between states of anxiety of studied women before and after counseling and successful attempts of assisted reproductive technologies may be due to the most of the sample (72.5%) had first attempt of IVF, this finging disagrees with **Farnaz et al., (2008)** who reported in their study which conducted in Iran that, there is a significant relationship between anxiety with pregnancy outcome in ICSI cycles.

While there is a statistical significant difference between states of anxiety of studied women before and after counseling and there types of infertility. This finding may be result of that most of the sample had a primary infertility .This results agrees with **Hassan (2016)** who reported in their study significant difference was observed between women's anxiety and their type of infertility.

These findings highlighted the need to give greater attention toward the mental health of infertile women and well-being. The present study had lower percentages of women who had anxiety compared to other studies done in this region. So counseling program to reduce stress/ anxiety should be incorporated in assisted reproductive technologies programs in the study region.

Conclusions
Based on the results of the present study, it can be concluded that

More than half of women attempting assisted reproductive techologies had moderate /severe anxiety; majority of studied women had a primary infertility. It was observed that about half of them (48.5%) had a male cause of infertility; the data still indicate that efficient counseling by well trained health personnel can reduce this high level of anxiety. Based on the results of the present study,

Recommendations

- Counseling about assisted reproductive techologies should be provided through health care providers, nursing staff, in local languages for raising women awareness to decrease the level of anxiety and improve the assisted reproductive techologies outcomes

- Special attention is needed by the health care providers for infertile women in discussing steps of assisted reproductive techologies management to improve women health and assisted reproductive techologies outcomes before starting in treatment and reducing levels of anxiety.

- Further research is needed to improve assisted reproductive techologies counseling and assess its effect on successful rate of pregnancy.

References

1. **Ahmed K., Allow, Sadek S., Abdulmogny A., Bracamonte Maryam & Belqees A., Kaid (2016):** Distribution of Infertility Factors among Infertile Couples in Yemen.Journal of Clinical Development Biology,ISSN 2472-1964, Vol .No 2:11 Received: June 20, 2016, Accepted date July 08, 2016, published date; July 13,2016.

2. **Alhassan A., Ziblim A., Muntaka S., (2014):** A survey on depression among infertile women in Ghana. BMC Women's Health.Thesis Published: 10 March 2014;14:42

3. **Coelho, H., Murray, L., Royal-Lawson, M., & Cooper, P., (2011):** Antenatal anxiety disorder as a predictor of postnatal depression: a longitudinal study. Journal of affective disorders, 129(1-3), 348-353.

4. **Cooper T., Noonan E., von Eckardstein S., Auger J., Baker H., Behre H., Haugen T., Kruger T., Wang C., Mbizvo M., Vogelsong K., (2010):** "World Health Organization reference values for human semen characteristics". Hum. Reprod. Update 16 (3): 231–45

5. **Dattijo L., Andreadis N., Aminu B., Umar N., (2016):** "Knowledge of Infertility Among Infertile Women in Bauchi, Northern Nigeria" nternational Journal of Women's Health and Reproduction Sciences. Vol. 4, No. 3, July 2016

6. **De Mouzon, J., Bhattacharya, S., Castilla, J., Korsak, V., & Consortium, for the European Society of Human Reproduction and Embryology (ESHRE). (2012):** assisted reproductive technology in Europe, 2008: results generated from European registers by ESHRE. Human reproduction, 31 (8), 1638-1652.

7. **Farnaz Sohrabvand1 M., Nasrin Abedinia M., Reyhaneh Pirjani M., Mina Jafarabadi M.,** **(2008)**: 'Effect of anxiety and depression on ART outcome'.International Journal of Reproductive Biomedical 6(3), 89-0, 2008.volume 6, issue 3(7-2008).

8. **Flores-Ramos, M., Galindo-Sevilla, N., Cordova Barrios, A., Leff Gelman, P., Fuentes, C., & Mancilla-Ramirez, J., (2013)**: Depression and anxiety during pregnancy: Clinical aspects. Current Psychiatry Reviews, 9(4), 325-330.

9. **Frederiksen, Y., Farver-Vestergaard, I., Skovgård, N., Ingerslev, H., & Zachariae, R., (2015)**: Efficacy of psychosocial interventions for psychological and pregnancy outcomes in infertile women and men: a systematic review and meta-analysis. BMJ open, 5(1), e006592.

10. **Gurunath S., Pandian Z., Anderson R., Bhattacharya S., (2011):** "Defining infertility--a systematic review of prevalence studies". Human Reproduction Update 17 (5): 575–88.

11. **Hashim S., Soliman S., Mansour S., (2012):** "Couples Adjustment to Failed Assisted Reproductive Technology after Counseling" Nature and Scienc, 10(6), 61-74.

12. **Hassan H., (2016)**: "Infertility profile, psychological ramifications and reproductive tract infection among infertile women, in northern upper Egypt" Journal of Nursing Education and Practice 6(4),92,2016 Received: October 29, 2016 Accepted: December 10, 2015 Online Published: December 21, 2016

13. **Kishanth O., Prema K., Susila C., (2014):** Level of anxiety among women withinfertility problems, at Pondicherry city hospital, Puducherry - ADescriptive study. International Journal of Comprehensive Nursing.vol (1), 48-51, 2014.

14. **La Fianza, A., Dellafiore, C., Travaini, D., Broglia, D., Gambini, F., Scudeller, L., & Brondino, N., (2014):** Effectiveness of a single education and counseling intervention in reducing anxiety in women undergoing hysterosalpingography: a randomized controlled trial. The Scientific World Journal (9) 22-25, 2014.

15. **Mallikarjuna M., (2015):** Selected risk factors of infertility in women: Case control studies Int J Reprod contracept Obstet Gynecol 4(6), 1714-1719, 2015.

16. **Mert Kazandi, Ozlem Gunday, Timucin Kurtulus Mermer, (2010)**: .Mert Kazandi., Ozlem Gunday., Timucin Kurtulus The status of depression and anxiety in infertile Turkish couples. Iranian Journal of Reproductive Medicine 9(2),99,2011Received: 7 December 2009; Accepted: 26 July 2010

17. **Pasch L., Francisco S., Gregorich S., (2016)**: Addressing the needs of fertility treatment patients and their partners; are they informed of and do they receive mental helth services? Fertility and sterility, 106(1), 209-215.

18. **Ramazanzadeh F., (2012):** 'Emotional adjustment in infertile couples ', Iranian Journal of Reproductive Medicine vol .7.No .3.pp:97-103.

19. **Reis S., Maria Raul Xavier C., Rui Coelho, Nuno Montenegro, (2013):** 'Psychological impact of single and multiple courses of assistedreproductive treatments in couples: a comparative study' European Journal of Obstetric Gynecology and Reproductive Biology .volume 171 (1), 61-66 November 2013.

20. **Seyyedeh Z., (2013):** Prevalence of Depression among Infertile Couples in Iran: A Meta-Analysis Study. 2013. Available from: http:Iran Journal of public Health;42(5):458-466

21. **Spielberger C., (2010)**: current trends in theory and research on anxiety, New York Academic Pychology.Wiley on line libarary.\

22. **Terzioglu, F., (2016)**: Investigation into effectiveness of counseling on assistedreproductive techniques in Turkey, Journal of Psychosomatic Obstetrics & Gynecology.22 (3), 133-141.

23. **Tokmak Aytenkin, Mahmut Kunta, Kokanali, Ali, İrfan Güzel, ÜmitTaşdemir, Burak Akselim, Nafiye Yilmaz (2015):** 'The effect of preprocedure anxiety levels on postprocedure pain scores in women undergoing hysterosalpingography'.Journal Of the Chinese Medical Association .78(8),481-485,

24. **Van den Broeck U., Emery M., Wischmann T., Thorn P., (2010):** 'Counseling in infertility: individual, couple and group intervention' Journal of Patient Education and Counseling, volume 81, Isse 3,422-428.