

# The Effect of a Mind – Body Therapeutic Program for Infertile Women Repeating in Vitro Fertilization on Uncertainty and Anxiety

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## Abstract

### Background

**The aim of this study** was to evaluate the effect of a mind – body therapeutic program for infertile women repeating in vitro fertilization on Uncertainty and Anxiety. **Design:** A Quasi-experimental. **Setting:** The study was conducted at Assistant Fertility Unit - Al-Azhar University, Cairo, Egypt. **Sample:** (100) infertile women repeating in vitro fertilization. **Data collection tools:** Structured interviewing questionnaire sheet, Uncertainty scale for infertile women, The State-Trait Anxiety Inventory, Personal Resources Questionnaire II, and the Relationship Change Scale. **Result:** More than half of the studied sample (56%) aged less than 36 years, (62%) of them had husbands with age equal to or more than 36 years old, most of them (90%) had high importance of having children, Post-intervention revealed a high significant improvement in decreasing anxiety and uncertainty. **Conclusion:** significant decrease in anxiety and uncertainty after Mind-Body Therapeutic Program intervention. **Recommendation:** Developing a training program, booklets, and guidelines for nurses in assistant fertility units regarding mind-body therapies is becoming mandatory in order to decrease anxiety and uncertainty of infertile women.

**Keywords:** In Vitro Fertilization (IVF), Infertility, Uncertainty, Anxiety, Mind-Body Therapeutic Program (MBTP).

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## I. Introduction:

Infertility is defined as an inability to get pregnant despite having frequent, unprotected sex for at least a year for most couples. Infertility may result from an issue with either woman or her partner, or a combination of factors that interfere with pregnancy (American Society for Reproductive Medicine, 2016).

The percentage of infertile couples is constantly increasing. Worldwide, it is reported that 60–80 million couples are affected by fertility issues, with every fifth couple in Europe having problems with conceiving offspring. There are many reasons for infertility. One contemporary issue identified is the delay in the onset of parenting roles past the optimal age of fertility, this being 20–24 years old. Current statistics show the average age of giving birth in Europe and the USA at over 30 years old. In addition, modern stressors are possibly adding to the increase of infertility on the global level (Alicja Malina and Julie Ann Pooley, 2017).

In vitro fertilization (IVF) is one of several techniques available to help people with fertility problems have a baby. IVF involves 6 main stages: suppressing the natural cycle by special medications, boosting the egg supply by medications, monitoring the progress and eggs maturing using ultrasound scan, collecting the eggs – a needle is inserted into the ovaries, via the vagina, to remove the eggs, fertilizing the eggs – the eggs are mixed with the sperm for a few days to allow them to be fertilized, and finally transferring the embryo(s) – 1-3 fertilized eggs (embryos) are placed into the womb (NHS, 2018).

"Failed IVF" is a vague term that can refer to several different situations: Cycle cancellation, prior to egg retrieval, because not enough follicles are produced; No eggs or only inadequate-quality eggs are retrieved; Retrieved eggs don't fertilize inadequately; No embryo is available for transfer into the uterus; Transferred embryos may not implant for a variety of reasons; And that, of course, will mean no pregnancy after embryo transfer (Norbert Gleicher, 2020).

An unsuccessful in vitro fertilization (IVF) cycle can be emotionally and financially devastating. In general, IVF treatment failure seems to be associated with a deterioration of women emotional well-being. Rates of depression, uncertainty and anxiety increased after IVF treatment failure and negatively affect hormonal, neuroendocrine, or immunological functioning leading to poor IVF outcomes (**Gulzhanat Aimagambetova, 2020**).

Mind-body practices are techniques designed to enhance the mind's positive impact on the body. These techniques practices include behavioral, psychological, social, expressive, and spiritual approaches. It includes: Meditation, Prayer, Cognitive behavioral therapy, Guided imagery, Biofeedback, and Yoga. Mind-body therapies and practices can help prevent stress, foster a sense of control, enhance optimism, or provide social support that improve the quality of life or just allow coping better with negative symptoms (**Jung YH, Ha TM, Oh CY, and et al., 2016**).

As technology for curing infertility has developed, patients' referring to fertility nurse who plays an important role in helping to encounter many tensions in diagnostic and therapeutic procedures and also for help to make decisions about treatment protocols has increased. An important way to make patients ready to experience the treatment intensity and introducing them to some hard decision-making that may come up in the treatment procedure, is psychological support and ideal counseling such as relaxation, stress management, cognitive-behavioral intervention, grief management, curing marital and sexual disorders, crisis management, self-help groups (**Fereshteh Yazdani, 2017**).

### **Aim of the study**

The main aim of the current study is to evaluate the effect of a mind – body therapeutic program for infertile women repeating in vitro fertilization on Uncertainty and Anxiety

### **Subjects and methods**

**Research design:** A Quasi-experimental design. **Setting:** Assistant Fertility Unit - Al-Azhar University, Cairo, Egypt. **Sampling:** purposive sample (**100 women**) was selected according to inclusion and exclusion criteria.

### **Tools of data collection**

Five tools were used for data collection:

#### **1- Structured interviewing questionnaire sheet.**

This sheet was developed by the investigator to collect data about the subjects in the following areas: age, duration of marriage, educational level, employment status, past pregnancy/abortion history, duration of infertility treatment, financial burden of infertility treatment, and importance of having children in the marriage.

#### **2- Uncertainty scale for infertile women :**

It was developed by (**Kim & Kim, 2010**). It consisted of 10 items in 5-point Likert scale with higher scores indicating greater infertility stress.

#### **3- The State-Trait Anxiety Inventory**

It was developed by (**Kim & Shin, 1978**). This is consisted of 20 questions each for trait anxiety with higher scores indicating greater anxiety.

#### **4- Personal resources questionnaire II:**

It developed by (**Weinert, 1987**), translated and modified by **Kim (1998)**.

This questionnaire consisted of 25 items with higher scores indicating greater social support.

#### **5- The relationship change scale:**

It developed by (**RCS; Guerney, 1977**), translated and modified by **Kim (1998)**. This questionnaire consisted of 27 items with higher scores indicating positive relationship change.

### **Preparatory phase:**

It includes reviewing of literature, different studies and theoretical knowledge of various aspects of the research topic using books, articles, internet, periodicals and magazines. This also helped in designing the study tools.

### **Administrative design:**

After explanation of the study aim and objectives, an official permission was obtained from the Dean of faculty nursing and the general manager of the study setting asking for cooperation and permission to conduct the study before starting the study.

**Ethical consideration:**

Prior study conduction, approval was obtained from scientific research and ethics committee of the Faculty of Nursing, Helwan University. The researcher clarified the aim of the study to the women who included on the study. They were assured that anonymity and confidentiality would be guaranteed, and informed about their right to refuse or withdraw from the study at any time. The study procedures do not entail any harmful effects on participants. An oral consent was obtained from each woman prior to participate in the study.

**Pilot study:**

It was carried out on 10 % of the studied patients (10 patients) to evaluate the applicability of the study tools and estimate the proper time required for answering the required data. All participants in the pilot study were excluded from the main study.

**Field work:**

**1-Assessment phase:-**

Assessment of women's psychological state was done .This assessment shed light on current psychological level to detect the defect and help in developing the educational program according to results.

**2- Planning phase:**

The researcher made exploratory visit to study setting to put plan for carrying out the study. Educational program developed by the researcher according to women's needs, moreover teaching materials such as (discussion, demonstration and booklet) prepared to help in covering theoretical and practical information.

**3- Implementation phase:**

- The study sample was 100 women divided into 7 groups as a follow:-
- The 1<sup>st</sup> group consisted of (20 women)
- The 2<sup>nd</sup> group consisted of (15 women)
- The 3<sup>rd</sup> group consisted of (15 women)
- The 4<sup>th</sup> group consisted of (17 women)
- The 5<sup>th</sup> group consisted of (9 women)
- The 6<sup>th</sup> group consisted of (14women)
- The 7<sup>th</sup> group consisted of (10 women)

The study was done during morning & Afternoon shifts three times weekly during the time of the study (7 months) started from 1/10/2019 till 28/4/2020. Month for each group for pre-program and program implementation & data collection immediately post implementing the program. Interview with available women to explain the aim of the study, the effect of this study on relieving anxiety and uncertainty and took their approval to participate in the study prior to data collection. The researcher collected data using questionnaires before developing the educational program. The researcher developed an educational program and booklet regarding mind – body therapeutic program for infertile women repeating in vitro fertilization according to their needs in simple Arabic language. The educational program & booklet were reviewed by 2 expertise in Maternity and Newborn Health Nursing department at Helwan University (one professor and one assistant professor). The educational program& booklet were given by the researcher to women and were asked to read its contents. Post-test was done immediately after the educational program ended.

**Statistical design:**

The collected data in pretest and posttest were organized, categorized, tabulated according to the type of each data.

**Statistical analysis:**

Data was entered and analyzed by using SPSS (Statistical Package for Social Science) statistical package version 22. Graphics were done using Excel program. Quantitative data were presented by mean (X) and standard deviation (SD). It was analyzed using student t- test for comparison between two means, and ANOVA (F) test for comparison between more than two means. Qualitative data were presented in the form of frequency distribution tables, number and percentage. It was analyzed by chi-square ( $\chi^2$ ) test. However, if an expected value of any cell in the table was less than 5, Fisher Exact test was used( if the table was 4 cells) , or Likelihood Ratio (LR) test (if the table was more than 4 cells). Level of significance was set as P value <0.05 for all significant tests.

## II. Result:

**Table (1):** showed that, more than half of the studied sample (56%) aged less than 36 years with a mean age of  $32.5 \pm 1.4$ . Less than two thirds of them (62%) had husbands with age equal to or more than 36 years old. Nearly one third of them (38%) were Secondary school or technical diploma education. As regards work status, two thirds of them (66%) were not working. Most of them had less than moderate family income (90%).

**Table (2):** showed that, less than two thirds of the studied sample (64%) married since more than 5 years with mean marriage duration of  $8.3 \pm 1.7$ . more than half of them (54%) seeking to have a baby since less than 5yrs. Less than two thirds of them (62%) had no pregnancy experience, nearly two thirds of them (68%) had no abortion experience, and most of them (84 %) had no children. Most of them (90%) had high importance of having children. As regards financial burden of infertility treatment, most of them (80%) mentioned it was moderate burden.

**Figure (1):** showed that, there was high significant improvement ( $p \leq 0.01$ ). The post program' "low anxiety" increased from 36% pre-intervention to 54% post-intervention

**Figure (2):** showed that, there was high significant improvement ( $p \leq 0.001$ ). The post program' "High uncertainty" decreased from 32% pre-intervention to 6% post-intervention

**Table (3):** revealed that, there were statistical significant differences between the total score of uncertainty level and duration of seeking a baby, duration of infertility treatment, and pregnancy experience ( $p < 0.05$ ). While there was high statistical significant difference between the total score of uncertainty level and financial burden of infertility treatment ( $p < 0.001$ ).

**Table (4):** revealed that, there was statistical significant differences between the total score of Anxiety level and financial burden of infertility treatment ( $p < 0.05$ ).

## III. Discussion:

In relation to age categories of the studied sample and their husband, the present study finding revealed that more than half of the studied sample aged less than 36 years with a mean age of  $32.5 \pm 1.4$  and Less than two thirds of their husbands with age  $\geq 36$  years old; this may be due to age is a fundamental factor affecting woman's fertility and the chance of success with IVF. A woman in early to mid-20s has a 25 to 30% chance of getting pregnant every month. Fertility generally starts to reduce when a woman is in her early 30s, and more so after the age of 35. By age 40, the chance of getting pregnant in any monthly cycle is around 5%.

This finding matches with **Enikő Lakatos, (2017)** who studied Anxiety and depression among infertile women from Hungary and reported that most of them were younger with a mean age of  $33.30 \pm 4.85$ . Also, these results were supported by **Miok Kim, (2014)** who studied The Effect of a Mind-Body Therapeutic Program for Infertile Women on Uncertainty, Anxiety, and Implantation rate in Korea and mentioned that (80.8%) of the sample were at age group ( $\leq 35$ years) with a mean age of  $33.85 \pm 3.17$  and (62.3%) of their husbands with age  $> 36$  years old.

Concerning level of education of the studied sample, the present study revealed that Nearly one third of them were Secondary school or technical diploma education; this may be attributed to cognitive abilities and increased health illiteracy related to coping with psychological negative feeling related to infertility and IVF process success.

This finding was on the same line with **Hanan Elzeblawy, (2016)** who studied Infertility profile, psychological ramifications and reproductive tract infection among infertile women, in northern Upper Egypt and reported that (40.4%) of the sample was Secondary school or technical diploma education.

Regarding occupation of the studied sample, the present study revealed that two thirds of them were house wives; this finding may be due to regardless of the occupation among women, having a child comes in higher priorities in Egypt. This is contradicted with **Hanan Elzeblawy, (2016)** who reported that (61.4%) of the sample was employee. And also with a study conducted by **Nurcan Kirca, (2019)** who stated that (70.3%) of the sample was employee.

Family income and insurance coverage are significantly affecting the probability of seeking infertility treatment; the choice to pursue assisted reproductive technologies (ARTs) is highly influenced by income. The result of the present study revealed that the majority of the sample had less than moderate family income. This finding was in agreement with previous research conducted by **Hanan Elzeblawy, (2016)** who stated that (50.6%) of the sample had bad family income.

In relation to duration of marriage of the studied sample, the present study revealed that less than two thirds of the studied sample married since more than 5 years with mean marriage duration of  $8.3 \pm 1.7$ ; this finding may be because of couples not seeking assisted reproductive technologies (ART) before inability to conceive after a year or more of regular, unprotected sexual intercourse and failure of routine fertility treatment like induction of ovulation by clomid. This result was not agree with **Hanan Elzeblawy, 2016** who reported that 73.4 of the sample had duration of marriage less than 5 years with mean age at marriage  $19.74 \pm 1.61$ . Also, a study conducted by **Miok Kim, (2014)** and revealed that the average duration of marriage was 55.6 months.

Reproductive characteristics and taking infertility history is both simple and important to identify the cause(s) and properly manage treatment plan and IVF protocol suitable for the case. The result of the present study revealed that nearly half of them seeking to have a baby since less than 5 years. Less than two thirds of them had no pregnancy experience, nearly two thirds of them had no abortion experience, most of them had no children, most of them had high importance of having children, and most of them mentioned financial burden of infertility treatment was moderate burden.

This finding was in agreement with previous research conducted by **Gulzhanat Aimagambetova, (2020)** who reported that (63.6%) had no previous deliveries, (85.1%) had no previous miscarriages, and (92.4%) had no previous intentional pregnancy interruptions, but not agreed with it in average infertility duration which was 5.9 years.

The present study revealed that there was a highly significant improvement in the anxiety level after application of MBTP ( $p \leq 0.001$ ). The post program' "low anxiety" increased from 36% pre-intervention to 54% post-intervention. This result is in agreement with **Hélène Gaitzsch, (2020)** who studied the effect of mind-body interventions on psychological and pregnancy outcomes in infertile women: a systematic review, and reported that participation in a mind-body intervention was associated with reduced anxiety trait and depression scores.

The present study revealed that there was a highly significant improvement in the uncertainty level after application of MBTP ( $p \leq 0.001$ ). The post program' "High uncertainty" decreased from 32% pre-intervention to 6% post-intervention. This result is in agreement with **Miok Kim, (2014)** who reported that the experimental group in the study showed greater decrease in uncertainty in pre-measurements and post-measurements than the control group did.

Regarding the relation between the studied sample's marriage and infertility features and their level of the total score of Uncertainty post intervention, the present study revealed that there were statistical significant differences between the total score of uncertainty level and duration of seeking a baby, financial burden of infertility treatment, duration of infertility treatment, and pregnancy experience.

This result is approved by **Hye Shin Lee, Sunjoo Boo, Jeong Ahn, and et al., (2020)** who investigate effects of uncertainty and spousal support on infertility-related quality of life in women undergoing assisted reproductive technologies in Seoul and reported that uncertainty was significantly affected by total number of ART treatment, marriage duration, financial burden of infertility testing and pregnancy experience. This similarity in results may be due to increase time of marriage without children, financial burden of infertility treatment and repeated failure or long period of infertility treatment increase uncertainty in infertile women which leading to reduce IVF success.

With regard to the relation between the studied sample's marriage and Obstetric history characteristics and their level of the total anxiety level post intervention, the present result revealed that there were statistical significant differences between the total score of Anxiety level and financial burden of infertility treatment. This result not approved by **Mahmut Yassa, Erol Arslan, and Duru Saygin, (2019)** who studied Effects of infertility treatment on anxiety and depression levels in Turkey and reported that there were no significant relation between anxiety and financial burden of infertility treatment. This inconsistency in the results may be due to the differences in the economic and the financial level of the individual between the two countries.

#### **IV. Conclusion**

The present study concluded that the majority of infertile women repeating IVF had significant decrease in anxiety and uncertainty after Mind-Body Therapeutic Program intervention

#### **V. Recommendation**

**Based on the results of this study, the following recommendations were suggested:**

- Clinical application of a mind-body therapeutic program in ART units
- Developing a training program, booklets, and guidelines for nurses in ART units regarding MBTP.
- Establish a private counseling, group therapy, and yoga area supported with nursing protocol in ART units for infertile women.
- Further researches regarding effect of MBTP on relieving infertile women's anxiety and uncertainty related IVF treatment process on large sample in order to generalize the results.

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**Table 1:** Distribution of Socio -demographic characteristics of the studied sample (N = 100)

Socio demographic characteristics	No.	%
<b>Age</b>		
Less than 36	56	56
≥ 36	44	44
<b>Mean ± SD</b>		
32.5± 1.4		
<b>Educational level</b>		
Read & write	30	30
Secondary school or technical diploma	38	38
university	32	32
<b>Spouse age</b>		
Less than 36	38	38
≥ 36	62	62
<b>Work status</b>		
Work	34	34
Not work	66	66
<b>Family income</b>		
Less than moderate	90	90
≥ moderate	10	10
<b>Total</b>		
100		
100		

**Table 2:** Distribution of marriage and infertility features of the studied sample (N=100).

Marriage & infertility features	NO.	%
<b>Duration of marriage</b>		
Less than 5 yrs.	36	36
≥ 5 yrs.	64	64
<b>Mean ± SD</b>		
8.3 ± 1.7		
<b>Duration of seeking a baby</b>		
Less than 5 yrs.	54	54
≥ 5 yrs.	46	46
<b>Duration of infertility treatment</b>		
Less than 5 yrs.	54	54
≥ 5 yrs.	46	46
<b>Pregnancy experience</b>		
Yes	38	38
No	62	62
<b>Abortion experience</b>		
Yes	32	32
No	68	68
<b>Having children</b>		
Yes	16	16
No	84	84
<b>Importance of having children</b>		
High	90	90
Moderate	10	10
<b>Financial burden of infertility treatment</b>		
High	6	6
Moderate	80	80
Low	14	14
<b>Total</b>		
100		
100		

**Table 3:** Relation between the studied sample's marriage and infertility features and their level of the total Uncertainty level post intervention (N= 100).

Marriage & infertility features	Post-intervention uncertainty level		Chi-square		
	Low	High	$\chi^2$	p-value	Sig.
	N=%	N=%			
<b>Duration of marriage</b>					
Less than 5 yrs.	36	0	3.6	0.058	NS
≥ 5 yrs.	58	6			
<b>Duration seeking a baby</b>					
Less than 5 yrs.	54	0	7.5	0.006	S
≥ 5 yrs.	40	6			
<b>Duration of infertility treatment</b>					
Less than 5 yrs.	54	0	7.5	0.006	S
≥ 5 yrs.	40	6			
<b>Pregnancy experience</b>					
Yes	42	0	4.6	0.032	S
No	52	6			
<b>Abortion experience</b>					
Yes	34	0	3.3	0.07	NS
No	60	6			
<b>Having children</b>					
Yes	14	0	1.04	0.308	NS
No	80	6			
<b>Importance of having a children</b>					
High	80	6	1.04	0.308	NS
Moderate	14	0			
<b>Financial burden of infertility treatment</b>					
High	6	4	22.9	0.000	HS
Moderate	74	2			
low	14	0			

**Table 4:** Relation between the studied sample's marriage and infertility features and their level of the total anxiety level post intervention (N= 100).

Marriage & infertility features	Post-intervention anxiety level		Chi-square		
	Low	High	$\chi^2$	p-value	Sig.
	N=%	N=%			
<b>Duration of marriage</b>					
Less than 5 yrs.	18	18	0.36	0.057	NS
≥ 5 yrs.	36	28			
<b>Duration seeking a baby</b>					
Less than 5 yrs.	28	26	0.22	0.641	NS
≥ 5 yrs.	26	20			
<b>Duration of infertility treatment</b>					
Less than 5 yrs.	28	26	0.22	0.641	NS
≥ 5 yrs.	26	20			
<b>Pregnancy experience</b>					
Yes	20	22	1.2	0.276	NS
No	34	24			
<b>Abortion experience</b>					
Yes	16	18	0.99	0.318	NS
No	38	28			
<b>Having children</b>					
Yes	10	4	1.99	0.158	NS
No	44	42			
<b>Importance of having a children</b>					
High	18	68	0.41	0.522	NS
Moderate	4	10			
<b>Financial burden of infertility treatment</b>					
High	8	2	12.1	0.002	S
Moderate	44	32			
low	2	12			

Figure 1: distribution of the total anxiety level of the studied sample pre and post intervention (N=100)

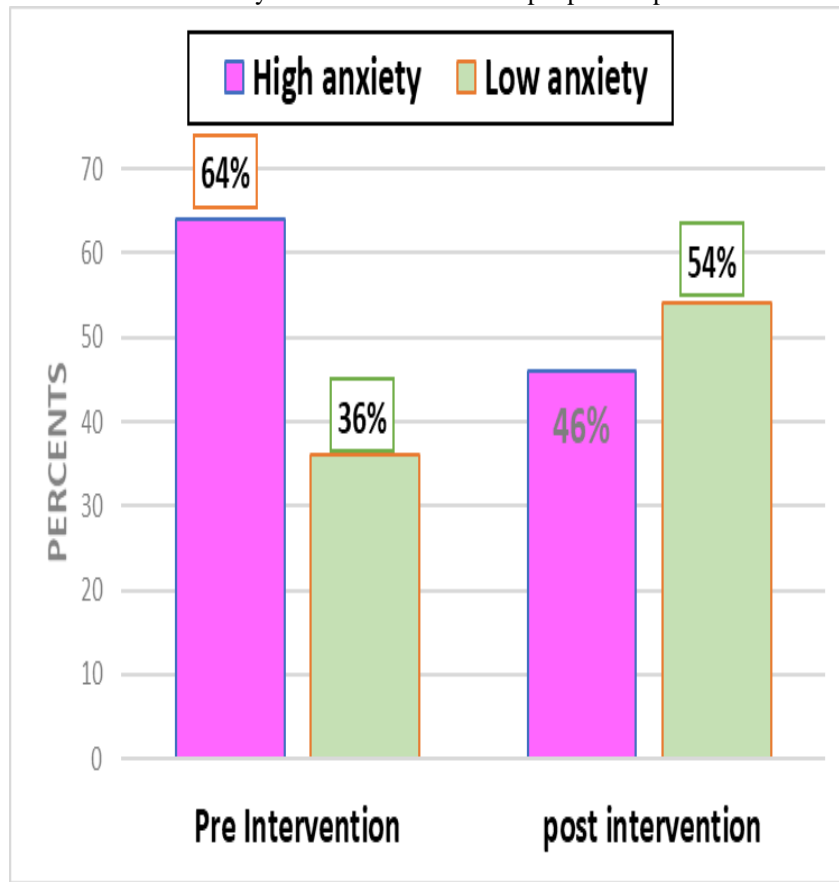


Figure 2: distribution of the total uncertainty level of the studied sample pre and post- intervention (N=100).

