

---

DOI: <https://doi.org/10.53555/eijmhs.v1i1.85>

---

## PERCEPTIONS OF INFERTILITY AND QUALITY OF LIFE AMONG WOMEN TREATED WITH IVF

Grinberg Keren<sup>1\*</sup>

*\*Corresponding Author:-*

---

### **Abstract:-**

**Aims and Objectives:** *The aim of this paper is to determine the association between infertility perception and perceived quality of life of women treated with In Vitro Fertilization.*

**Background:** *Infertility is characterized by the inability to conceive for a year, despite the ongoing efforts. Studies have indicated that the problem affects the quality of life of women.*

*Although they did not examine the relationship between the perception of the problem and **quality** of life of those women.*

**Design:** *A descriptive, cross-sectional design*

**Methods:** *Eighty women (average age of 31 years), attending the IVF clinic, completed the IPQ-R and Multidimensional QOL questionnaires.*

**Results:** *We found significant negative associations between identity, consequences, timeline and causes of the problem components of IPQ-R and the level of perceived quality of life. Specifically quality of life was negatively associated with perceptions of infertility as a problem, longer timeline, the number of symptoms attributed to infertility, emotional representation and the consequences of this problem. Four significant factors were found to explain the quality of life of these women: problem identity; symptom relevance; Perception of problem; and the number of perceived internal causes.*

**Conclusions:** *There is a significant impact of the illness perception components on quality of life of women's undergoing IVF treatments.*

**Relevance to clinical practice:** *There is rising need for appreciation and recognition of the concept of infertility in women who undergo IVF treatments in order to plan appropriate interventions to improve their quality of life.*

**Key words:** *Infertility, Quality of life, Illness perception, IVF.*

## INTRODUCTION

Infertility, defined as the inability to become pregnant in spite of repeated attempts over a 12-month period (Bolosy et al. 2010) It is a common health complaint. In Israel, according to the Ministry of Health, 16% of couples in the fertile age range do not manage to conceive (Bar-Spector 2010) Fertility difficulties may be a source of daily stress, which may become chronic and experienced in different emotional manifestations such as panic, depression, loss of control and loss of self-esteem (Lee and Sun 2000) and also affect women's quality of life (Chachaminovitch et al., 2009).

### Background

Approximately 10% of infertile couples undergo In Vitro Fertilization (I V F) treatments as a result of failure or incompatibility of other treatment methods. These multi-stage treatments may negatively impact the quality of life of the women and couples (Benyamini et al. 2009; Benyamini et al. 2004; Ragni et al. 2005). The negative effects on quality of life include the duration of infertility, the failure to conceive, and coping with cycles of hope and disappointment throughout the treatments. Additionally, the treatments may negatively affect the women's hopes of conceiving, their health, and their relationships with their partner and with their social network (Chachamovich et al. 2009; El-Messidi et al. 2004; Monga et al. 2004).

One of the factors affecting how one responds to illness or a threat to health is how these are perceived (Nicola and Moss-Morris 2003). Illness perception awards personal significance to the health threat to which one is exposed. For example, physical symptoms (pain, weakness), discovery of physical signs (a lump on the breast, a change in skin color), or external communications (a medical examination, a conversation with a friend) create a cognitive representation of the symptom and recognizing it as a threat to health or identifying it as an illness (Weinman ET al. 1996). It may also determine how the individual responds (Petrie et al. 2002). In the present study, we consider IVF as a health problem and not as an illness. The study was based on the Common Sense Model of self-regulation (Leventhal ET al. 2003). Which proposes that in response to illness and other health threats, people develop parallel cognitive and emotional representations which, in turn, give rise to problem-based and emotion-focused coping procedures, respectively (Leventhal ET al. 1984).

This model is comprised of six basic components for the progression of, adaptation to, and recuperation from various health situations. These components include: problem identity, timeline, causes, consequences, and the perception of control and also coherence of the problem.

This model has been used in various studies that showed that illness perception has an effect on quality of life (QOL) for a range of chronic disorders (Marden 2004), and that theoretical components may be important predictors of QOL and adjustment to illnesses such as:

arteriosclerosis (Nicola and Moss-Morris 2003) Huntington's Disease (Helder et al. 2002), arthritis (McCracken 2008) and myocardial infarction and rehabilitation (French et al. 2006). For example, illness perceptions of patients following acute myocardial infarction (AMI) predict attendance at cardiac rehabilitation. Patients with more positive identity, cure/control, consequences and coherence beliefs were more likely to attend cardiac rehabilitation.

Research conducted on patients suffering from lower back pain showed that illness perception (IP) factors (consequences of the illness, timeline, and treatment control) were independent predictors of clinical results and of QOL (Foster et al. 2008).

We did not find studies concerning the different components of IP and QOL in women coping with infertility. Understanding the associations of these components with the QOL of such women will enable identifying causes of distress and aid health services in developing interventions to improve the coping ability of patients and their families, and thus also their QOL.

The purpose of this research is to determine links between different cognitive aspects of infertility perception in women treated with IVF and their QOL, based on the self-regulation model. The working hypothesis is that a negative correlation will be found between perception of infertility as a problem and QOL. We also expected to find a positive correlation between perceived control of infertility (personal control and control of the treatment), and coherence of infertility and QOL.

## METHODS

This cross-sectional study was approved by the Rambam Medical Center in Haifa Helsinki committee where the research was to be conducted. Potential participants were approached during a visit to the IVF unit and presented with the subject and objectives of the study. They were informed that participation was voluntary and anonymous. The time to complete the questionnaires was between 15 and 25 minutes. Women who agreed to participate were given a written explanation of the research and were asked to sign an informed consent form. Of the 84 questionnaires distributed, four were rejected for not being completed according to the instructions, generating a 95% response rate.

### Data collection

Data collection took place between December 2007 and June 2008. The Participants completed three questionnaires: *A socio-demographic and health questionnaire*, that included: age, years of schooling, previous IVF attempts, religion (Jewish, Muslim, Christian), religiosity (religious, traditional, secular), number of children and economic status.

*The Illness Perception Questionnaire Revised (IPQ-R)* (Moss-Morris et al. 2002). The questionnaire was translated to Hebrew and was validated by Benyamini et al. (2009), Cronbach's alpha reliability coefficient was 0.18. The questionnaire includes seven parts representing cognitive and affective aspects of illness perception:

**Identity:** This part denotes the label and symptoms associated with the problem. It includes 12 core items, describing common non-specific symptoms such as: nausea, shortness of breath, weight change, pain and fatigue. We also added a specific symptom of itching and redness in the area of injection. Participants were asked to confirm the presence or absence of these symptoms by answering yes or no via a scoring system where 1 corresponded to a positive answer, and 0 to a negative one. Total score ranged from 0-12, and a high score indicated the respondent reported experiencing more symptoms thus having a strong infertility identity (Cronbach's alpha = 0.63). An separate scale also was formed for the symptoms relevant to IVF problems in category- relevant symptoms (Cronbach's alpha =0.84 0.63).

**Timeline of the problem.** For example, is it acute or chronic? This part included eight items, each on a 5 point Likert style response scale ranging from 1, to -5. A sample item: "My problem will be resolved quickly", where a low score indicated that the problem was perceived as chronic. Alpha Cronbach = 0.80.

**Consequences of the problem:** six items, each on a 5 point Likert style response scale ranging from 1 to -5. Sample item: "My illness has significant consequences for my life." A high score indicated that the participant perceived serious consequences. Alpha Cronbach = 0.85.

**Self-control of the problem and/or the treatment:** this scale comprises of two components.

First, perception of self-control over the problem itself (six items, rated on Likert scales of 1-

5). For example: "I can do many things to minimize the symptoms of my problem." A high score indicates a high level of perceived self-control of the problem. The second component is the perception of control over the treatment (five items graded on Likert scale of 1-5). For example: "The treatment will be effective against the disorder." A high score here would indicate a belief in the effectiveness of the treatment and thus that the problem is treatable.

Alpha Cronbach = 0.69.

**Problem coherence** (coherent understanding of infertility): five items graded on Likert scales of 1-5. For example: "I do not understand my illness." A high score indicates better understanding of the problem. Alpha Cronbach = 0.94.

**Emotional representation:** six items, each on a 5 point Likert style response scale ranging from 1, to -5. For example: "When I contemplate my illness, I become depressed." High scores indicate negative feelings towards the problem. Alpha Cronbach = 0.88.

**Causes of the disorder:** The measure included 18 items graded on a 5-point Likert scales. Participants were required to grade to the extent they agreed with each statement. The measure was divided into two categories, internal causes (ten items such as: "My behavior" or "my personality) and external causes (eight items such as "eating habits", "environmental pollution"). Alpha Cronbach was 0.83 (Moss-Morris ET al.2002).

**C. QOL** was measured by the Multidimensional Quality of Life Questionnaire developed by Kreitler and Kreitler.(2006). It was designed for adult participants (over the age of 18), who are healthy or who have different health complaints. The original questionnaire includes 60 items. In the present study we included 57 statements and excluded three items about one's role as a parent as not all participants had children). The items refer to a great variety of themes, such as mobility, functioning at work (or studies), eating and appetite, sleep, functioning in the family as a partner, as a sibling, and as son/daughter and so on. Each item is presented separately and refers to one specific theme each followed by four response alternatives, presented in a row as a discontinuous scale and labeled verbally in a manner specific to each item. The 4-point scale ranges between one (the lower QOL) to four (higher QOL). The respondent's task is to mark one of the four response alternatives for each statement.

In this study we calculated a global score of QOL as the mean of all 57 items. A high score indicates a better quality of life. Alpha Cronbach reliability of the questionnaire according to studies with different samples is in the range of 0.79 to 0.89. In the present study the alpha Cronbach's coefficient for the total QOL score was 0.94.

## Data Analysis

The Statistical Package for Social Sciences (SPSS) for Windows, Version 19, was used for data analysis. Socio-demographic variables were examined using descriptive statistics.

Pearson's coefficients were computed to test the links between the general score of quality of life and the different factors of IPQ-R (problem perception). We also tested the adequacy of the specific model of associations between the problem perception factors and the dependent variables of QOL. A Stepwise linear regression analysis was conducted to generate a linear model for the study.

## Results

The convenience sample consisted of 80 infertile women being treated at the IVF unit of the Rambam Medical Center in Haifa. Inclusion criteria were: married, Hebrew-speakers, otherwise healthy, having undergone at least one unsuccessful IVF attempt. The mean age of participants was 31.2. The mean number of years of schooling was 14.1, and the sample had an average of 3.6 previous IVF attempts. Most of the women (71.3%) were childless. 57.5% of the participants were Jewish and the rest were Muslim (31.3%) and Christian (11.3%). The majority (81 %) were secular. The economic status of most of the participants was average, with only 5% reporting being poor.

Table 1 presents the associations (Pearson's coefficients) between problem perception components (IPQ-R) and QOL. We found a significant, moderate, and negative correlation between the number of reported symptoms (Identity) and QOL ( $r=-0.4$ ,  $p<0.01$ ). The more symptoms the woman suffers from, the lower is her QOL. Similarly, there was a significant,

weak, and negative correlation between the perception of those symptoms as associated with infertility and QOL ( $r=-0.2$ ,  $p<0.05$ ).

We also found two very strong associations between IPQ-R factors and QOL: *consequences* of infertility ( $r=-0.688$ ,  $p<0.01$ ) and emotional representations ( $r=-0.597$ ,  $p<0.01$ ). It means that the more the problem is perceived as having significant negative consequences; and the higher the score of emotional representations, the lower is the level of QOL. Additionally, women who perceived the problem as more of a chronic issue had a lower level of quality of life ( $r=-0.3$ ,  $p<0.01$ ).

On the other hand, the higher was one's coherence of the problem the better was their QOL ( $r=0.3$ ,  $p<0.01$ ). No significant associations were found between control of the treatment, personal control and QOL.

As to causes of the illness, we found a significant and negative correlations between both external and internal causal attributions and quality QOL ( $r=-0.378$ ,  $p<0.01$ ;  $r=-0.421$ ,  $p<0.01$ , respectively). In other words, the more a woman attributed the problem to external and to internal causes the lower was her level of QOL. These findings indicate that the women believed that multiple internal and external causes had an effect on their infertility. For example, the more they attributed their problem to stress, hard work, viruses or polluted environment the lower was their level of QOL.

Additional tests assessed associations between background variables, such as: number of children, religion, religiosity, and economic status with both perception of fertility and QOL. Childless women perceived infertility as a more serious problem than women who already had one child. Jewish women had more negative emotional representations (anger and isolation) than non-Jewish women. Furthermore, religious women were more likely to blame themselves for their infertility and to view it in a more negative light. An additional finding is the negative correlation between the number of previous failed IVF attempts and QOL.

Table 2 represents a predictive model of the QOL of women undergoing IVF. We used the multiple regression stages as a statistical procedure and the explained variance of the model was 59.3%. Four significant factors were found to explain the QOL of these women: problem identity (the number of symptoms) ( $r=-3.568$ ,  $p<0.01$ ); symptom relevance (the number of symptoms perceived as directly related to the infertility treatment,  $r=2.239$ ,  $p<0.01$ ); Perception of problem B (see Data Analysis); and the number of perceived internal causes.

## DISCUSSION

The findings of a negative association between IPQ-R scores and QOL indicate that the participants' perception of their infertility was significantly linked to their QOL. In general, IP factors predicts QOL parameters but socio demographic factors did not predicts QOL at all.

The more negative the woman's perception of infertility, the lower her QOL. These findings also include most of the components assessed in the present study (identity, consequences, coherence of the problem, emotional representation, and attribution of causes) These findings are similar to those of El Messidi et al.2004 who found that the QOL of infertile couples is lower than that of fertile couples. The findings also support Benyamini et al's suggestion that IVF treatment is likely to significantly reduce the QOL of women undergoing the procedure (Benyamini et al.2004).

The negative correlation between identity and QOL indicates that the more symptoms are reported (such as: pain, weight loss/gain, fatigue, abdominal pain, sensitivity, and redness at the site of injections), the lower is QOL of the woman undergoing IVF treatment. The same is true for the perception of these symptoms as being associated with the problem. An explanation for this is provided in a study conducted by Petrie et al.(2007 who suggested that symptoms contribute to the identification of infertility as a problem/threat to one's health, and that as symptoms increase, the problem will be viewed in a more negative light, and therefore cause a decrease in QOL. It seems that simply having more symptoms, especially those connected with infertility per se, contributed to the perception of infertility as a problem, and consequently results in a decrease in the QOL among women undergoing fertility treatments.

The research results show a strong negative association between perceiving infertility as chronic and QOL. Women perceiving infertility as a chronic issue, report a lower level of QOL. These results support Ragni et al's conclusions (Ragni et al.2005) that as infertility continues without an immediate solution, the couple's QOL decreases, and this also has a negative impact on the quality of their marriage. It appears that when the issue of infertility is perceived as being temporary, there is less of a negative effect on QOL due to the expectation of a quick solution to the problem.

Another interesting finding in the present study is the strong and significant positive correlation between the component of coherence of infertility and QOL. Women who have a better coherence of their problem enjoy a better QOL. This is compounded in societies where fertility is taken for granted since couples do not expect or plan for difficulties in conceiving. Fertility problems are characterized by a high level of vagueness and uncertainty. Couples are left with a feeling of uncertainty regarding their ability to conceive. This makes coping with the problem even more difficult (Monga ET al.2004). This vagueness, together with a limited understanding of the issue of infertility, may contribute to a lack of clarity and to an increase in stress levels, with a negative impact on QOL.

The findings indicate that QOL is negatively associated with external and internal causal attributions of infertility. Many women believed that there were multiple reasons for their infertility. Some are external, such as: environmental effects, viruses, bacteria, and heredity. Others are internal, such as: personality, work load, impulsivity, or loneliness. In their opinion, several of these factors contributed to their infertility. A possible explanation of this finding is provided by Nicola and Moss-Morris (2003), who showed that the more psychological and sociological causes attributed to a problem/illness, the more negatively it will be perceived by patients. It is possible that our findings could be attributed to women's socialization, and to the current cultural norms and values. However, the study did not assess such factors and this speculation warrants further research.

## CONCLUSIONS

We found that IVF treatments due to infertility were associated with the QOL of treated women. Each woman reacts differently to the problem, and the wide range of emotional responses affect how these women perceive infertility. Women's perception of their infertility seems to be one of the factors associated with their QOL during the treatment. Women who have a negative view of their infertility at the beginning of the process, even before treatment begins, could be at a greater risk of not being able to adjust properly to the problem. Identification of such negative perceptions and approaches, and the implementation of different treatment programs to counteract them, can assist these women with their complex coping throughout the various phases of IVF, and improve their quality of life.

## Relevance to clinical practice

The research might lead to the development of learning programs focusing on means of identifying perceptions of infertility, as well as improvement techniques that will facilitate a more positive perception. The need for a hospital-based support group for women undergoing IVF is recognized. Here, women will receive guidance and support, and furthermore acquire tools and skills enabling them to view their issues in a more positive light, thus improving their QOL.

## REFERENCES LIST

- [1]. Bar- Spector, S. 2010. Scope and deployment of IVF unit in Israel. Knesset- research information: Jerusalem.
- [2]. Benyamini, Y., Gozlan, M. and Kokia, E. 2009. Women's and men's perceptions of infertility and adjustment: A dyadic approach. *British Journal of Health Psychology* 14:1-16.
- [3]. Benyamini, Y., Gozlan, M. and Kokia, E. 2004. On the self-regulation of health threat: Cognitions, coping and emotions among women undergoing treatment for infertility. *Cognitive Therapy and Research* 28(5):577-592.
- [4]. Bolsoy, N., Taspinar, A., Kavlak, O. and Sirin, A. 2010. Differences in quality of life between infertile women and men in Turkey. *Journal of Obstetric, Gynecologic and Neonatal Nursing* 39:191-198.
- [5]. Chachamovich, J., Chachamovich, E., Fleck M, P., Cordova, FP., Knauth, D. and Passos, E. 2009. Congruence of quality of life among infertile men and women: Findings from a couple-based study. *Human Reproduction* 24(9):2151-2157.
- [6]. El-Messidi, A., Al-fozan, H., Lin Tan, S., Farag, R. and Tulandi, T. 2004. Effects of repeated treatment failure on the quality of life of couples with infertility. *Journal of Obstetric and Gynecologic Cancer* 26(4):333-336.
- [7]. Foster, N.E., Bishop, A., Thomas, E., Main, C., Horne, R., Weinman, J. and Hay, E. 2008. Illness perception of low back pain patients in primary care: What are they, do they change and are they associated with outcome? *Pain* 136:177-187.
- [8]. French, D.P., Cooper, A. and Weinman, J. 2006. Illness perceptions predict attendance at cardiac rehabilitation following acute myocardial infarction: A systematic review with meta- analysis. *Journal of Psychosomatic Research* 61:757-767.
- [9]. Helder, D.J., Kaptein, A.A., Kemper, G.M., Weinman, J., Houwelingen, H.C. and Roos, R.A. 2002. Living with Huntington's disease: Illness perception, coping mechanisms, and patients' wellbeing. *British Journal of Health Psychology* 7:449-462.
- [10]. Kreitler, S. and Kreitler, M. 2006. Multi-dimensional Quality of Life: A new measure of quality of life in adults. *Social Indicators Research* 76:5-33.
- [11]. Lee, T.Y. and Sun, G.H. 2000. Psychosocial response of Chinese infertile husbands and wives. *Archives of Andrology* 45(3):143-148.
- [12]. Leventhal, H., Brissette, I. and Leventhal, E.A. 2003. The common-sense of self-regulation of health and illness. In: D. Camerone, & H. Leventhal, (Eds.). *The self-regulation of health and illness behaviors*. Routledge: London and New-York
- [13]. Leventhal, H., Nerenz, D.R. and Steele, D.J. 1984. Illness representations and coping with health threats. In A. Baum, S. E. Taylor, & J. E. Singer (Eds.) *Handbook of Psychology and Health*, 4. Hillsdale. Lawrence Erlbaum Associates: NJ.
- [14]. Marden, S.F. 2004. Technology dependence and health related quality of life: A model. *Journal of Advanced Nursing* 50(2):187-195.
- [15]. McCracken, J., Linder, H. and Sciacchitano, L. 2008. The mediating role of secondary beliefs: Enhancing the understanding of emotional responses and illness perception in arthritis. *Journal of Allied Health* 37:30-37.
- [16]. Monga, M., Alexandrescu, B., Katz, S.E., Stein, M. and Ganiats, T. 2004. Impact of Infertility on quality of life, marital adjustment and sexual function. *Urology* 63:123-130.
- [17]. Moss-Morris, R., Weinman, J., Petrie, K.J., Horne, R., Cameron, L.D. and Buick, D. 2002. The Revised Illness Perception Questionnaire (IPQ-R). *Psychology and Health* 17(1):1-16.
- [18]. Nicola, M. and Moss-Morris, R. 2003. The role of illness severity and illness representations in adjusting to multiple sclerosis. *Journal of Psychosomatic Research* 54:503-511.
- [19]. Petrie, J.K., Cameron, L. D., Ellis, C.J., Buick, D. and Weinman, J. 2002. Changing illness perception after myocardial infarction: An early intervention randomized controlled trial. *Psychosomatic Medicine* 64:580-586.
- [20]. Petrie, J.K., Jago, L.A. and Devicich, D.A. 2007. The role of illness perceptions in patients with medical conditions. *Current Opinion in Psychiatry* 20:163-167.
- [21]. Ragni, G., Mosconi, P., Pia Baldini, M., Somigliana, E., Vegetti, W., Caliarì, I. and Nicolosi, A. 2005. Health related quality of life and need for IVF in 1000 Italian infertile couples. *Human Reproduction* 20(5):1286-1291.

[22]. Weinman, J., Petrie, K.J, Moss-Morris, R. and Horne, R.1996. The Illness Perception Questionnaire: a new method for assessing the cognitive representation of illness. *Psychology and Health* 11: 431-445.

**Table 1: Associations between problem perception components (IPO-R) and quality of life (Pearson's coefficients)**

	1	2	3	4	5	6	7	8
Quality of life								
1. Timeline –acute	0.427**							
2. Timeline – chronic	0.337**	0.843**						
3. Identity	0.045	0.326**	0.288**					
4. Symptom relevance	-0.280*	0.766**	0.290*					
5. Consequences	0.688**	-0.206	0.200-	0.024				
6. Personal control	-0.040	0.422**	0.435**	0.426**	0.201			
7. Treatment control	0.047	0.410**	0.402**	0.239*	0.133	0.643**		
8. Problem coherence	0.302**	0.225*	0.281*	0.021	0.416**	0.094	0.149	
9. Emotional representations	0.597**	-0.021	0.061-	0.195	0.772**	0.311**	0.207	0.237-*

\* P<0.05 \*\*P<0.01

**Table 2: Regression analysis to predict model of quality of life**

Predictors	T	β
Identity	-3.561**	-0.400
Relevance of symptoms	2.230*	0.205
Perception of problem B	-	-0.480
Internal causes	-2.066*	-0.286
External causes	-0.175	0.007-
Age	0.682	0.057
Education (years)	0.801	0.087
Previous attempts	-8.241	0.822-
Religion	8.650	0.843
R <sup>2</sup>		50.3%
Adj. R <sup>2</sup>		53.1%
F		80.14***

\*\*\*P<0.001 \*\* P<0.01 \*P < 0.05 N=380