

Was it worth it? Infertile couples' experience of assisted reproductive treatment and psychosocial adjustment one year after treatment

Mariana Moura-Ramos¹ e Maria Cristina Canavarro²

Abstract

Undergoing Assisted Reproductive Technology (ART) can be a demanding experience. We aimed to describe changes in psychosocial adjustment from ART treatment to one year after and couples' evaluation of the treatment's experience. The study used a longitudinal design, with 33 infertile couples who were assessed during their ART treatment and one year after treatment regarding their emotional reactivity, emotional distress and quality of life; additionally, participants were asked to evaluate their treatment experience. Results indicated that from the ART cycle to one year after, couples who have achieved pregnancy showed an increase in positive emotions and a decrease in negative emotions. However, all couples evaluated the experience of ART in a positive way, regardless of treatment outcome, although more positive ratings were found in couples who have achieved pregnancy. It can be concluded that the emotional reactivity and the evaluation of the experience one year after treatment is affected by the treatment outcome.

Keywords: Infertility; Psychosocial adjustment; *In Vitro* Fertilization

1 Centro de Investigação do Núcleo de Estudos e Intervenção Cognitivo-Comportamental, Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra, Portugal. Apoiada por uma bolsa de Pós-doutoramento da FCT (SFRH/BPD/87514/2012). Email: marianamr@fpce.uc.pt

2 Centro de Investigação do Núcleo de Estudos e Intervenção Cognitivo-Comportamental, Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra, Portugal. Email: mccanavarro@fpce.uc.pt

Será que valeu a pena? A avaliação da experiência do tratamento de procriação medicamente assistida pelos casais inférteis e ajustamento psicossocial um ano após o tratamento

Resumo

O recurso a técnicas de procriação medicamente assistida (PMA) tem sido descrito como um acontecimento exigente física e psicologicamente. No presente estudo, e utilizando um desenho longitudinal, pretendemos descrever as mudanças no ajustamento psicossocial desde o momento do tratamento até um ano após o tratamento, em 33 casais inférteis portugueses, bem como avaliar, de forma retrospectiva, a experiência do tratamento. Os resultados mostraram que, quando comparado o momento tratamento com um ano mais tarde, os casais cujos tratamentos tinham sido bem-sucedidos tiveram um aumento das emoções positivas e diminuição das negativas. No entanto, de um modo geral, todos os casais avaliaram de forma positiva o tratamento de PMA, independentemente do seu resultado, apesar de os casais que alcançaram uma gravidez terem avaliado a experiência de forma mais positiva. Pode concluir-se que a reatividade emocional e a avaliação da experiência são em parte influenciadas pelo resultado do tratamento.

Palavras-chave: Infertilidade; Ajustamento psicossocial; Fertilização *in Vitro*

INTRODUCTION

Assisted reproductive technologies (ART) are cutting edge technologies that help infertile couples to achieve their desired pregnancy. Although recent statistics suggest a steady increase in the use of ART treatments, with more than 400.000 cycles being conducted every year (Andersen et al., 2009), it has been described as an emotionally demanding experience for couples: undergoing ART is expensive (Mazure & Greenfeld, 1989), time consuming, interferes with professional life (Bouwman et al., 2008) and is emotionally and physically demanding (Boivin et al., 1998; Boivin & Takefman, 1996; Eugster & Vingerhoets, 1999) for couples. Beyond the demands of treatment, its positive or negative outcome represents success or failure in achieving the much desired parenthood. Thus, treatment outcome is expected to directly determine couples' adjustment after each cycle is completed (Verhaak, Smeenk, Nahuis, Kremer, & Braat, 2007), although in both cases the experience of treatment is

positively evaluated (Hammarberg, Astbury, & Baker, 2001). The goal of this study is to document changes in the emotional reactivity of infertile couples that underwent successfully and unsuccessfully IVF procedures, from the hormonal stimulation of a treatment cycle to 12 months after that cycle. Understanding changes in long-term adjustment to an ART cycle can help health care professionals to tailor interventions to the specificities of the different periods of ART treatment, helping couples to cope with their experience of infertility and ART, not only during but also after treatment.

Undergoing ART has been described as a demanding experience, with couples stating that the emotional aspects of treatment are more stressful than physical ones (Hammarberg et al., 2001). Overall, the treatment period is a stressful experience, but also a period of elevated optimism (Boivin & Takefman, 1996) and hopefulness (Slade, Emery, & Lieberman, 1997).

Albeit some negative reactions, research has in general documented good levels of adjustment during ART procedures (Eugster & Vingerhoets, 1999; Verhaak, Smeenk, Evers, et al., 2007). Reports highlight high levels of negative emotionality (Slade et al., 1997), but scarcely over the normative range. When examining the impact of ART just after treatment, results point out that adjustment largely depends on the treatment outcome: couples with unsuccessful treatments clearly showed more adjustment difficulties and evaluated the overall experience as less positive, when compared to couples that achieved pregnancy (Holter, Anderheim, Bergh, & Moller, 2006; Verhaak, Smeenk, Evers, et al., 2007).

Several studies have documented differences in long term couples' emotional recovery, indicating that the initial difficulties experienced after a failed cycle may endure with time. For instance, Slade et al. (1997), who compared infertile couples who achieved and did not achieve pregnancy with IVF at intake for IVF and six months after treatment outcome, did not find group differences at intake. However, six months after non pregnant women reported higher anxiety and depression, poorer marital adjustment, higher sexual dissatisfaction and also higher negative emotional reactivity than pregnant women. Results in men were similar, although less consistent (Slade et al., 2007).

Taking into account three different time moments (before the start of medication prior to IVF, 4-6 weeks after pregnancy test and six months after last treatment cycle), Verhaak and colleagues (Verhaak, Smeenk, van Minnen, Kremer, & Kraaimaat, 2005) found that, in the nonpregnant group, there was an increase in anxiety and depression from the first to the second assessment that did not decrease until the third assessment, six months after treatment, suggesting no immediate recovery from the intense negative emotional reac-

tions experienced after treatment failure. However, in a later study the authors investigated the emotional adjustment of these couples three to five years after treatment (Verhaak, Smeenk, Nahuis, et al., 2007), and found that depression and anxiety scores had returned to baseline levels. Albeit this recovery, women that got pregnant after IVF showed better overall well being (lower anxiety and depression) when compared to women who did not get pregnant. Additionally, among the unsuccessful group, women still pursuing pregnancy (medically or passively) reported higher depression and anxiety than women who had abandoned their intents to achieve pregnancy, through defining new life goals or pursuing adoption (Verhaak, Smeenk, Nahuis, et al., 2007). Similar results were also found by Leiblum et al. (1998), who reported that in long-term adaptation (2 to 13 years) after treatment cessation, infertile women who achieved pregnancy reported higher life satisfaction, lower anxiety and lower negative impact of infertility on marriage than infertile women who remained childlessness.

Regarding gender differences, studies examining the reaction during and after ART treatment suggest that women tend to react in a more negative and intense way than men (Moura-Ramos, Gameiro, Soares, Santos, & Canavarro, 2010; Slade et al., 1997). However, results on the pattern of these reactions suggest that although differences were found in the degree of intensity, similarities are found in the patterns of reaction. For instance, in a study that followed infertile couples during a full IVF procedure, although women reported in general higher distress and fatigue, the type and pattern of the reactions were 'remarkable similar' (Boivin et al., 1998, p. 3265) among couple partners. Similarly, when studying short-term adjustment to the first IVF treatment with a prospective design, from before treatment procedures to two weeks after pregnancy, Holter, Anderheim, Berg and Möller (2006) found that women presented stronger emotional reactions in all measurement occasions, but the progression along the three measurement occasions was similar for both partners (namely, for both, after knowing treatment outcome it largely depended on the achievement of pregnancy). That is, although differences in the degree in reaction to treatment can be due to the treatment procedures (as they are, in general, focused on women), they can also be a consequence of normative gender differences (Edelmann & Connolly, 2000), therefore explaining the similarity in the response patterns.

The main purpose of this study was to describe the experience of ART treatment one year after treatment, namely 1) to compare the course of psychosocial adjustment of couples who successfully or unsuccessfully undergone ART treatments; 2) to assess the participants evaluation of their experience one year after the IVF treatment, namely differences between unsuccessful and successful

infertile couples; and 3) to examine differences in the psychosocial adjustment of participants who failed to achieve parenthood regarding their current situation on ART.

METHOD

Procedures and Participants

This study was approved by Ethics Committee of the Coimbra University Hospital. When recruiting participants, a full explanation of the research objectives, the participants' role and the researchers' obligations were given. Participants who agreed to collaborate filled out an informed consent form. In the present study only those couples in which both partners completed the questionnaires at both assessment points were considered.

This was a prospective study. Couples were recruited by the researcher at the Reproductive Medicine Service in Coimbra University Hospitals in the beginning of the ART treatment, during hormonal stimulation phase (T1). One year after this treatment (T2), questionnaires were sent by mail with a prepaid and preaddressed envelope. Sixty-six participants (33 couples) participated in both assessment times.

Participants were couples undergoing an IVF cycle. Women were 32.45 ($SD = 4.04$) years old and men were 34.94 ($SD = 5.66$) years old. Most couples belonged to the medium socioeconomic level (63.6%). Couples were trying to get pregnant for almost six years ($M = 5.55$, $SD = 2.83$), had undergone on average one previous ART treatment ($M = 1.03$, $SD = 0.85$) and infertility was mostly due to female factors (48.5%).

Instruments

The psychosocial adjustment of infertile couples was assessed using the following self-report instruments:

The Emotional Assessment Scale (EAS, Carlson et al., 1989; Portuguese version by Moura-Ramos, 2006) is a 24-item (emotion) scale where subjects are asked to mark how much they feel at the moment on a 10 cm analogical scale. The

Portuguese version of the scale revealed seven factors: anxiety, happiness, fear, guilt, anger, surprise and sadness, with good internal consistency reliability and good construct validity (cf. Moura-Ramos, 2006). In the present sample, Cronbach alpha coefficients ranged from .78 to .90.

The Brief Symptom Inventory (BSI, Derogatis, 1983; Portuguese version by Canavarro, 1999). In this 53-item scale, participants were asked to assess the frequency of specific symptoms during the past week on a 5-point scale (0- *Never* to 5-*Very often*). In the present sample, subscales Cronbach alpha coefficients were of .89 and .85 for, on Depression and anxiety, respectively.

Quality of life (QoL) was assessed with the World Health Organization Quality of Life Brief instrument - WHOQoL-bref (WHOQoLGROUP, 1995; Portuguese version by Vaz Serra et al., 2006). This is a 5-point scale with 26-item that assess QoL in relation to four specific domains (physical, psychological, social relationships and environment). In the present sample, Cronbach alpha coefficients for subscales ranged from .76 to .82.

The experience of treatment was retrospectively assessed with two questionnaires adapted from the questionnaire developed by Hammarberg et al. (2001), which were translated to Portuguese. The first scale, "Rating of stressful events in an IVF cycle" assessed women's evaluation of several events related to the IVF treatment (eg. "Starting a cycle", "having oocyte retrieval", having to find out how many eggs had fertilized"), using a scale from 1 (not stressful) to 5 (extremely stressful) (Hammarberg et al., 2001). The second questionnaire, which assessed men's and women's "overall experience of IVF", is composed by 16 items (e. g. "I lost job opportunities due to ART", "My life was on hold while I had ART", "Infertility is no longer an issue in my life"), with a response format from 1 (Totally disagree) to 5 (Totally agree). In the present sample, Cronbach alpha coefficient for this questionnaire was .80.

Data analyses

Data was analyzed using IBM SPSS, version 20.0 (IBM Corporation, Armonk, NY, USA). To examine participants' treatment evaluation, means and standard deviations were calculated compared among successful and unsuccessful groups.

To examine changes in the psychosocial adjustment from the start of an IVF cycle to one year after that cycle, we performed Analysis of variance using the General Linear Model (GLM) for Repeated Measures. Data analyses were performed using the couple as a unit. The database was restructured in order to consider each couple as the subject of the analysis and each partner score was a

different variable, so that within couple differences could be explored. In these analyses, main effects were examined with Group (1 – unsuccessful and 2 – successful) as the between-subjects factor and with Gender (0 – Men; 1 – Women) and Time (1 – M1, 2 – M2) as within-subjects factors. Interactions effects Time X Group were also examined.

Effect sizes are presented in all analysis using partial eta squares (h_p^2), which can be interpreted as the proportion of total variation attributable to the factor, partialling out (excluding) other factors from the total nonerror variation. Effect size was interpreted as follows: $\eta_p^2 = .01$ a small effect size, $.06$ a medium effect size and $.14$ large effect size. *Post hoc* power calculations demonstrated that the achieved sample size was sufficient to detect only large effects [$f = 0.46$, $p < .05$, power = $.80$, G*Power 3] (Faul, Erdfelder, Lang, & Buchner, 2007). Significance level used was $.05$. However, because small to medium effects would not be detected, marginally significant differences ($p < .1$) will also be reported and discussed.

RESULTS

Changes in the psychosocial adjustment of infertile couples from ART treatment to one year after

At T1, there were no differences in any of the outcomes assessed between successful and unsuccessful couples (all p values are above $.05$). Table 1 presents the descriptive statistics of participants' emotional reactivity in T1 and T2.

Table 1. Descriptive statistics

	T1 (6 th day hormonal stimulation prior to IVF)				T2 (12 months after IVF)			
	Unsuccessful (Mean ± SE)		Success (Mean ± SE)		Unsuccessful (Mean ± SE)		Success (Mean ± SE)	
	Women	Men	Women	Men	Women	Men	Women	Men
Emotional reactivity								
Anxiety	42.48 ± 26.40	40.07 ± 19.17	53.15 ± 26.45	46.10 ± 26.18	41.29 ± 27.96	38.04 ± 26.74	24.65 ± 17.97	29.69 ± 19.87
Happiness	51.31 ± 28.81	51.45 ± 27.48	55.08 ± 28.60	53.67 ± 28.51	42.83 ± 24.20	43.19 ± 27.57	82.07 ± 16.42	82.51 ± 15.46
Fear	23.20 ± 26.06	12.48 ± 10.85	30.19 ± 22.89	19.42 ± 11.82	18.91 ± 19.84	19.20 ± 16.78	12.58 ± 11.18	17.96 ± 11.51
Guilt	19.94 ± 21.45	21.06 ± 17.08	24.17 ± 16.58	19.05 ± 10.47	20.42 ± 16.89	21.81 ± 16.43	12.47 ± 10.88	15.26 ± 12.10
Anger	18.40 ± 30.12	16.02 ± 19.94	21 ± 26.71	14.36 ± 16.14	20.21 ± 25.27	23.93 ± 23.50	7.64 ± 10.02	8.50 ± 8.56
Sadness	26.36 ± 31.96	30.04 ± 25.94	34.54 ± 27.70	32.29 ± 30.72	38.39 ± 35.72	44.61 ± 29.42	8.29 ± 11.29	9.29 ± 14.85
Emotional distress								
Depression	0.98 ± 0.97	0.57 ± 0.62	1.00 ± 0.66	0.54 ± 0.55	0.93 ± 1.10	0.57 ± 0.48	0.61 ± 0.65	0.40 ± 0.35
Anxiety	0.97 ± 0.83	0.62 ± 0.58	1.08 ± 0.77	0.69 ± 0.39	0.92 ± 0.90	0.65 ± 0.50	0.70 ± 0.78	0.56 ± 0.38
Quality of life								
Physical	76.13 ± 14.19	82.63 ± 10.65	73.72 ± 13.63	79.96 ± 12.34	74.06 ± 14.67	79.91 ± 7.61	74.75 ± 11.42	80.65 ± 12.89
Psychological	72.37 ± 13.76	74.97 ± 15.39	72.02 ± 12.06	79.76 ± 10.95	69.30 ± 20.91	76.29 ± 10.06	76.49 ± 11.16	83.08 ± 9.74
Social Relation	77.19 ± 11.73	77.88 ± 13.33	70.83 ± 14.89	70.54 ± 15.20	74.12 ± 13.58	72.59 ± 8.68	73.81 ± 11.72	72.59 ± 12.40
Environmental	64.64 ± 11.97	64.18 ± 11.57	69.20 ± 9.08	68.94 ± 13.79	64.47 ± 12.68	62.68 ± 6.12	70.54 ± 9.55	71.91 ± 11.82

The Multivariate MANOVA for repeated measures revealed a Time X Group significant interaction effect, $F(7,25) = 2.56, p = .039, h_p^2 = .42$ regarding emotional reactivity. Anxiety and Guilt also qualified for a Time X Gender X Group significant interaction effect, $F(1,31) = 5.43, p = .026, h_p^2 = .15$ and $F(1,31) = 4.77, p = .037, h_p^2 = .13$, respectively, showing that the pathway from T1 to T2 between the successful group and unsuccessful group has some differences between men and women. Detailed analysis for men and women revealed that differences from T1 to T2 occurred in the successful group, while no changes occurred in the unsuccessful group. For the women of the successful group, anxiety, $F(1,13) = 22.98, p < .001, h_p^2 = .64$, fear, $F(1,13) = 5.74, p = .032, h_p^2 = .31$, anger, $F(1,13) = 11.18, p = .005, h_p^2 = .64$, guilt, $F(1,13) = 5.22, p = .04, h_p^2 = .29$, and sadness $F(1,13) = 14.707, p = .002, h_p^2 = .53$ sharply decreased, while happiness increased, $F(1,13) = 10.71, p = 0.006, h_p^2 = .45$. As can be seen, all effects size were large, suggesting sharp changes for this group from T1 to T2. Figure 1 depicts men's and women's significant changes from baseline to 12 months after for unsuccessful and successful groups.

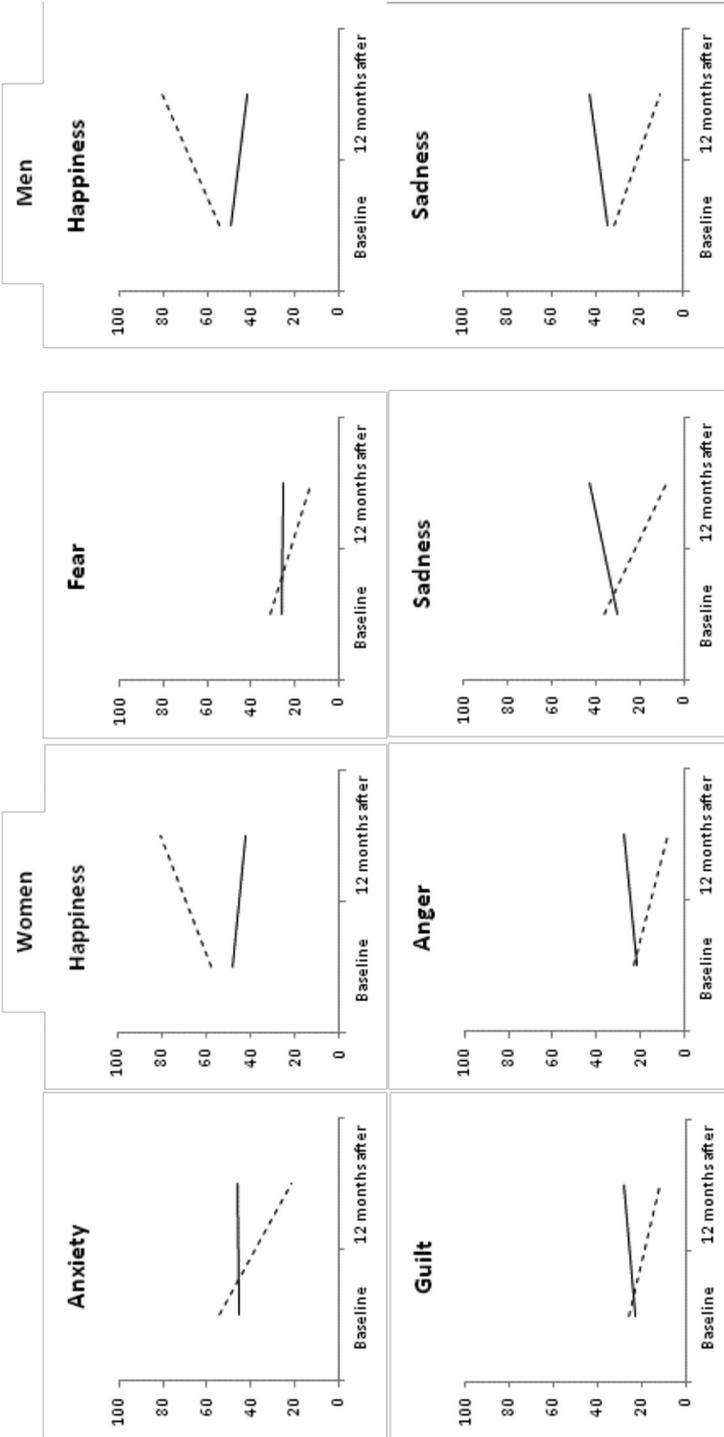


Figure 1. Changes in women's and men's emotional reactivity from baseline to 12 months after IVF cycle in unsuccessful (straight line) and successful (dotted line) groups.

Emotional distress

Emotional distress had a multivariate significant effect only for gender [$F_{2,30} = 3.445, p = .045, h_p^2 = .19$], and not for time, suggesting that significant differences were found in men and women in both times assessed. Univariate analysis showed that women reported higher values in depression $F(1,13) = 7.02, p = .013, h_p^2 = .19$, and anxiety, $F(1,13) = 5.79, p = .022, h_p^2 = .16$, than men in both times assessed in both groups. No group differences were found in anxiety and depression.

Quality of life (QoL)

Quality of life qualified for Group, Time and Gender effects, although distinctly for the different measures of QoL. In the Psychological domain of QoL there was a marginal significant Time X Group interaction effect. Couples from unsuccessful group decreased QoL scores from T1 to T2, while successful couples increased their QoL in psychological domain $F(1,31) = 2.82, p = .1, h_p^2 = .08$. A gender effect was also present, indicating that men had higher QoL in the Psychological domain than women in both times assessed and both groups $F(1,31) = 4.34, p = .046, h_p^2 = .12$. A similar gender effect was found regarding QoL in the physical domain: men reported higher values of QoL in the physical domain than women $F(1,31) = 7.76, p = .009, h_p^2 = .20$. Quality of life in social relations domain qualified for a marginally significant Time X Group X Gender effect $F(1,31) = 4.34, p = .094, h_p^2 = .09$. There was an increase of QoL scores in the social relations domain for couples from the successful group and a decrease in the scores of couples from the unsuccessful group from T1 to T2, but just for men $F(1,31) = 13.54, p = .001, h_p^2 = .30$ and not for women $F(1,31) = 2.76, p = .11, h_p^2 = .08$.

Examining the experience of Assisted Reproductive Technology

Rating of stressful events in an IVF cycle

Figure 2 depicts participants' rating of events regarding the IVF cycle. Events that were rated as highly stressful or extremely stressful were "waiting to find how many eggs had fertilized" ($M = 3.9, SD = 1.06$), "waiting to find out if pregnant after embryo transfer" ($M = 4.2, SD = 0.87$), "having pregnancy test" ($M = 4.0, SD = 1.15$), and "finding out that the cycle had been unsuccessful" ($M = 3.95, SD = 1.10$).

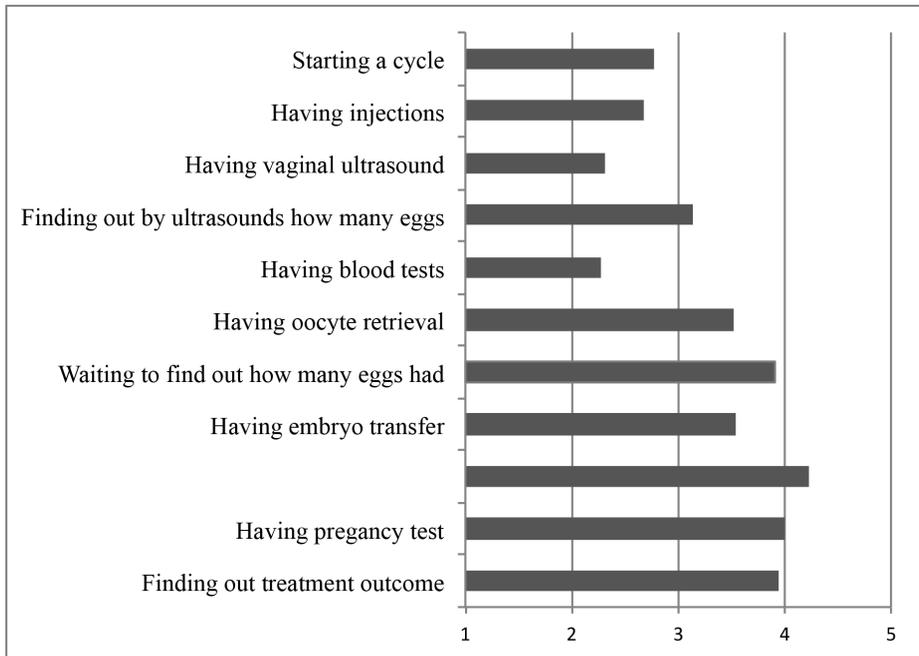


Figure 2. Participants' ratings of stressful events of an IVF cycle. The questionnaire was adapted from the questionnaire by Hammarberg et al. (2001)

Overall Experience of ART treatment one year after

Results clearly indicated that undergoing ART was a positive experience for both successful and unsuccessful couples (see Table 2), although participants who had a successful IVF tended to evaluate it more positively than participants who had a failed IVF cycle ($t = -3.75, p < .001$). Women who failed to get pregnant tended to rate the overall experience of IVF as more positive than their partners ($M = 4.18, SD = 0.60$ vs. $M = 3.27, SD = 1.19, p = .043$). No other differences were found between couple partners. When comparing participants from successful and unsuccessful couples, significant differences were found and they mainly relied on overcoming the experience. Indeed, patients from the unsuccessful group tended to evaluate more negatively (e.g. "Looking back I regret that I had IVF") and disagree to a larger extent, when compared with participants from the successful group, that the infertility experience is in the past ($M = 5.45$ vs. $M = 3.42, p < .001$). That is, the evaluation of the infertility experience and its effect in participants' life is affected by current treatment outcome.

Table 2. Participants' overall experience of IVF

Items	Successful IVF		Unsuccessful IVF		t test	p value
	M	SD	M	DP		
1 Looking back I regret that I had IVF	1.14	0.35	1.45	0.68	2.212	.032
2 I delayed career moves due to IVF	1.23	0.88	1.58	0.92	1.218	.229
3 I'm glad I tried IVF	4.64	0.49	4.16	0.90	-2.469	.017
4 I lost job opportunities due to IVF	1.23	0.53	1.68	1.08	2.011	.050
5 My life was on hold while I tried IVF	2.18	1.10	2.35	1.45	0.472	.639
6 My relationship to my partner suffered due to IVF	1.59	0.96	1.74	0.10	0.551	.584
7 My experience of IVF is in the past and does not cross my mind anymore	4.23	0.81	3.32	1.22	-3.027	.002
8 I wish IVF did not exist	2.00	1.20	1.84	1.19	0.677	.629
9 Overall, the experience of IVF was positive	4.45	0.74	3.42	1.18	-3.928	<.001
10 My life as a whole was negatively affected by having IVF	1.45	0.67	2.19	1.11	2.782	.008
11 I still hope to become pregnant	3.59	1.05	4.42	1.09	2.766	.008
12 Infertility is no longer an issue in my life	3.23	1.03	1.90	1.16	-4.418	<.001
13 I will always be sad that I did not have children	2.50	1.23	3.65	1.08	3.542	.001
14 I am a happier person now that I am no longer involved in IVF	2.41	1.33	2.29	1.21	-.337	.738
15 To have IVF was an ordeal	1.82	.80	2.19	1.11	1.538	.180
16 I had IVF so that would not regret that I had not tried everything	2.09	1.41	2.26	1.26	0.452	.653
Total score	1.92	0.40	2.43	0.54	3.751	<.001

Notes: Items 3, 7, 9, and 12 were reverse coded for calculating total score. Statistical significant effects are in bold type. This questionnaire was adapted from the questionnaire developed by Hammarberg et al. (2001)

Differences in emotional reactivity regarding current situation on ART

Finally, we specifically tested for differences in for Emotional reactivity regarding current situation on ART of participants from the unsuccessful group, i.e., 1) couples that were still trying to get pregnant through ART, and 2) couples who had stopped ART treatments after the failed IVF cycle.

Results showed that only the main effect of group, and not the interaction effect (Group X Gender), was significant. Men and women who were still undergoing ART reported higher anxiety, $F(1,31) = 8.201, p = .007, h_p^2 = 0.20$ and fear, $F(1,33) = 5.297, p = .028, h_p^2 = 0.14$. Marginally significant results found are suggestive of the same pattern, indicating that men and women who are still undergoing ART report higher guilt, $F(1,31) = 3.708, p = 0.063, h_p^2 = 0.10$, surprise, $F(1,31) = 3.957, p = .055, h_p^2 = 0.11$, and sadness $F(1,31) = 3.617, p = .026, h_p^2 = 0.10$.

DISCUSSION

The main aim of the present study were to describe changes on emotional reactivity of infertile couples from ART treatment to one year later and to describe their evaluation of the experience of an ART cycle. For this purpose, we used a couple based analytic approach in a longitudinal design, with both prospective and retrospective assessment. The main finding of the study was that emotional adjustment after an ART cycle was largely influenced by the treatment outcome, that is, successful couples clearly presented better psychosocial adjustment than unsuccessful couples. Nevertheless, in both cases men and women evaluated the ART experience as positive.

The assessment of changes from the ART cycle to one year after indicated that achieving pregnancy did have an impact on emotional reactivity but not on other measures of individual and couple adjustment. Indeed, couples who have achieved pregnancy reported an increase in positive emotionality (e. g. happiness) and a decrease in negative emotionality (sadness and anger), while the nonpregnant group remained stable (although below the presumed fertile group). No group differences were found in emotional distress.

These results are in line with previous research that suggest that emotional reactivity, but not emotional distress, is affect by undergoing ART, during the treatment itself (Moura-Ramos et al., 2010) or six months after treatment (Slade et al., 1997), although contradicting Verhaak, Smeenk, van Minnen et al. (2005) results, which revealed that after 6 months after the last ART cycle, men and women still reported higher anxiety and depression when compared to the pretreatment assess-

ment. Methodological issues, namely the period assessed, may explain some of these differences: While Verhaak, Smeenk, van Minnen et al.'s study assessed pretreatment 4-6 before treatment start, the present day and Slade et al. study assessment occurred during the hormonal stimulation period (8th day and 1st day, respectively).

Regarding quality of life, as in emotional reactivity, couples who had achieved pregnancy reported an increase in the psychological domain scores, while the nonpregnant group reported a decrease. Interesting to note is that men reported the same pattern on the social domain of QoL, but women did not. Although it has been suggested that more men than women keep the infertility a secret (Van Balen & Trimbos-Kempere, 1994), which could have a detrimental effect in their social relations during treatment and after a failed ART cycle, this association remains unclear, needing further investigations in future research.

This study results suggest that failure to achieve pregnancy does not aggravate negative emotional reactivity but they also highlight that there was no recovery from the treatment period, which has been described as a phase of intense negative emotional reactivity (Moura-Ramos et al., 2010). Our results also highlight some differences between couple partners pathway along time, clarifying that changes in emotional reactivity along time are less marked in men, when compared to their partners. Nevertheless, we may also conclude that the patterns of response between couple's partners tend to be similar, as Boivin et al. (1998) has shown.

The retrospective analysis of the experience of ART indicated that in general, for all participants, undergoing an ART cycle was a positive experience and no one regretted it, regardless of its outcome. However, differences were found in both men and women among the couples who achieved and who did not achieved pregnancy regarding overcoming the infertility experience: participants who did not achieve pregnancy more strongly felt that infertility was still an issue in their lives, which is consistent with the results reported by Hammarberg et al. (2001). The evaluation of the stressfulness of the ART cycle events also suggested that the events that were rated as more stressful were not the more intrusive procedures but the ones related with the uncertainty of the outcome. Therefore, it may be that is not the treatment procedures themselves, but the expectations that are associated with it, that affect treatment adjustment, as suggested by Boivin et al. (1998) and found by Hammarberg et al. (2001).

A major strength of the present study was its prospective nature, because it allowed following the same couples along a 12 months period. Another important strength was the consideration of both couple members, allowing for comparison of each partner's scores. The use of different psychosocial wellbeing indicators also allowed for the distinction of pathological and non pathological reactions, which, in our consideration, lead some light in understanding the emotional reaction of infertile couples to an ART cycle. In particular, the assessment of emotional reactivity and

quality of life allowed for the detection of group differences not detected by measures of psychological distress. Despite the aforementioned strengths, important limitations should be considered. The study sample was small, which limits the generalizability of our findings. As power analyses showed that small to medium effects may have been ignored, the results should be interpreted with cautious. In addition, the study did not take into account clinical variables that may have affected couples experience, such as previous failed assisted reproduction treatments.

The results of our study have several implications for research and for clinical practice with infertile couples. Events associated with treatment outcome were rated as more stressful, suggesting that those couples' expectations about the success of treatment can interfere with their emotional adjustment. Health care professionals should therefore develop interventions in order to help patients deal with the anxiety associated with these events. Additionally, negative emotionality during and after treatment should be addressed, to promote a better adjustment to a failed ART cycle and consequently to reduce dropout rates.

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