

Distress and Coping with *In Vitro* Fertilisation (IVF): The Role of Self-Compassion, Parenthood Motivation and Attachment

Abstract

Background: The experience of infertility and assisted reproductive technology (ART) are emotionally distressing for both partners, but particularly for women.

Aims: The current study explored the relationship between self-compassion, motivation for parenthood, relationship attachment and psychological distress in women undergoing in vitro fertilisation (IVF).

Method: A sample of 363 women undergoing IVF responded to a questionnaire based survey. Results: Negative mental health effects seem to be buffered by self-compassion, secure attachment, social support, problem focused and emotion focused coping.

Conclusion: Women who are less likely to blame themselves for failure and are more forgiving of perceived shortcomings, who are more secure in their relationship, who feel supported and are able to use both problem-focused and emotion-focused coping strategies have better mental health. The findings point to potential psychological interventions in terms of stress management, couple counselling, and mindfulness therapy in reducing the psychological distress of IVF.

Keywords: Mindfulness; Motivation for Parenthood; Distress; Coping; In vitro fertilisation

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Introduction

Infertility is a major source of distress for both women and men, with 10-15% of couples world-wide who are trying to conceive being affected [1,2]. In extreme cases it has been linked to psychiatric disorder [3], and even suicide [4]. It is generally invisible to the wider society and couples may feel isolated and unsupported [5,6]. In addition where it is recognised in a community there is potential for couples to be stigmatised [7]. Infertility also affects relationships in that it puts a strain on both partners and leads to choices about taking up assisted reproductive technologies (e.g. in vitro fertilisation – IVF) or adoption [8,9]. Relationships also provide both the source of support which is important in moderating the impact of infertility [10,11], and the source and context for pressures that lead to stress [12]. It has been estimated that at least one-in-seven heterosexual couples in the United Kingdom (UK) experience fertility problems and 1 in 6 seek medical advice often leading to IVF [13].

The decision to seek ART is a major life event and the procedure itself is stressful [14]. Most commonly couples choose in vitro fertilisation (IVF). The evidence suggests that stress levels associated with IVF may impair the intervention and it has been argued that IVF cycles should start with a stress reduction intervention [15]. Research suggests that levels of distress fluctuate across the IVF cycle and tend to peak towards the end in anticipation of the pregnancy test [16-20]. Failure of IVF has

a negative impact on emotions and expectations of success and stress levels in future cycles of IVF [21-23]. Emotional distress is also predicted by pre-IVF cognitions of helplessness and acceptance [23] with women who start with low expectations of success experiencing less distress when treatment fails. The review authors go on to recommend “psychological support should be specifically targeted to help the woman adjust to the possibility of treatment failure and eventual childlessness rather than to help her to cope with the impact of the treatment itself” (p. 34). While it is important to establish realistic expectations, there is arguably very good ground for providing support during treatment [16,17]. Findings in regard to elevated stress levels early in the IVF cycle, particularly at the start, are equivocal [23] and there is some research to suggest that this may be explained via psychological processes [24]. Since IVF offers hope for infertile women, to be finally starting treatment could be argued to provide a respite from the stress or distress of infertility. The latter authors conclude that “active and passive coping, personality characteristics, dependency and self-criticism and intrusiveness, are more important in predicting the variability in psychological distress than infertility-specific concerns” (p. 1471). To be more specific their path model shows that the negative pathway leading to increased distress involves self-criticism and dependency (on others for support) which lead to passive coping strategies. This is interesting in the context of a growing literature on the role of self-compassion in relation to negative events, stress, and distress

[25-28], and the link between self-compassion and mindfulness based interventions [29-31]. Mindfulness interventions have been demonstrated to be effective in stress reduction and management [32].

There seems to be ample evidence that infertility causes distress and that distress levels are increased during IVF at some point. The end of cycle fear of failure is one cause for elevated distress levels but there are arguably other sources. IVF procedures are invasive, time consuming and disruptive [5,14,33]. The process puts additional demands on relationships thereby reducing the support that is necessary to cope with the procedure [34] often leading to the break-up of the relationship [4]. The latter perhaps somewhat explained by gender differences in coping with fertility stress in which men tend to use distancing strategies while women tend to prefer confrontative approaches and support seeking [12]. Furthermore there is some evidence that distress levels associated with IVF may have negative consequences for the success of treatment [35,36], adding fuel to the need to understand the factors which cause distress, particularly those which may inform interventions. Cassidy and Sintrovani [5] suggest that the motives for having a child may be influential and proposed a 6 factor model of parental motivation including, *Continuity* (motivation to carry on the family line), *Nurturance* (intrinsic maternal desire for a child), *Relationship* (motivation to maintain or protect a relationship), *Identity* (motivation to complete the female identity as mother), *Social Pressure* (motivated to meet the demands of relative / friends), and *Materialism* (motivation based on what a child can provide in future such as support). They found that social pressure correlated directly, while nurturance and identity correlated inversely, with distress. The suggestion is that if a woman is more intrinsically motivated (maternal desire for a child) the better she will cope with the stress of IVF and the more she is extrinsically motivated (pressure from family) the less able she will be to cope.

Van den Broeck et al. [24] also identify self-criticism and intrusiveness, a lack of self-compassion, as negatively indicated in relation to distress in IVF. There is also a growing literature on the positive impact of self-compassion in reducing distress [25-29], and an emerging link with successful mindfulness based interventions to reduce stress [30-32]. Peterson, et al. [12] explored gender differences in coping among couples undergoing IVF and found that “women proportionately engaged in a greater degree of confrontative coping, accepting responsibility, seeking social support and escape/avoidance” while men “cope by distancing themselves from the infertility, keeping their feelings to themselves through self-controlling strategies and emphasizing plans to solve the problem of infertility” (p. 2447). The fact that women are more likely to confront the problem and seek social support while men tend to distance themselves and keep their feelings to themselves, risks the breakdown of a supportive relationship which is one of the core variables in coping with stress [10], and may ultimately lead to relationship break down [37]. While there is a wealth of anecdotal evidence that many relationships do not survive the stress of IVF there is limited empirical evidence. However, it is clear that lack of social support between partners is a risk factor for distress during IVF and begs the question if the strength of the relationship could be a protective factor. There is some evidence that anxious and

avoidant attachment is associated with increased distress in IVF couples [38] and attachment style is recognised as a measure of relationship quality [39,40]. The latter authors show secure attachment to be an important protective factor in relationship stability.

From the literature reviewed it would seem that distress levels are important for the process and outcome of IVF and there is an urgent need to understand and try to alleviate stress. Factors related to distress in IVF include; motivation for parenthood, lack of self-compassion, lack of social support, passive coping style and anxious and avoidant attachment. The literature has tended to focus on the factors that generate stress and distress (a deficit approach) and provides strong evidence that it plays a significant role in IVF. The recent growth in positive health psychology allows us to apply a resource-based approach [38,39]. This has not previously been done and we would suggest that it is important to ask if distress has a negative impact on IFV, could the development of psychological resources have a positive effect. In other words we have asked what causes distress and how might it be prevented, rather than what causes positive mental health and how might we build it. In this study the aim was to explore the role of motivation for parenthood, self-compassion, social support, coping style, and attachment in relation to both positive and negative mental health in women undergoing IVF.

Methods

Design

A cross-sectional survey design with questionnaire data collection was used to assess the relationship between motivation for parenthood, self-compassion, social support, coping style, and attachment in relation to both positive and negative mental health in women undergoing IVF.

Participants and Procedure

Following ethical approval participants in an online support area were invited to take part in the study by a member of the group. They were provided with the e-mail address of the researcher and asked to e-mail their agreement if they were willing to take part. The inclusion / exclusion criterion was that they were currently undergoing an IVF cycle. In return they were e-mailed a questionnaire which they could download and complete and return via e-mail. Of the 381 who initially sent e-mail consent, 363 replied with completed questionnaires. Some of the informal comments made in the e-mails support the conclusion that the women were pleased that someone recognised the stressfulness of their situation and supported the need for research.

Measures

Personal details were requested on age, cycle of IVF (i.e. 1st, 2nd), and stage within the cycle (1 = egg production, 2 = egg collection and fertilisation, or 3 = embryo transfer to pregnancy test). This was followed by the following standardised measures [40-42].

The General Health Questionnaire: [43,44] is a widely used measure of psychological distress and is comprised of 12 questions each of which is rated on a four-point scale. At the

time of completing the GHQ-12 the participants were asked to consider how they had been feeling over the past month. In terms of scoring the GHQ-12, there are two methods. Likert scoring assigns a score (0-1-2-3) in response to each of the 12 questions, which makes for a maximum total score of thirty-six. The GHQ method or clinical method, which was used in this study, involves allocating scores of 0 and 1. The first two responses indicate the absence of a symptom and are allocated a 0, while the second two answers indicate the presence of a symptom and are allocated a 1, which makes for a maximum total score of twelve. A reliability coefficient of .78 was calculated in this study. There have been numerous psychometric studies of the GHQ-12 which show that it measures a number of factors but can equally be used as a unified measure [45-47]. There have also been numerous studies demonstrating the reliability and validity of the GHQ12 in a range of social surveys with different ages and cultural groups and all support the construct, discriminant and predictive validity of the measure. For example Makowska, Merecz, Mościcka, and Kolasa, (2002) compared the GHQ-12 and the GHQ-28 on five validity indicators, sensitivity, specificity, overall misclassification rate, and positive and negative predictive values. Both versions of the GHQ performed well but the GHQ-12 performed better on all measures.

The Perceived Social Support Scales (PSS-Fr and PSS-Fa Scales): [48] are two 20-item scales designed to measure perceived levels of social support received from friends and family. Most statements appear on both subscales, but one scale is concerned with family and the other with friends (e.g. 'I rely on my family for emotional support' vs. 'I rely on my friends for emotional support'). The items are rated across a three-point scale 'yes', 'no' and 'don't know'. The measure is comprehensive and designed to reflect a number of forms of support including, emotional, feedback, informational and reciprocity (i.e. provision of support by the individual). In the current study the reliability coefficient values were friends support ($\alpha = .81$), and support from family ($\alpha = .83$).

Self-compassion: Self-compassion was measured using the Self-compassion Scale (Neff, 2003). The Self-compassion Scale is a 26-item self-report inventory and consists of six sub-scales: self-kindness, self-judgment, awareness of common humanity, isolation, mindfulness, and over-identification. Each item was rated on a 5-point scale (1=*strongly disagree* to 5=*strongly agree*). Cronbach Alphas were .94, .94, .87, .89, .92, and .94 for six subscales, respectively.

Coping: We used the Brief COPE [49] which is a widely used 28-item questionnaire and is a short version of the full 60-item version of the COPE [50]. The 28 items assess 14 coping strategies each with two items. Research supports the reliability and validity of the Brief COPE [49]. Participants respond to each item on a 4-point scale with the categories I did not do this at all (0), I did this a little (1), I did this a medium amount (2), and I did this a lot (3).

Different studies have produced differing numbers of second order factors [51,52]. It is recommended that researchers use their own data to test factor solutions and in this study we produced

a 3 factor solution which fits the widely recognised model of problem-focused, emotion-focused and avoidance coping.

Attachment: This was measured using the revised Hazan & Shaver 3-Category Measure [53,54] which measures secure attachment, anxious / ambivalent attachment, and avoidant attachment. Secure attachment has been described as a protective factor in relationship stability [37]. This single item measure allows participants to rate each dimension on a 7 point scale from strongly agree to strongly disagree and has been shown to be reliable [55].

Motivation for Parenthood: This was measured using the Parenthood Motivation Scale (PMS) [5]. This 24 item scale measures 6 factors related to motivation to have a child, *Continuity* (motivation to carry on the family line - $\alpha = .87$), *Nurturance* (intrinsic maternal desire for a child - $\alpha = .76$), *Relationship* (motivation to maintain or protect a relationship - $\alpha = .89$), *Identity* (motivation to complete the female identity as mother - $\alpha = .86$), *Social Pressure* (motivated to meet the demands of relative / friends - $\alpha = .84$), and *Materialism* (motivation based on what a child can provide in future such as support - $\alpha = .69$).

Results

The first stage in analysis focused on distress levels as measured by the GHQ-12 across the stages of IVF (egg production, egg collection and fertilisation, and embryo transfer to pregnancy test) and the cycles (in this case we just had the first and second cycles). The relevant descriptive statistics are in Table 1. The first stage in the analysis was to explore bivariate correlations between the variables with a particular focus on the correlates of positive and negative mental health as shown in Table 1. There is evidence to support the study aims in the pattern of correlations produced. Secure attachment is significantly inversely related to negative mental health and directly related to positive mental health, while both avoidant and anxious attachment have smaller but significant reverse relationships. From the motivation for parenthood variable, social pressure is significantly directly related to negative mental health and inversely related to positive mental health while nurturance has the reverse relationship with both. Self-compassion, problem focused coping and social support are inversely related to negative mental health and directly related to positive mental health. In essence, the pattern of relations suggests that those with secure attachment, who are more motivated by nurturance than social pressure, who are more self-compassionate, use problem focused coping, and have more social support, have more positive mental health. On the other hand those who have less secure attachment and are more motivated by social pressure than nurturance, who are less self-compassionate, less likely to use problem focused coping, and have less social support, have more negative mental health.

To clarify this and consider combined effects hierarchical multiple regressions (HMRA) was used to identify the predictors of positive mental health as per Table 2. Age, stage of current IVF cycle and which IVF cycle, were entered on step 1 and accounted for 8% of the variance in positive mental health. All participants were either in their first ($n=168$) or second ($n=195$) cycle of IVF

and this produced the only significant beta ($\alpha = -.25, p < .001$). A one-way Anova shows that those in the second cycle scored significantly higher on negative mental health ($f(1,361) = 27.008, p < .001$) and significantly lower on positive mental health ($f(1,361) = 34.527, p < .001$) than those in the first cycle. On step 2 friend and family support were added and an additional 11% of variance was explained. The motivation for parenthood dimensions on step 3 added a further 13% of explanatory variance

with nurturance contributing significant positive variance and social pressure, materialism and continuity contributing negatively. The dimensions of self-compassion on step 4 added a further 9% of variance with mindfulness, common humanity and self-kindness adding positive variance and over identified adding negatively.

Table 2: Predictors of Positive Mental Health from HMRA.

Model 1	B	SE B	b	DR2
age	0.015	0.025	0.03	
Stage of Cycle	-0.008	0.005	-0.102	
IVF cycle	-0.609	0.145	-.250***	.08***
Model 2 Friend and Family support added				
age	-0.021	0.022	-0.043	
duration/months	0	0.004	-0.003	
IVFcycle	-0.662	0.127	-.272***	
Family support	0.099	0.043	.103*	
Friend support	0.406	0.04	.461***	.11***
Model 3 Motivation for Parenthood added				
age	-0.028	0.016	-0.057	
duration/months	-0.002	0.003	-0.029	
IVFcycle	-0.238	0.098	-.098*	
Family support	0.15	0.036	.156***	
Friend support	0.156	0.032	.177***	
Continuity	-0.225	0.049	-.208***	
Materialism	-0.123	0.035	-.125***	
Relationship	-0.01	0.047	-0.008	
Identity	0.007	0.042	0.007	
Social pressure	-0.259	0.039	-.288***	
Nurturance	0.366	0.034	.422***	.13***
Model 4 Self-compassion added				
age	-0.007	0.014	-0.014	
duration/months	-0.003	0.003	-0.04	
IVFcycle	-0.096	0.084	-0.039	
Family support	0.092	0.031	.096**	
Friend support	0.105	0.029	.119***	
Continuity	-0.188	0.043	-.173***	
Materialism	-0.177	0.03	-.180***	
Relationship	-0.068	0.042	-0.052	
Identity	0.031	0.039	0.031	
Social pressure	-0.147	0.034	-.163***	

Nurturance	0.298	0.032	.343***	
Self kindness	0.133	0.066	.108*	
Self judgement	0.045	0.047	0.041	
Common humanity	0.126	0.043	.122**	
Isolation	0.081	0.039	.063*	
Mindfulness	0.195	0.04	.215***	
Over identified	-0.151	0.033	-.130***	.09***
Model 5 Attachment Style added				
age	-0.003	0.013	-0.005	
duration/months	-0.003	0.003	-0.039	
IVFcycle	-0.086	0.079	-0.035	
Family support	0.066	0.029	.069*	
Friend support	0.083	0.028	.094**	
Continuity	-0.136	0.041	-.125***	
Materialism	-0.139	0.029	-.141***	
Relationship	-0.074	0.039	-0.057	
Identity	0.001	0.036	0.001	
Social pressure	-0.116	0.032	-.129***	
Nurturance	0.288	0.03	.332***	
Self kindness	0.13	0.062	.105*	
Self judgement	0.058	0.044	0.053	
Common humanity	0.082	0.041	.079*	
Isolation	0.065	0.037	0.051	
Mindfulness	0.161	0.038	.178***	
Over identified	-0.129	0.031	-.111***	
Avoidant attachment	-0.049	0.024	-.057*	
Secure attachment	0.178	0.035	.168***	
Anxious attachment	-0.049	0.024	-.056*	.08***
Model 6 Coping Style added				
age	0.005	0.014	0.01	
duration/months	-0.003	0.003	-0.043	
IVFcycle	0.024	0.083	0.01	
Family support	0.072	0.028	.076**	
Friend support	0.11	0.027	.125***	
Continuity	-0.105	0.04	-.096**	
Materialism	-0.146	0.027	-.149***	
Relationship	-0.067	0.045	-0.052	
Identity	-0.022	0.037	-0.022	
Social pressure	-0.043	0.033	-0.047	
Nurturance	0.24	0.03	.277***	
Self kindness	0.126	0.06	.103*	

Self judgement	0.023	0.043	0.021	
Common humanity	0.048	0.039	0.046	
Isolation	0.065	0.035	0.051	
Mindfulness	0.12	0.037	.132***	
Over identified	-0.086	0.031	-.075**	
Avoidant attachment	-0.065	0.023	-.075**	
Secure attachment	0.133	0.034	.126***	
Anxious attachment	-0.058	0.023	-.066**	
Problem focused	0.267	0.045	.227***	
Emotion focused	0.076	0.04	0.058	
Avoidance coping	-0.082	0.04	-.066*	.06***
Total R2				.55***
* p<.05 **p<.01 ***p<.001				

Step 6 added the dimensions of attachment and accounted for a further 8% of variance with secure attachment contributing positively and avoidant and anxious attachment making a negative contribution. The final step added the dimensions of coping contributing a further 6% with problem focused coping making a significant positive contribution.

Discussion

The data from this study show that women undergoing IVF do experience more negative and less positive mental health. This effect is even more pronounced in the second cycle probably reflecting the depressing effect of having failed in the first cycle. The pattern of correlations between motivation for parenthood and mental health corresponds with previous findings [5] indicating that those who are more intrinsically motivated (in terms of nurturance motivation) experience more positive and less negative mental health. However, women whose motivation is externally driven (e.g. via social pressure) experience the reverse in terms of mental health. The negative mental health effects seem to be buffered by self-compassion, secure attachment, social support, problem focused and emotion focused coping. These same variables seem to bolster positive mental health. What this means is that women who are less likely to blame themselves for failure and are more forgiving of perceived shortcomings, who are more secure in their relationship, who feel supported and are able to use both problem-focused and emotion-focused coping strategies have better mental health. This is of special importance in the context of IVF, since it is a stressful and invasive process, which has a high prevalence of failure, which is potentially damaging to relationships, and carries with it a sense of potential blame for one or other partner because of the initial infertility.

Clearly this is a cross-sectional study with all its inherent limitations. However the relatively large sample and the range of measures provide useful information in terms of potential interventions. Based on this research and other previous research [5] the first recommendation is that some initial counselling should be undertaken to identify the true motivation for wanting a child. Opening up such discourse between couples could serve

to be protective in enhancing interpersonal understanding and support. In addition the early counselling might help to identify potential relationship difficulties and prevent later break down. In fact, part of such a process could empower partners to be more open about their emotions so that they can share the emotional load inevitably involved. Finally, it is widely recognised in the literature that only a small part of the failure of IVF can be explained by biological or medical causes, and that psychosocial stress must play a major part [5]. It therefore follows that reducing or managing stress should impact on success rates. The identification of self-compassion and mindfulness as potential factors points to a potential intervention which must be considered, that is Mindfulness Based Stress Reduction (MBSR) which has been shown to be effective in a range of conditions [32]. There is also some evidence that psychological interventions can increase pregnancy rates in IVF [56] though MBSR has not been tested.

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