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General Infertility Review

Psychogenic Infertility—Myths and Facts[1]

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***Purpose*:** The hypothesis of this review is that the role of psychological factors as the sole cause of infertility is generally overrated.
***Methods*:** A review is given of studies concerning the influence of psychological factors on the development of infertility.
***Result*:** A prevalence of psychogenic infertility of 10–15 per cent must be discussed critically. A value of approximately 5 per cent is more realistic. Equating unexplained infertility with psychogenic infertility is not justified. A definition of psychogenic infertility according to the German guidelines *Psychosomatics in Reproductive Medicine* is presented. Spontaneous pregnancies following adoption or the decision to remain childless are the absolute exception. The association of stress and infertility in humans is still unclear. For many women the effect of infertility and notably of medical therapy is a considerable emotional stress. This may make psychosocial counseling necessary in certain cases.
***Conclusions*:** An exclusive psychological/psychodynamical point of view on the complexity of infertility is as inadequate as a strictly somatic point of view. Infertility should always be treated as a psychosomatic entirety.

KEY WORDS: Emotional distress; psychogenic infertility; psychosocial factors; spontaneous pregnancies; unexplained infertility.

INTRODUCTION

In psychosomatic medicine, there is still a controversy if psychological factors can cause infertility or if only infertility triggers distress (1,2). Notably, for couples with medically unexplained (idiopathic) infertility it was assumed in the past, that individual or couple psychopathology played an important role in the etiology and persistence of infertility (3,4). The assumption of a "psychological blockade" in connection with infertility is still widely spread in lay press and even in special handbooks on infertility. But the validity of myths and stereotypes does not increase with permanent reiteration. The aim of this review is a critical discussion of the concept of "psychogenic infertility" against the background of the advanced diagnostic possibilities in reproductive medicine and the results of systematic studies rather than anecdotal reports. The hypothesis of this review is that the role of psychological factors as a sole cause of infertility is generally overrated. The issues to be adressed are the development of the concept of psychogenic infertility, the differentiation between unexplained and psychogenic infertiltity, and the evaluation of systematic studies on this subject. Further on, a definition of psychogenic infertility and an estimation of its prevalence will be presented. The occurance of pregnancies after adoption or in the diagnostic phase of reproductive medicine and the influence of distress on fertility disorders will be evaluated.

History of the "Psychogenic Infertility Model"

Initially, psychosomatic research on involuntary childlessness concentrated more on the potential psychic causes of fertility disorders ("psychogenic infertility model," 5,6,7, or "full psychogenic infertility

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model," 8) than on their psychic consequences. Beginning in the 1950s, a number of authors inquired into unconscious conflicts as a possible factor affecting or preventing pregnancy, notably in women with unexplained infertility. Historical examples are the work of Deutsch (9), Benedek (10), Jacobson (11), and Langer (12), more recent work of a similar persuasion comes from Christie (13) Allison (14), and Bydlowski (15). The conclusion drawn from detailed case descriptions of psychoanalytic therapy sessions with involuntary childless women was that the unfulfilled desire for a child could be an example for the expression of an unconscious conflict in connection with the assumption of the mother role: "A latent psychological conflict always underlies complaints of infertility" (16, p. 139). A criticism that needs to be levelled at these studies is that they used observations drawn from individual cases or small numbers of patients to make extremely large statements strongly geared to a psychopathological perspective which was predominant at that time (and still is in some cases, e.g., 17). Notably in connection with infertile women (but also men, 18), doubt was cast in these studies on the quality, seriousness, or both of the desire for a child. This view is inadequate on a number of counts and certainly cannot be sustained in such an undifferentiated form. First of all, it equates unexplained infertility with psychogenic infertility (infertility caused solely by psychological factors). This is incorrect, as the term "unexplained infertility" also encompasses inadequately diagnosed organic disorders (19). The equation of these two diagnoses stems from a period in which about 50% of all causes of infertility defied diagnosis (20). Today, the incidence of unexplained infertility is thought to be 5–15% on average (27% at the most, 21,22–32). Incidence depends on the selection and age of the study population and, to some extent, on infertility evaluations (33,34,25,35–38). Second, in the initial stages of research on this phenomenon, the studies focused exclusively on women ("male-dominated, women-centered research," 39, pp. 733–734), although fertility disorders occur in both partners and medical causes are distributed more or less equally across men and women.

The desire for a child is usually ambivalent. Alongside positive notions about pregnancy, birth, and parenthood, there is almost always a degree of anxiety about the changes they involve, many of which are unpredictable in scope. This anxiety encompasses uncertainty about roles (in pregnancy, childbirth, parents) as well as about the quality of the couple's relationship, which is bound to be affected by the arrival of a child. Clearly, classifying the desire for a child into categories like "healthy" as opposed to "fixated" and "right" or "normal" as opposed to "wrong" or "conflictual" is a highly dubious undertaking, as was done in one older study where a "normal" wish for a child could be found in only 25% of the infertile couples investigated (3).

In their recent critical review of psychoanalysis and infertility the psychoanalysts Apfel and Keylor summarized "Themes, believed to be causal, emerging from the psychoanalytic treatment of infertile women have included: unconscious fears and confict over sex and pregnancy, rejection of feminine/maternal identification and one's reproductive destiny, (. . .). However, it must be noted that these themes are also very familiar and present in analyses of women who have no difficulty conceiving, whether accidentally or planfully. Still other women with very serious psychic problems conceive with ease" (40, p. 86).

Unexplained Infertility—Psychogenic Infertility

As van Balen (8) pointed out, during the 1980s research developed from a full psychogenic model to a model concerning the psychogenic origins of unexplained infertility. Couples with unexplained infertility as a subgroup of infertile couples had a special relevance from a psychodiagnostical point of view. Notably, the psychodynamically derived concepts pertaining to fertility disorders had been largely developed with reference to couples from this subgroup. The comparison between couples with unexplained infertility and couples from other diagnostic groups was inconclusive. Some studies were unable to identify any differences between the groups (41–43). Others indicated that women with medically unexplained infertility were more anxious and dissatisfied with themselves and their lifestyle than women in the other groups but also reported greater marital satisfaction and greater satisfaction in other areas of life than controls (44–46). Comparing 16 organically infertile women and 14 women with unexplained infertility, one study (47) found above-average neuroticism scores for the group with unexplained infertility. In another study (48), 39 couples with unexplained infertility were judged by the author to be "anxious and depressive persons" typically displaying a "symbiotic and clinging" relational pattern. Studies with greater sample sizes (49,30), using the same instruments, were unable to replicate these findings.

In summary, the literature contains no well-founded indications of any relevant psychological

differences between couples with unexplained infertility and organically infertile couples when the studies were conducted systematically and encompassed larger sample sizes.

Psychological Aspects of Infertility from the Viewpoint of Systematic Studies

In psychosomatic medicine, there has been a shift to evidence-based medicine in the last decade. The only genuinely reliable finding produced so far by systematic research on psychosocial aspects involved in fertility disorders (comprehensive surveys are 1,50,6,51–53) is that in most studies infertile women display above-average depressive tendencies and anxiety and also report a higher number of physical complaints, but the deviations are in most cases not clinically significant. There are no prospective studies on personality characteristics in women and men prior to and subsequent to the onset of the desire for a child. Accordingly, it is impossible to say whether such emotional disorders are partly responsible for infertility or whether they are the consequence of the inability to have a child. It does, however, appear plausible to interpret these findings as a consequence of medical diagnosis, therapy, or both ("psychological sequelae model," 54, or "psychological consequences model," 6,7,8), as notably the depressive tendencies in women increase with the duration of infertility therapy (55). Also, it is frequently the case that even in the continued absence of pregnancy there is an improvement in the general mental well-being of these women following psychological counseling or psychotherapy (56,57). The findings in connection with involuntarily childless men are largely unremarkable. If any, only men with an andrological factor describe themselves as more anxious and uncertain in comparison with the norm (58). In summary, it does not appear that slight or even moderately increased levels of stress are serious enough to bring about infertility (8). As such, the findings of systematic studies give support to the "psychological consequences model" (e.g., infertility causes psychological distress) and not to the "psychogenic model" (e.g., psychic distress causes infertility).

In her recent overview (57), Boivin indicates that systematic evaluation of intervention effects (with control group and follow-up) only took place in 25 out of 380 studies on psychological infertility counseling. Most of the systematically studied psychological interventions were relaxation therapies, psychodynamical psychotherapies, and behavioural therapies. Boivin concluded that only interventions geared to a behavioural medicine approach and relaxation techniques appear to bring about an increase in the pregnancy rate, an example being the mind/body program described by Domar *et al.* (59,60). There are, however, insufficient systematic studies indicating a rise in pregnancy rates following psychological interventions. Although psychoanalytical research added a lot to our understanding of infertility, and the psychogenic model is built on systematic and theoretical grounds, psychoanalytical treatment in infertility has not been evaluated systematically up to now. Thus the "psychogenic infertility model" has yet to receive scientific confirmation. However, it does not seem to be justifiable to abandon the model of psychogenic completely as Apfel and Keylor demand "It is time to retire the term 'psychogenic infertility' as simplistic and anachronistic" (40, p. 100).

Guidelines for Counseling in Infertility and Psychogenic Infertility

The "Guidelines for Counselling in Infertility" (61) by the ESHRE Special Interest group "Psychology and Counselling" only refer to psychogenic infertility at two points: "Counsellors should point out that unexplained infertility is not in most cases equivalent to psychogenic infertility," (61, p. 25) and (under the heading "Sexual Problems Causing Infertility"): "For a small percentage of infertile patients, sexual problems are the primary cause of infertility and can be masquerading as cases of infertility: e.g., infrequent intercourse, vaginismus, dyspareunia, lack of sexual desire, erectile dysfunctions. These sexual problems may be of organic and/or psychological origin." (61, p. 27). Psychogenic infertility is given more detailed attention in the German guidelines *Psychosomatics in Reproductive Medicine* (62). These guidelines argue that it is only legitimate to speak of psychological factors as a partial cause of fertility disorders if:

a) despite the desire for a child and the corresponding counseling from a doctor the couple continue to engage in behaviour detrimental to fertility (e.g., diet, notably over- and underweight; high-power competitive sport; alcohol, nicotine, tablet abuse; extreme stress, especially at work),
b) a couple does not have sexual intercourse on fertile days or one (or both) of them have a nonorganic sexual dysfunction,

c) a couple consciously consents to a medically indicated infertility therapy but then fails to go through with it.

So far, we have no systematic studies assessing the prevalence of psychogenic infertility in line with this definition. The percentage of 5–10, as often stated in the literature, is either not proved (63) or based on *one* sole personal communication (64,65,47,66). A few systematic studies and clinical observations suggest, however, that the ratio is likely to be 5% (67–69).

It is well known from interviews and psychological counseling that for a large portion of infertile couples (up to 60%) sexuality is negatively affected over the course of medical treatment, especially when sexual intercourse has to be timed or during in vitro fertilization (IVF,70,71–75). The validity of the results concerning sexual satisfaction and frequency of sexual intercourse is clearly restricted by answering in line with social desirability—not only in studies with infertile couples. For that reason it is unknown exactly how many infertile couples do *not* have sexual intercourse in the fertile period. In one study (76), systematic diary records showed that this was the case in 18 of 37 couples investigated.

Conception Following Adoption

Although it is almost universally accepted in the scientific community that the rates of conception are no higher after adopting a child, this myth of "conception following adoption" is apparently still a never-ending and widespread story in the lay press, in infertility handbooks, and among a considerable numbers of gynecologists. In counseling encounters one frequently hears of the spontaneous pregnancy after a couple has inwardly said farewell to the notion of having a biological offspring and either adopted a child or became foster parents. Contrary to this popular myth, systematic studies however fail to demonstrate any connection between adoption and pregnancy (42 and 77 for overviews, see 63). Those that encompass a large number of cases show that the pregnancy rate among adoptive parents is certainly no higher than that of other couples after fertility therapy. In the study by Arronet *et al.* (78), the incidence of pregnancy was 20% of 133 couples who adopted a child, whereas the 400 couples in the control group who did not adopt experienced a pregnancy rate of 66%. Of the 204 couples in our study, 32 had given up their desire for a child (79). Among these 32 couples only one woman with a year-long history of secondary infertility became pregnant again spontaneously after taking in a foster child. Spontaneus pregnancies after adoption follow similar rules like spontaneus remissions in cancer. Many people hope for it, but its probability is extremely small. This probability is clearly lower than the probability of pregnancy following treatment with reproductive medicine (80). In psychodynamic terms, the resolution "If I want a child I must stop wanting a child" can be seen as a—paradoxical—attempt to achieve a positive influence on the ultimately uncontrollable situation of a fertility disorder by consciously refraining from any attempt to exert control over it. As advice from outsiders (say, relatives) it is an indication of helplessness in dealing with a couple that is involuntarily childless. But it may also indicate the alarm felt by those persons at the intensity of the desire for a child and the attendant pressure the couple places on themselves.

Conception in the Diagnostic Phase of Reproductive Medicine

Up to a third of all pregnancies in this context occur independently of actual treatment with reproductive medicine, i.e., during the diagnostic phase or during the waiting period (21,81–83,27,84–86). One possible explanation is that some couples embarking on such treatment are able to pass on responsibility for the fulfilment of their desire for a child to the doctors at the institution they are consulting. This may represent a reduction of pressure and distress on the couple and subsequently improve chances of pregnancy by alterations in the neuroendocrinologic characteristics of the infertile couples (see following section). For many other couples a definitive diagnosis (e.g., male infertility) may increase the subjective distress (87). As a result it cannot be assumed that there will be an increase in psychological well-being due to stress reduction as a result of receiving competent care. The occurrence of pregnancies during the diagnostic phase or during the waiting period may be also ascribed to the "time" factor, for example chance of success increases over time ("therapy of waiting," 36), because 15–60% of untreated women with unexplained infertility conceive within 1 year (88).

Psychic Distress and Infertility

Since the beginning of the 1980s, a large number of studies have been carried out on the relationship between stress and infertility, most of them investigating couples undergoing in vitro fertilization.

But the impact of psychic distress on infertility is still a controversial issue (6,51). It is incontestably the case that for many patients—notably women—reproductive medicine treatment represents a major emotional strain (7) and also interferes with their capacity for a fulfilling sex life (89). Some 15–20% of all couples experience reproductive medicine as so stressful that they require psychological counseling (61). The emotional ups and downs experienced during such treatment ("emotional roller coaster," 90) become more marked in the first years of unsuccessful therapy (55). For couples whose coping resources are inadequate, depleted, or both, counsellors must make efforts to contact such patients individually to discuss the potential benefits of using counseling, participation in support groups or both. Psychosocial counseling should be offered at all stages of infertility treatment and not only when treatment fails (91). Instructions for psychosocial counseling are given in the *Guidelines for Counselling in Infertility* (61), in Burns and Covington (92) and in Strauß (93).

There are strong conjectures about the effect of neuroendocrinological (e.g., via prolactin and cortisol) or immunological mechanisms (e.g., cervical antisperm antibodies). However, there has been controversy about the application of animal models (94,95) to access the influence of mental distress on fertility (96,97). Two examples of the "cyclical model" (8) and the influence of emotional states on menstrual and reproductive functions include pseudocyesis (98) and stress-induced amenorrhea (99). The results of retrospective studies on stress and fertility may be invalid, because retrospective and prospective stress ratings differ (100), and women still not pregnant might attribute their infertility to the "stress" factor as an attempt to achieve "interpretative control" (101). Recent systematic prospective studies (for an overview see Klonoff-Cohen, 102) have shown relationships between stress and fertility rates in general, but this relationship seems to be complex, not linear (103). In these studies, stress was usually defined as elevated scores on questionnaires measuring anxiety, depression, or marital dissatisfaction. Some studies also had an experimental design. Demyttenaire and coworkers demonstrated that women with high anticipatory state-anxiety levels and high anticipatory cortisol levels during the follicular phase of stimulated cycles had lower pregnancy rates (104). They also showed that with high depressive scores, maladaptive coping and avoidance behavior, pregnancy chances decreased. Merari and colleagues found significant negative correlations between prolactin and cortisol and state anxiety and depression scores for the women in the study who conceived, but no correlation for those who did not (105). Lindheim *et al.* (66) found increased cortisol levels and higher blood pressure in controls compared to women in IVF, whereas Facchinetti and his group (106) pointed out the elevated vulnerability to stress in women failing to get pregnant, who showed higher systolic blood pressure and a higher heart rate under stress test conditions compared to successful women. The unsuccessful women showed high amounts of activated T cells in the peripheral blood under stress conditions (107). For their male partners a higher heart rate under stress test conditions was a predictor for treatment failure (108). But other studies on mood states and the excretion of stress-related hormones failed to detect any major correlations (109–111).

The findings regarding the influence of *anxiety* are inconsistent. In the study by Sanders and Bruce (112), for instance, low levels of trait anxiety were associated with higher pregnancy rates, but women in the highest quartile for anxiety also experienced increased rates of pregnancy. In one study, conceiving women showed a significantly higher trait and state anxiety compared to women who did not conceive (113). Many studies did not find any differences in anxiety scores between pregnant and nonpregnant women (114–118), or the differences were not statistically significant (119–121,111) or occurred at different stages of IVF treatment (102,122). Higher state-anxiety for nonpregnant women was found in some studies (123,124,105,106). The results concerning the impact of *depression* on the outcome of IVF treatment are more consistent. Most studies showed elevated scores on the depression scales for women failing to get pregnant (125,104,126,127,122) and an increase in depression scores over the course of IVF treatment (114,128,121,127). In some studies no differences were found (105,112,118). Stoléru and colleagues (117) found that the women's perception of *marital dissatisfaction* was higher in the unsuccessful group, but most studies did not confirm this (129,121,118,122). The few studies on male partners of women getting pregnant produced inconsistent results. One study found higher anxiety and depression in the male partners of unsuccessful women (121), whereas another study showed higher depression scores in men whose female partners succeeded in getting pregnant (130). There are much more convincing indications of distress-induced impairment of the spermiogram in men (131,48,132,133). Two studies found a significant deterioration in semen quality when comparing samples produced some months

before IVF with samples produced at the time of IVF (134,135). But other studies showed positive correlations between stress levels and semen quality (136–138).

Summarizing, these results indicate that depression is very likely, anxiety is less likely, and marital dissatisfaction in infertile women is unlikely to negatively affect the outcome of reproductive medicine treatment. Studies on their male partners provide no clearcut picture of these variables except that high stress levels correlate negatively with spermiogram quality. Many studies on the impact of stress on infertility still have substantial shortcomings from a methodological point of view (for criticism see 42,39,139,140,2,8). Infertile persons were seen as one homogeneous group, so that the influence of different diagnoses and different infertility histories were not taken into account. The operational definition of stress has been very variable and not all studies differentiated acute and chronic stress as well as different coping styles. In several studies the amount of variables collected was too great, so that some results may have occurred by chance and therefore were not generalizable. The issues posed by answering in line with social desirability and by attrition were not always adequately considered.

Despite the recent psychophysiological research on distress and infertility, we still agree with Brkovich and Fisher that "forty years of research have been unable to determine whether psychological distress may be a cause of infertility or is solely a reactive effect of living with infertility" (51, pp. 226–227). Until the methodological problems (the lack of systematically controlled studies and an overemphasis on correlational studies) are solved we cannot definitively elucidate how stress and the reproductive system are connected.

DISCUSSION

Present scientific knowledge suggests that couples with an unfulfilled desire for a child do not display psychological disorders any more frequently than couples without fertility disorders. This applies equally to couples with medically unexplained infertility, couples with a long-term unfulfilled desire for children, and children conceived following reproductive medicine therapy and their parents (with the exception of families with higher-degree multiple births).

In a small number of cases psychological factors are indeed the sole cause for fertility disorders. These cases need to be diagnosed at an early stage so that the patients involved can be spared the time-consuming distress and financial expense of reproductive treatment. Substantially more marked is the effect of fertility disorders and in particular of medical treatment on the psychological situation of involuntarily childless couples. The distress induced by the treatment finds its expression notably in an increase of depressive tendencies and anxiety in many women involved. In certain cases this may make psychosocial counseling necessary for them. Psychosocial counseling should be available at all stages of medical therapy.

In lay etiology, the influence of psychological factors on infertility disorders is still generally overrated. There is definitively no scientific evidence for a "fixated" desire for a child or a specific relationship pattern of the infertile couple being responsible for infertility, nor is there any such evidence that giving up the desire for a child helps to increase the rate of conception. Recent studies on the linkage between psychological stress and physiological mechanisms have indicated correlations between distress and reproductive restraints. However, there are as yet no convincing systematic studies covering a substantial number of cases that provide evidence of distress as the sole cause of infertility. Equating unexplained infertility with psychogenic infertility is not only unjustified, it is actively counterproductive because it may induce feelings of shame and guilt especially in the infertile women ("putting the blame on the victim," cf. 5) and may increase their vulnerability for unscientific treatment approaches (cf. 141). A rash and global psychologization of infertility masks the cases in which psychotherapy can effectively help to solve the fertility problem. The statement made by Decker 30 years ago has lost none of its validity: "In fact, a false psychological diagnosis may exaggerate a modest reaction of frustration into a feeling of sexual and feminine inferiority that may result in demonstrable changes in the reproductive cycle" (142, p. 175). Or, as stated in a more recent publication: "Indeed, continuing psychogenic diagnosis of infertility could be considered a source of "iatrogenic" stress in and of itself" (8, p. 90). Summarizing we can say that in most cases psychogenic infertility can be assigned to myths rather than to facts, and that we need more prospective and controlled studies on the effects of psychological stress on fertility in women and men.

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