Achieving pregnancy depends not only on biology but also on numerous psychological and social factors. Cognitive, emotional and social processes can hinder the project to have a child by affecting, for example, sexuality, treatment motivation or the effectiveness of stimulation regimens in in vitro fertilisation (IVF). The periconceptional consultation provides an excellent opportunity to identify such issues. The aim of the present chapter is to describe psychosocial issues that may interfere with the project to have a child among those trying to conceive naturally and/or with treatment as well as how these issues can be addressed in the context of a periconceptional consultation.

Parenting motivation and ambivalence

Parenting motivation and need for parenthood are important to consider in periconceptional consultations with couples trying to conceive because individual and couple ambivalence about the parenting project predict pregnancy and time-to-pregnancy. The experience of parenthood is central to individual identity and the life plan of most people in most societies and many psychosocial factors contribute to the decision to actively start trying to have children. People start on the project to have a child when the perceived benefits of having children begin to outweigh the perceived disadvantages of doing so. Many positive reasons motivate efforts to become a parent (e.g. pass on the family name, give and receive love, marital harmony, give life meaning) but having children can also interfere with the desire and freedom to focus on other life pursuits (e.g. career, humanitarian work) that would be at odds with parental responsibilities or their consequences (e.g. financial costs, lack of time) and these may influence fertility decision-making. Even if the individual or couple has strong motivation to have a child other demographic, social and lifestyle factors may create ambivalence about the project and intervene to postpone the start of childbearing attempts.

Individual and couple ambivalence about the parenting project predict both pregnancy and time-to-pregnancy. In a prospective study among French couples trying to conceive naturally it was found that ambivalence about childbearing, as reflected in factors related to poor integration of the desire for a child into the sexual relationship (men) as well as frequent fears or concerns about having a child (men and women), was related to reduced fertility 12 and 18 months later and, in those who did eventually achieve pregnancy, longer time to pregnancy. Ambivalence might reduce conception by making couples avoid sexual intercourse or engage in behaviours that would make conception more difficult, for example, scheduling business trips during the fertile period or continuing with lifestyle factors detrimental to conception (e.g. smoking, drinking alcohol). Ambivalence could also jeopardise diagnostic procedures and treatment if a fertility problem was eventually discovered. In further analyses of the French data it was found that women who were ambivalent were less likely to have completed all the medical procedures required to obtain a diagnosis at the 18-month follow-up. This finding is in line with other work showing that couples who drop out of infertility diagnostic testing do so because of a lower motivation to conceive. Furthermore, in one German study couples where the desire to have a child was mainly motivated by the desire to keep ‘marital harmony’ were less likely to persist with fertility treatment and to have conceived in 12 months than were couples where there was a greater desire for parenthood per se.

It is important to make ambivalence conscious in the periconceptional consultation so that individuals and/or couples can address its cause and prevent negative effects on time to pregnancy. Although couples need not be united in their reasons for having a child, the findings make clear that the project to become parents will be much more successful if both are united in believing that the present time is, on balance of the positives and negatives of parenthood, a good time to start trying for a family. It would be impossible to list here all the causes of ambivalence about having children but the main issues factored into the decision in transition to parenthood studies concern age, career development, economic stability and financial cost of raising a child, physical effort and loss of leisure time. As noted previously marital conflict may also be a source of ambivalence and, if uncovered, couples should be
referred for appropriate support. Couples may need to address and resolve sources of ambivalence before fully engaging in the project to have a child.

Sexual issues

The success of natural attempts to conceive and some treatments depend on sexual intercourse taking place during the fertile period and therefore sexuality is a legitimate area of enquiry in the periconceptional consultation. Sexual health is considered the physical and emotional state of well-being that enables sexual enjoyment and acting on sexual feelings, whereas sexual dysfunction involves any impairment or disturbance in one or more of the phases of the sexual response cycle (desire, arousal, orgasm and satisfaction). Approximately 40–45% of adult women and 20–30% of adult men experience a sexual problem at some point and negative life events that exert pressure on the individual and/or couple (e.g. occupational stressors, illness, marital conflict) can negatively impact on efforts to conceive by affecting sexual life. Sexual dysfunction as an aetiological factor contributes to a very small percentage of cases of infertility though in some cultures couples may prefer to mask sexual dysfunctions as a cause of their fertility problem. Where possible such issues should be addressed because they can undermine efforts to conceive. Unfortunately, as these individuals/couples are outside the medical system, interventions are more a matter of educational public health campaigns than individual intervention. Nevertheless, it is important to know what factors reduce the likelihood of seeking medical advice as such factors may also influence movement between categories of help (e.g. going from diagnostic investigation to treatment, or between different forms of treatment).

First, and perhaps most obviously, people often do not realise they have a fertility problem. In a recent study we found that nearly 20% of women sampled...
The hierarchical-compensatory model of seeking support/advice proposes that professionals are able to offer many couples in this respect as it provides them with information about the conception process and fertility issues, including suggestions on what couples trying to conceive should adapt in their diet and lifestyle to improve fertility. If changing lifestyle habits does not resolve the problem then people may try to resolve it first by self-diagnosis and then self-treatment and this may follow and/or co-occur with lifestyle adaptations. There are a number of over the counter testing kits (e.g. Fertell, Ovukit) that provide information about ovarian reserve and ovulation in women, and/or motility and volume of sperm in men. Although people cannot self-medicate there is now increasing use of complementary and alternative medicines (CAM) to address a variety of health problems and about 30–60% of infertility patients use CAMs. In other health contexts a poorer prognosis and more severe disorders are key motivating factors for CAM use and the lack of success conceiving may similarly cause people to use CAMs in order to self-treat and resolve perceived fertility problems. Although there is a persuasive belief that CAMs are benign their use can delay seeking more effective intervention.

A second factor inhibiting seeking medical advice is lack of knowledge about the effectiveness of treatment and/or negative portrayal of infertility treatment in the media. Steinbrook found that 75% of respondents polled relied on media coverage for medical information to aid their decision-making. The media offers important opportunities for large-scale educational campaigns informing the public about important medical issues; however, differences in the quality and presentation of data can undermine and misrepresent valuable information. With regard to infertility, the descriptions of “extreme” rather than “normal” cases often cited in the mass media may influence decision-making in a negative way. Research has demonstrated that people willing to undergo fertility medical interventions had more faith in and less anxiety about medical interventions and more convinced that medical interventions could help them achieve their parenthood goal than women who did not seek medical interventions.

A final factor that may delay seeking medical advice is that getting timely advice can be at odds with the instinctive way people seek help when they need help. The hierarchical-compensatory model of seeking support/advice proposes that professionals are consulted only when individuals cannot sort the problem out on their own or find help amongst their own network of family and friends. Accordingly people will likely first try to resolve a suspected fertility problem by first making behavioural changes and/or taking up solutions within their control. Couples may start looking at their lifestyle habits and modify those that are perceived to be problematic as this is an area in their life they can readily control. Indeed the internet is a valuable tool to many couples in this respect as it provides

**Treatment burden**

The majority of couples (69.4%) who initiate treatment will achieve their goal of parenthood with about 3.7 treatments within 5 years. Given such odds the main psychosocial considerations during the treatment process will be to reduce the strain of fertility treatment and help people stay in treatment long enough to get pregnant. There are four well-established findings concerning reactions to fertility treatment and knowing these can help practitioners ease the burden of treatment. First, reactions (emotional, physical and social) to fertility treatment vary according to the practical demands and psychosocial challenges of each stage of treatment. For example, fatigue is highest when people attend clinic for scans or blood tests; side-effects (e.g. breast tenderness) highest when fertility drugs exert their greatest influence; stress reactions (e.g. anxiety, tension) highest when
there is possibility of threatening test results (any eggs? any embryos? pregnant?) and so on.\textsuperscript{49} Second, unsuccessful treatment is associated with an acute period of depression, elevated anxiety, anger and frustration, and a variety of other reactions, including suicidal thoughts that can persist for more than 5 weeks in about 20% of patients\textsuperscript{46} and that the intensity of negative emotions for a cancelled IVF cycle (e.g. poor ovarian response, failed fertilisation) is as great as a negative pregnancy test.\textsuperscript{47} Third, results converge to show that the main difference in reactions between men and women is in intensity of reactions to IVF rather than in kind since men and women have a similar pattern of reactions.\textsuperscript{48} Finally, despite the considerable emotions experienced in IVF, 80% of women report that participation in the IVF programme did bring some benefits, especially with regard to satisfaction that they had tried all medical options available\textsuperscript{49} and greater closeness to their spouse.\textsuperscript{50} Although other fertility treatments (e.g. insemination, ovulation induction) will differ in side-effects, emotional reactions would be expected to be similar.

The predictability in emotional responses to fertility treatment can be used to better prepare patients for what they can expect during treatment. Preparatory coping information has received considerable attention in areas as diverse as radiation therapy, cardiac surgery and dental check-ups, and has generally been found to be effective in reducing patient distress (for reviews see Ludwick-Rosenthal and Neufeld,\textsuperscript{51} Suls and Wan\textsuperscript{52}) because it helps patients rehearse mentally how they will cope with emotional and physical effects of treatment,\textsuperscript{53} provides patients with accurate expectations for the future thereby reducing the unpredictability of the event\textsuperscript{54} and finally provides a desensitising experience that will reduce patients’ conditioned fear of medical procedures or their outcome.\textsuperscript{55} Laffont and Edelmann\textsuperscript{56} also found that patients ranked a pre-treatment booklet about the psychological aspects of IVF among the most important interventions they could have received to ease the strains of undergoing IVF treatment. Preparatory information would, thus, seem to be an ideal intervention for IVF patients who face considerable uncertainty about the medical procedures to be used and the reactions they may have during the treatment. Tuil et al\textsuperscript{57} recently demonstrated that access to personal medical records, especially an IVF day planner that gave a personalised timetable of treatment steps, was rated amongst the most useful aspects of an internet intervention, above even email communication with staff. The periconceptional consultation would be an ideal time to provide patients with preparatory coping interventions to aim to reduce the burden of forthcoming treatments.

**Stress and treatment outcome**

Stress is increasingly viewed as having a negative effect on fertility. Stress can be defined in numerous ways, as a stimulus (e.g. bereavement, high workload), response to such events (e.g. anxiety, tension, physiological reactivity) or the dynamic relation between stressor and response whereby events that exceed individual abilities or resources to cope produce emotional, cognitive and physiological stress responses that can compromise health.\textsuperscript{57} There is now converging evidence that stress plays a part in the process of conception though the precise critical threshold for such effects and the factors that moderate this psychobiological relationship are not yet known. For example, in healthy women trying to conceive naturally, negative affect (e.g. anxiety, depression) and/or negative personality traits have been associated with longer cycle lengths,\textsuperscript{58} ovulatory disturbance\textsuperscript{59} and reduced conception.\textsuperscript{60}

There is also converging evidence that negative psychological traits and mood states contribute to fertility treatment failure. These effects have been found mainly in women trying to conceive with IVF\textsuperscript{61} but also with donor insemination.\textsuperscript{62,63} The association has been shown with diverse psychological measures: anxiety,\textsuperscript{64} depression,\textsuperscript{65} infertility-specific distress\textsuperscript{66} and overly intense desire for a child\textsuperscript{3} as well as diverse biological indicators of stress, for example, reactivity,\textsuperscript{67} hormonal\textsuperscript{68} and immunological\textsuperscript{69} parameters. In treatment cycles these are associated with a poorer biological response to treatment,\textsuperscript{65} a lower pregnancy\textsuperscript{69} and live birth rate.\textsuperscript{70} Finally, this psychobiological association remains if one controls for procedural stress effects (i.e. negative feedback from staff during treatment\textsuperscript{71} and/or negative lifestyle factors associated with stress that also compromise success rates (e.g. smoking or poor diet).\textsuperscript{72,73}

A psychobiological link between stress and fertility has been contentious because women can and do conceive despite harsh conditions of war, poverty and famine, and indeed fertility per woman is highest in countries where such hardships are common, most likely due to the reduced likelihood of offspring survival.\textsuperscript{72,73} Moreover, despite the converging evidence in human studies noted previously, not all human studies find an association between stress and fertility potential and/or the effect size varies among studies (e.g. Anderheim et al\textsuperscript{74} Merari et al\textsuperscript{75}) and, in fact, some studies show benefits due to higher stress levels.\textsuperscript{72,76} However, variation in the association between stress and fertility across countries or studies need not question the existence of the association but it does point to the likelihood that stress-induced reproductive suppression can be augmented or diminished depending on the presence of other factors and/or that it can be over-ridden.\textsuperscript{72} More research is needed to identify what these factors are and how they can be used to minimise stress interference in fertility treatments.

Periconceptional consultations should routinely include enquiries about stress factors and other negative lifestyle factors that covary with stress and which may themselves be the cause of the association.
between stress and fertility (e.g. smoking). If stress factors are a contributing cause to infertility, then individuals could be directed to appropriate psychosocial interventions. The two reviews of the intervention literature agree that psychosocial interventions (e.g. individual/couple or group therapy, counselling, educational or comprehensive programmes) do effectively reduce emotional distress, especially anxiety, in people undergoing fertility interventions. However, there is more controversy about whether these studies also demonstrate a positive effect on pregnancy rates.

Boivin reviewed the intervention data and found that three randomised controlled trials showed positive intervention effects on pregnancy whereas five did not. The positive randomised controlled trials used three different interventions: two sessions of couple psychodynamic psychotherapy with an 18-month follow-up period, a 32-week course of couple sex therapy with a follow-up period of 6 months and a ten-week comprehensive educational and coping skills intervention with a 12-month follow-up period. The cumulative pregnancy rate in positive effects studies ranged from 30 to 60% with an average of 48.3%. In contrast, the cumulative pregnancy rate in the no-effect studies ranged from 15 to 40% with an average of 24.7%. These are substantial effects when one considers that the cumulative pregnancy rate reported for the positive effects studies was approximately similar to the cumulative pregnancy rate following five consecutive IVF cycles or 6 months of unprotected sexual intercourse in fertile couples. Although these results seemed promising it was concluded that much greater confidence could be had in effectiveness if future investigations were better controlled. Although deLiz and Strauss made the same conclusion they were more optimistic that the benefits in pregnancy rates realised from reducing distress were genuine and would be upheld in further investigations.

The reviews also showed promising results for combined intervention that tackled multiple psychosocial factors. Clark et al. found that 85% of women who lost weight following a group intervention that included diet, exercise and group support were able to conceive naturally. Domar et al. showed that the time-to-pregnancy was significantly lower in people attending ten weekly sessions of the Mind/Body programme that involved nutritional and exercise advice, training in relaxation and mindfulness techniques, and group sharing and support compared with the control and support only groups.

Together the results indicate that one is likely to improve quality of life for patients undergoing fertility treatment through psychosocial interventions but that such effects cannot guarantee a concomitant increase in pregnancy. It may be that such effects can be produced once the interventions have been made more potent by concentrating the active ingredients and eliminating ineffective components.

### Treatment persistence and treatment drop out

There is accumulating evidence of substantial premature drop out from fertility treatment. By drop out we mean voluntarily ending treatment despite good prognosis and resources to carry on with treatment. The true rate and cause of drop out for fertility medical services is difficult to estimate because the treatment process is protracted (i.e. from the diagnostic investigation to IVF), prognostic and financial resources are not always factored into estimates, and whilst the causes of drop out are probably multifactorial only a single primary cause is listed, which may hide other important secondary causes. Despite these problems there is reasonable expectation that a significant proportion of women actively withdraw after the first IVF cycle and 18.3% after a second despite good prognosis and financial subsidies to continue with treatment, and the women who dropped out were more depressed and anxious at the start of treatment than those who continued.

As noted previously all patients should receive preparatory coping interventions at the periconceptional consultation but findings about treatment drop out suggest that periconceptional consultations might additionally aim to identify those at risk for high distress during treatment so that preventative interventions can be implemented. Psychological screening and assessment prior to IVF is controversial because fertility experts operate more or less with the belief that their role is not to decide who has access to treatment (“gatekeepers”) but to provide fertility services for those who have barriers to conception. Having said this, most clinics have implicit policies that do limit access to fertility treatment in cases of active substance abuse, current physical abuse, severe marital strife, the presence of a major personality disorder or severe intellectual impairment and in cases where one spouse is being coerced by the other to undergo treatment. Outside of such extreme situations, the focus of screening should be to implement intervention programs that can minimise the impact of risk factors and help individuals/couples stay in treatment long enough to achieve conception. Very little work has been carried out on this topic but what has seems promising in terms of early detection.

In a series of studies testing a stress vulnerability model in the context of fertility treatment Verhaak et al. demonstrated that personality traits (neuroticism), marital factors (dissatisfaction), infertility related cognitions (helplessness) and information processing (attentional biases to infertility threat words) were vulnerability factors for greater depression and anxiety after a failed fertility treatment cycle (after controlling for pre-treatment distress), whereas social
support and acceptance were protective. Furthermore, a screening tool based on these vulnerability and protective factors was predictive of post-treatment anxiety and depression in an IVF sample, with a 74% rate of correct classification (at risk, not at risk), sensitivity of 68% and specificity of 77%. If individuals at risk for distress can be identified then appropriate interventions can be recommended.

The cause of premature drop out is likely to be multifactorial and accordingly the problem should be tackled from different angles. As noted, much can be done to ease the burden of treatment using preparatory interventions, however, those at risk for high distress might additionally benefit from interventions directed to meeting emotional rather than informational needs. Many such interventions exist (see Boivin™ for a review) but some seem particularly relevant to a treatment context. In a rigorously controlled experiment Cousineau et al demonstrated that a flexible online intervention that helped people identify their support needs and provided concrete coping skills and support opportunities significantly reduced infertility-specific distress and decisional conflict as well as improved fertility knowledge and self-efficacy compared with no treatment control groups. Benefits were markedly greater in women using the intervention for more than 1 hour. Van Balen™ reported on a telephone helpline managed by trained volunteers who had all experienced infertility. The helpline operated to full capacity; 90% of calls were from women and calls lasted between 20 and 30 minutes. Calls were mainly requests for medical or treatment information, but 30–40% of callers wanted emotional support, and support was rated as helping to cope with the strains of infertility and its treatment. Schmidt et al showed that an intervention focused mainly on communication skills training helped couples in treatment to better manage information exchange in their social network, which improved their quality of life. Finally, Lancastle and Boivin™ demonstrated that a self-administered coping intervention designed to promote positive reappraisal coping was perceived to be helpful and to sustain coping efforts during the 2 week waiting period prior to the pregnancy test in IVF. These recently developed interventions all have the potential to be easily administered in the treatment context with early promise as tools to reduce the burden of treatment and, individually or in combination, may provide sufficient support for the individual to stay in treatment long enough to achieve their goal of parenthood.

Summary and conclusions

Achieving pregnancy depends not only on biology but also on numerous psychological and social factors that can at times undermine the project to have a child. The periconceptional consultation provides an ideal opportunity to determine to what extent such factors are relevant to the individual or couple. Numerous interventions now exist to manage such issues and most could be adapted for the typical fertility clinic and adapted to individual patient need. Importantly, research demonstrates the effectiveness of such interventions in helping individuals achieve their goal of parenthood, whether that is by increasing motivation, reducing sexual dysfunction or negative lifestyle habits, promoting good coping skills or easing the burden of treatment.

References


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