**Historic overview**

Historically, investigations into the psychological aspects of infertility concentrated on psychopathology. In the 1940s and 1950s, psychoanalytical and psychogenic understanding explained that infertility may result from an unconscious rejection of motherhood, immature femininity or from sexual identity conflicts. At that time, in approximately 50% of all cases of infertility, no medical reason could be found and it was assumed that in these cases, infertility was triggered by such psychopathology. Many of these findings were based on theoretical speculation or anecdotal evidence and concentrated on the female partner; men as well as male infertility were largely ignored. A shift of thinking occurred in the 1970s when psychological distress was considered as an important cause of infertility (1). Although a link between psychological stress and infertility is still discussed, there is increasing evidence that stress, as such, is unlikely to result in infertility but that individual coping mechanisms, the extent of support, level of optimism and resilience are important confounding factors (2-4). Recently, the focus shifted from individual psychopathology to more holistic models of understanding. Models including biological, psychological and social aspects were developed and these were based on the premise that infertility in most cases has physical causes; that there are medical interventions to treat it (biological aspects), there are individual reactions to infertility such as depression and anxiety (psychological aspects) and there are social implications such as the stigma and taboo associated with infertility (social aspects). As a result, various psychosocial interventions were adapted to help and support individuals and couples experiencing infertility. These include crisis intervention, grief and bereavement approaches, (family) systems theory, cognitive-behavioural, solution-focused and psychodynamic approaches, identity theory, stress and coping theories, and stigma theory (1, 5-7).

**Psychological health of individuals experiencing infertility**

Current research suggests that from a psychological viewpoint, individuals affected by infertility are as healthy as the average population (8). However, depressive reactions such as hopelessness, despair, feelings of failure and reduced self-esteem are typical and common. The levels of anxiety and depression tend to be higher in individuals diagnosed with infertility (rather than in the fertile partner) and in some studies higher in women than in men (9). Furthermore, there are indications that levels of depression and anxiety are higher when infertility is first diagnosed and during specific phases of medical treatment, both with men and women (1). Historically, idiopathic infertility, a state in which no medical cause can be diagnosed, was strongly associated with psychological dysfunction. More recently, however, research suggests that there are very few differences between couples with a medical diagnosis and those where no medical cause can be found (8, 10). Idiopathic infertility should therefore not be confused with psychogenic infer-
ility, the latter describing that psychopathology does result in or contribute to infertility. According to the current German “Guidelines for Psychosomatically Oriented Diagnosis and Therapy of Fertility Disorders” (8), psychogenic infertility should only be diagnosed under the following circumstances:

1. If a couple continues to practice behavior negatively affecting fertility despite the wish for a child and after having been explained the consequences by a physician (i.e., eating habits; high-performance, professional sports; substance abuse; extreme distress).

2. If a couple avoids sexual intercourse during the time of ovulation; if sexual, non-physical dysfunctions are presented.

3. If a couple affirms the wish to undergo medical infertility treatment but avoids the commencement of it.

On a social level, infertility in most cultures remains associated with social stigma and taboo. Couples who cannot reproduce break social norms and conventions. Social stigmatisation tends to be greater in pro-natalistic societies in which (large) families are desired and/or the norm. In some cultures, infertility can result in separation or divorce (typically from the wife) so that the fertile partner has the possibility to have children with another spouse. In addition to these emotional and social factors, in many countries, there is no or limited public funding for medical treatment; thus infertility and its treatment can be a major financial burden for couples.

**Gender-specific reactions to infertility and ART**

There is evidence that men and women experiencing infertility react differently and manage this crisis in different ways (11). Many women perceive the inability to conceive to be one of the most upsetting life events (12) and tend to show their emotional reactions more visibly than men. This perception may be even stronger in cultures that value motherhood very strongly or where motherhood is the only role option for women. Some authors suggest that women experience greater levels of distress than men (13), others indicate that men and women find infertility equally distressing (14). The latter explain that social contexts, gender-specific role expectations as well as the impact of medical treatment (which is mainly carried out on women) result in men being more reserved about displaying emotions and less affected by treatment, both physically and emotionally. Furthermore, it has been suggested that certain study designs and standardised measures may be less sensitive towards typical male emotional expressions and may not capture the entire range of men’s affects towards infertility (15-17).

Male infertility tends to be associated with a more significant taboo than female infertility (18). Thus, it is not surprising that men indicate high levels of stress when male factor infertility is diagnosed (19). Regarding management strategies, men tend to benefit from information and often prefer a pragmatic and aim-oriented approach whereas women find it helpful to share their emotional reactions (11). Furthermore, life without children has different implications for men and women. Men’s social life, as a result of having the breadwinner’s role in many societies, changes little if they do or do not have children. The role of women is more strongly intertwined with the role of motherhood. Also, women’s social life alters as female friends become mothers and change their focus in life. This impacts the quality of their friendship, with many infertile women losing contact or isolating themselves from friends who have become mothers.

Sexual dysfunctions are common reactions to infertility and medical treatment, but these are temporary and in most cases warrant education and support rather than intensive treatment (20). Up to 60% of all couples suffer from a loss of libido or erectile dysfunction which is not surprising given that medical treatment can be invasive and in many cases, several treatment cycles are required. In addition to this physical burden, couples often perceive intercourse as futile as it does not result in the conception of a child. Sexuality therefore becomes a task-oriented exercise and pleasurable and intimate aspects become neglected.

Follow-up studies indicate that couples who remain childless are as healthy and satisfied with their lives as those who have conceived and many couples report that their relationship has strengthened as a result of having managed the crisis together (10, 11, 21, 22). Congruence, i.e., the level of agreement between both partners regarding their perception of infertility, their way of managing this crisis, as well as the ability to develop an alternative life aim seem to be important indicators for a satisfied marital relationship that remains childless (11, 23, 24).

**The challenge of identity adaptation**

Infertility alters an individual’s perception of his/her self, of his/her concept of identity. As a result of the strong link between femininity and motherhood, women may experience an identity crisis as there is a conflict between their ideal sense of self as a woman who can become a mother and their real self as being infertile (24). The experience of infertility requires both men and women to adapt and to integrate infertility into their sense of self. The manifold diagnostic and treatment procedures
require couples to adapt their identity not just once, but several times and in stages (25, 26). They need to adapt:
• from the assumption that they are fertile and can reproduce, to
• not becoming pregnant spontaneously, to
• undergoing medical examinations and being diagnosed with infertility, to
• requiring (invasive) medical treatment, to
• considering family building alternatives such as gamete donation or adoption, to
• facing a life without children.

No matter whether infertility includes an actual loss (such as an early pregnancy loss) or not, it always includes a loss of self-concept which can be experienced as a narcissistic injury and a symbol of the loss of self (1).

Understanding grief
As described above, feelings of loss are experienced in various stages during the experience of infertility:
• failure to conceive spontaneously;
• (repeated) failure during medical treatment;
• failure to conceive at all.

Grief and loss related to infertility are emotionally challenging. In many cases they are not related to a concrete loss, but to the loss of a potential, a wish. In most cultures, there are no mourning rituals for this type of loss. Couples often report that family members and friends do not understand their profound feelings but are expected to move on with life quickly, suggesting this loss is considered to be disenfranchised (27). Grieving infertility often involves typical reactions such as shock, disbelief, anger, blame, shame and guilt, and includes depressive reactions and low self-esteem. Gender differences are also prevalent in grieving reactions: while women often show their emotions openly and weep, men distance themselves emotionally. However, men’s lack of emotional and verbal expressions is not necessarily an indication that they do not suffer (1). Their grief should also be acknowledged and counselling should also offer men the opportunity to mourn their loss in a way that they find appropriate.

A mourning phase of up to two years is not uncommon and so are depressive reactions during this time (28). Infertility may be a life event that alters individuals’ identity profoundly and permanently and not only in those cases where couples remain childless. As a major life crisis, it may be a chronic sorrow which re-emerges periodically even though childlessness has been accepted (29).

Selected key questions that can be raised prior to or during medical treatment

The following questions can be asked by medical staff in order to facilitate communication with patients and in order to explore and understand not only the medical but also the psychosocial impact of infertility (8, 30):
• How long have you wished for a child?
• How many doctors and/or other professionals have you consulted?
• What do you think is the reason for your infertility?
• How much do you suffer as a result of your infertility? Who do you think suffers more, you or your partner? Do you think your partner understands your reactions, do you understand his/hers?
• How has infertility impacted your marriage? How has it impacted your closeness?
• What is the most difficult part of infertility for you and for your partner?
• What have you done to feel better? What can your partner do to support you?
• Do you feel under pressure because friends become pregnant? If yes, how do you manage this?
• Who can you talk to about your infertility and is this helpful?
• How has your life changed since you have wanted to conceive a child?
• What do you think should be changed in your life so that you can have a child?
• Where are limits in medical treatment for you?
• What life alternatives do you have if you remain without children?

Conclusion
One of the major current challenges in the provision of medical treatment for infertility is the inclusion of psychosocial counselling. For many years, counselling has been perceived to be less important or necessary only in cases where couples suffer severely. This article has summarized some of the psychosocial implications of infertility and its treatment experiences by most couples. Given this broad range of implications, it is vital for all couples to be able to access counselling. Counselling can contribute to improving the psychological and social health and, last but not least, counselling can thus help to minimize drop-out rates: couples who can manage the emotional challenges infertility entails are more likely to carry out the number of treatment cycles that are recommended from a medical viewpoint.

References
17. Thorn P. Male infertility - do men suffer as much as women? (work in progress).