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PSYCHOLOGICAL ASPECTS OF INFERTILITY *RESEARCH REVIEW*

Psychologiczne aspekty niepłodności. *Przegląd badań*

ABSTRACT
The aim of this article is to present a research review about psychological aspects of infertility. In the first part medical understanding of infertility is explained. Next, research works on self-esteem, stress, and personality and their associations with infertility are shown. The following part shows infertility in the perspective of partner relationships. In the last part gender differences in the experience of infertility shown in research data are presented. In the conclusion, we show some important methodological problems which exist in the literature on infertility and its psychological aspects. We also give some recommendations to overcome these problems.
Key words: infertility, psychological aspects and consequences, research review.

STRESZCZENIE
Celem artykułu jest przedstawienie przeglądu badań na temat psychologicznych konsekwencji niepłodności. Na początku przedstawiono zagadnienia wyjaśniające zjawisko niepłodności z perspektywy nauk medycznych. Następnie opisano wybrane badania na temat stresu, samooceny, osobowości i niepłodności. Później przeanalizowana została niepłod-

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ność z perspektywy relacji partnerskich. W końcowej części omówiono wyniki badań na temat różnic płci w przeżywaniu niepłodności. W podsumowaniu ukazano najważniejsze problemy metodologiczne w badaniu niepłodności oraz sposoby ich przezwyciężenia.
Słowa kluczowe: niepłodność, uwarunkowania i konsekwencje psychologiczne, przegląd badań

INTRODUCTION

Infertility is a phenomenon which must be analyzed from a wide perspective, taking into consideration medical, psychological, social, economic and demographic issues. Having offspring is one of the most important aims of a man, the biological priority of passing on genes determines the survival of human race. The willingness of having a baby is formed subconsciously in accordance with natural law. A woman longs to have offspring despite the sacrifice it incurs – this is the philosophy of life. From the cultural point of view, fertile people are considered to be valued and important for the society as they bring social and demographical benefits. Fertile people are those who fulfill their humanity, as it is inscribed in their basic rights and obligations. This state of affairs shows the drama of infertility as the couples may share the feeling of underperformance in every significant field of life, lack of the real or imaginary social acceptance. It is unprecedented that the feeling of being different in its pejorative context affects human functioning.

Frustration arising from the impossibility of having children incurs a range of changes and pathologies in the psyche. When the body "suffers", the "soul" starts suffering too. It is up to the individual how much the psyche changes. It is undoubtedly true that when something changes inside a man, the situation between people changes as well because we function in groups as social identities.

Men and women all over the world suffer from infertility. The World Health Organization recognized infertility as a social disease (Skrzypczak et al, 1997). It is estimated that 13- 20% marriages suffer from infertility. The estimates for Poland are even higher and the infertility rate varies between 20-25%, which means there are 1.5 million couples suffering from infertility. Globally, infertility affects 60-160 million people (Bidzan, 2006). According to the estimates, there are 50-80 million women at the reproductive age suffering from infertility worldwide.

It is commonly assumed that we can speak about infertility when a woman cannot get pregnant after 12 months of regular unprotected sexual intercourse (Pisarski et al, 1997; Domitrz, Kulikowski, 1997). Another definition assumes that infertility starts after 6 months of regular sexual life without using contraceptives (Kuczyński, 2003).

The term of infertility is not unequivocal in science. According to different approaches or researchers, we can speak about infertility when a woman cannot get pregnant but also when she is unable to carry a pregnancy to term. The inability of carrying a pregnancy to term (*infertilitias*) may result from difficulties of egg cell implementation due to previous miscarriages (Pisarski et al, 1997).

The explanation of infertility phenomenon has been transformed significantly over the last few decades. The early approach of analyzing the infertility within psychoanalytical and psychosomatic theories, which focused on unconsciousness and defensive mechanisms, have been replaced by the models explaining infertility as a phenomenon determined mostly biologically. Due to the development of medical knowledge, the hypothesis of psychogenic causes of infertility have been replaced by experimentally verified medical explanations or those related with stress effects. While psychology has not contributed a lot to the understanding of infertility causes, it has much more to offer when it comes to the analysis of infertility effects. The research done in this field brought a lot of facts which may be vital for the effective help for those suffering from infertility.

The aim of this article is to present the review of the research concerning the psychological aspects of infertility. Firstly, the issues explaining the phenomena of infertility from the medical point of view will be presented. Then, chosen research in the area of stress, self esteem, personality and infertility will be discussed. Furthermore, the infertility will be presented from the perspective of partners' relationship. Finally, the results of the research into the differences of men and women coping with infertility will be presented. The conclusion includes the most important methodological problems concerning infertility treatment and the ways of overcoming them.

MEDICAL ASPECTS OF INFERTILITY

The problem of infertility must always be analyzed with a reference to a couple being in a relationship as infertility always affects two people, no matter if the definite cause is only because of one of the partners. When we speak about spouses' infertility we can distinct female infertility (*sterilias femina*), and male infertility (*sterilias maskulina*) (Waroński, 1983; McDonald, Evens, 2004; Bidzan, 2006). When it comes to the causes of infertility we can speak about the complete or relative infertility. Female complete infertility (*sterilias absoluta*) – may be caused by the lack of particular organs essential for the procreation process: uterus, vagina, oviducts. Male infertility may be the consequence of lack of testicles. Relative infertility is temporary and can be cured (Bidzan,

2006). While analyzing the problem of infertility, we can speak about primary infertility which occurs when there is no pregnancy in spite of having regular sexual life within the period of 12 months without using any contraceptives. Secondary infertility is the one when there is no possibility of getting pregnant again (Pisarski et al,1997).

A very important determining factor is the period of the infertility existence. The probability of giving birth without any treatment to an alive child is decreasing with age and the period of infertility existence. The probability of successful birth without any treatment decreases at 5% for every year of a woman's life and 15%, 20% for every year of infertility. Most of idiopathic pregnancies happen within three years, the prospects are smaller afterwards (Jakimiuk, Czajkowski, 2007).

While speaking about infertility two main forms must be distinguished: male and female infertility.

Female infertility may be the result of endocrinological changes, pathogenesis of ovulation disturbances – a direct cause of ovulation disturbances is incorrect ovarian follicles maturity resulting from regulatory disturbances of hypothalamus and pituitary gland. Lack of ovulation may be the symptom of premature ovarian failure, ovarian hyperstimulation syndrome, endometriosis, thyroid diseases, adrenal body diseases or obesity. All ovulation assessment are important but there is not the best one. When a woman is diagnosed with lack of ovulation, she undergoes ovulation induction.

While analyzing the medical conditions we may also speak about cervix factor. Cervix and cervical mucus play a role in reproduction process in a few different ways – cervical mucus captures spermatozoon from the ejaculation in the cervix, selects other ingredients of the sperm and filters morphological spermatozoa, nurture biochemical spermatozoa so they could survive until the ovulation. The mucus is solid and liquid glycoprotein gel.

Another important factor is uterus. It must be noticed that this factor rarely contributes to infertility. Anatomical anomalies of uterus affecting the fertility are congenital disorders: myoma, intrauterine adhesion, special interest in infertility problem is raised because of endometritis (Jakimiuk, Czajkowski, 2007). Apart from the causes mentioned above, the cause of infertility may often be the consequence of taking cytotoxic drugs, which are applied for treating malignant neoplasm (there may be the adverse effects after finishing the treatment). Gonadal steroids – steroid contraceptive hormones, progestogens, estrogens, applied while treating bleeding, irregular sexual cycles, neurological drugs prescribed for schizophrenia, antidepressants (tri-phase) an inhibitors of monoamine oxidases and drugs applied for gastroenterological disturbances contribute to infertility. Infertility may be the result of the diseases transmitted via sexual intercourse. In recent years there has been a dramatic growth of

infections with *Chlamydia trachomatis* and it is the main cause of pelvis minor inflammation and sex organs infections.

Male infertility. Women have been blamed for infertility for many years. This approach has changed due to the last 45 years of research in the contribution of male factor. Due to this research, it was noticed that 40- 50 % cases of partners' infertility was due to male factor (Skrzypczak et al, 2008). The reason of male infertility is attributed to hormonal disturbances related to lack of glycoprotein hormones. It is visible in the analysis of the semen quality because of its lower density. Other factors include genetic disorders, chromosomal aberrations, system diseases and infections such as mumps. Neurological disturbances, varicose veins of the spermatic cord, immunological diseases and erection disturbances have also a big influence on infertility (Wdowiak, 2009). Infections of sex organs have a direct influence on male infertility. Inflammations limit fertility by blocking vas deferens, lowering sperm quality, decreasing activity and ability of fertilization (Pisarski et al, 1997). Prolonged prostate or seminal vesicles inflammation may result in semen infection. It has been proven that microbes have a negative influence on male germ cells. (Pisarski et al, 2008). Lower fertility is also related with disturbed balance of oxidation-reduction system resulting from smoking cigarettes and lack of antioxidants in the diet (Wdowiak, 2009).

Alcohol abuse by men affects disturbed testosterone production, higher percentage of bad spermatozoa, sexual disorders and impotence (Chazan, 2004).

Among the reasons of infertility, the following spermogenesis disturbances must be added: oligozoospermia (not enough spermatozoa in semen), teratozoospermia (higher number of bad spermatozoa in semen), azoospermia (no mature spermatozoa in semen), aspermia (not having any measurable level of sperm in semen) (Breckwoldt, 1997).

ASSISTED REPRODUCTIVE TECHNOLOGIES

Assistance provided to achieve pregnancy is not an invention or discovery of our times. The first insemination was performed in 1785 and it resulted in pregnancy. The massive development of assisted reproductive technologies started in the 20th century when Lucy Brown was born through in vitro insemination. Currently, when we speak about infertility epidemic, we have entered the period of constant development of assisted reproductive technologies and many more technologies are available now then a century ago.

Insemination is a technology most often used for treating male infertility but also in the inexplicable cases. It is a process by which spermatozoa is taken

from a man and the spermatozoa of the highest parameters are selected. An appropriate concentration of spermatozoa must be achieved and selected from other ingredients of the semen. Sperm is placed in the cervix by a special catheter. Successful insemination ranges from 20-60%.

Gamete intrafallopian transfer is a method of removing eggs from a woman's ovaries through the ultrasonographic or laparoscopic surgery, and placing them in spermatozoa in a specially prepared catheter and then placing the gamete in the fallopian tube.

In vitro fertilization means fertilizing an egg cell outside the body of a woman. These assisted reproductive technologies include: in vitro fertilization and placing the embryo in the womb, surgical embryo transfer, embryo culture inside the vagina, transfer of a fertilized cell or embryos to fallopian tubes.

Immunological infertility refers to male autoimmune reactions towards spermatozoa, in other words a male body disorganizes the correct parameters of the sperm treating it as a foreign body. Immune disturbances may be the result of woman's body reaction to treat sperm as „bodies" to destroy. Methods of treatment include restraining male and female bodies from killing sperm and treating it as a pathogen (Skrzypczak et al, 2008).

PSYCHOLOGICAL ASPECTS OF INFERTILITY

Infertility affects many areas of human life although it is unmentionable and not revealed to the public. Infertility is the cause of permanent stress, develops gradually, following treatment is often described by the researchers metaphorically as riding the roller coaster. The earlier research in the field confirmed existing changes in the psyche, especially among women. Greil (1997) claimed that no major differences were found among people suffering from infertility and the healthy population. At the same time, some differences were found in feeling stressed and occurrence of mental disorders. There are suggestions of possible impact of infertility on personality. What seems to be the most important from the psychological practice point of view, is the influence of infertility on marriage relationships. All the issues will be discussed below.

Procreation behavior and decisions do not come from social vacuum, but they are expressed in a wider macro-structural system, determined by social, economic and demographical conditions (Slany, 1989). Being aware of that fact is important as it shows the reality of life of infertile people and at the same time the source, the characteristics of the stimulus which may determine the difficult situation.

STRESS, MENTAL DISORDERS AND INFERTILITY

It was shown in the research as early as in the 1980s (Freeman and others, 1985) that infertility is the cause of suffering from stress and 49% of women and 15% of men diagnosed with infertility described the problem as the most irritating event in their relationship lives.

Based on Lazarus and Folkman definition (1984), stress is understood as an interaction between a man and his environment. In other words, stress is defined as a mismatch between demands and coping resources. Two cognitive processes, appraisal and coping, are important to the person/environment transaction. Lazarus proposed two stressful appraisals. The first type of stressful appraisal is harm-loss. This one is especially important in understanding infertility.

From the psychological point of view, realizing that there is a problem of having an own child produces the feeling of a life crisis and frustration of many needs of a man. The impossibility of having children incurs lack of expectations and requirements fulfillment related to biological and social role of a woman, followed up by a potential loss of a beloved partner and no chance of prolonging life from its existential perspective. This state of affairs may produce social, psychological and existential frustration (Motyka, Golańska, 1982; Waroński, 1982; as: Bielawska-Batorowicz, 1991). Stress, which appears when there is no possibility of having a child is compared to a death of a close relative (Bielawska-Batorowicz, 1991), it is also compared to a stress reaction after being diagnosed with cancer or heart attack (Makara-Studzińska, Wdowiak 2009).

The reactions following the diagnosis of infertility is being surprised and disbelief. It happens quite often that couples informed about infertility deny being affected by the phenomenon. The next step is anger and frustration with the general practitioner and procedures being implemented towards the couple. Patients start thinking about their past, trying to find the reasons of the experienced problems. They think about ex-partners, number of sexual contacts, diseases suffered before (Bielawska-Batorowicz, 1991).

Stress produced by infertility is undoubtedly related with change of the life of the partners. They diagnose the infertility, then, while undergoing medical treatment, are forced to change their lifestyle and have to adapt to constant diagnostic examinations. The terms of medical consultancies are fixed as they are strictly related to a woman's ovulation. It must be mentioned that the procedure is often embarrassing and produces tension in couples undergoing the treatment. Stress in men is related to masturbation which is necessary to obtain semen for the examination. Stress in women is produced by constant gynecological examinations, revealing the intimate life to the doctor and medical staff in order to set the details of the treatment. It has been found that the more

the intimate sphere of marriage and ethical and moral values are interfered, and the more unnatural the treatment is considered, the more willing the women are to accept this treatment. When it comes to infertility treatment, mental sphere is extremely important. The level of acceptance towards applied methods means that undergoing medial treatment is more natural and a woman, apart from the expressed acceptance, accepts more easily the mental and physical consequences of the treatment (Łuczak et al ,1991).

The first step of infertility treatment is medical examination and diagnosis provided by a doctor. The second step is to reconcile with the negative results of the therapy and accepting own childlessness (Bielawska-Batorowicz, 1991).

Łuczak and the coworkers (1991) conducted the research verifying which medical method interferes most in intimate issues of the patients. The relationship between the following methods of treatment was measured: AIH – artificial insemination by husband, AID artificial insemination by anonymous donor, IVF in vitro fertilization, microsurgery. The research was conducted among 65 women treated for the impossibility of getting pregnant, 61 women suffered from primary infertility, 4 women suffered from secondary infertility. The patients were aged 22-37. The results showed that AIH method was considered the most natural one as it just deals with an appropriate transfer of the donor's semen. Microsurgery was perceived as the one requiring special sacrifice from woman, as infertility is not a direct threat to human life, contrary to surgery. It is also accompanied by a huge tension related to undergoing surgery and its preparations as well as possible consequences. IVF – in vitro fertilization raised most moral and ethical doubts. Lower acceptance resulted from the fear of transferring the egg cell, its destroying while extracting and failure while transferring the fertilized cell to the uterus. The research shows that this method of treatment brings a lot of tension and stress. The couples qualified for this kind of treatment suffered from greater anxiety and inquietude.

According to the results of various research, it has been noticed that the tension increases when the treatment prolongs. It turns out that the most stressful is the beginning and the end of the examining procedure, related to extraction, in vitro fertilization and placing it in the uterus. Failure is the reason of sadness and depression. AID turned out to be the least desired method. Interfering in marriage intimate life was the most frequently raised problem. Women tended to comment this form of fertilization as the result of a mental infidelity to a partner. There was also an anxiety about the anonymity of the donor. It raised some distrust towards the baby as his or her characteristics taken after a donor cannot be foreseen. It turned out to be a religious problem for many women. Different research shows that when a couple decides to undergo this form of treatment, it is preferred to keep this fact secret. It is because of the fear against the criticism of the environment

and putting the husband in a disadvantageous position due to his small or limited reproduction abilities. Scientific publications underlines the importance of keeping this fact secret. The consequence is the tension resulting from lack of support and tension related to the fact of keeping the secret (Łuczak et al, 1991).

The percentage of women (40,1%), who decided to undergo this form of treatment turned out to be very important. It can be explained that the need of giving birth to a child is so strong among women that they are able to change their moral and value system in order to reconcile with the new form of treatment, which form was not accepted at all at the beginning. (Łuczak et al, 1991).

Infertility treatment is always accompanied by strong emotions. They strengthen with time and become the part of the patient personal characteristics. The type of relationship resulting from the disease and undertaken medical treatment is determined as secondary. While analyzing the problem from this perspective, the question arises if the stress is the consequence or the cause of the impossibility of getting pregnant. Undoubtedly, there is a relation between stress hormones and hormones responsible for sex organs functioning. It confirms the importance of mental factor in infertility treatment. Both external and internal emotional impulses are stimulated by hypothalamus. The intensity of the stress stimuli and the time of their existence result in disturbed balance of the endocrinological system and it leads to the dysfunction of reproductive system. The increased concentration of catecholamines disturbes the hormonal activity of hypothalamus-pituitary-adrenal axis and correlates with the production of the following hormones: gonadotropin-releasing hormone, prolactin, luteinizing hormone and follicle-stimulating hormone (Łuczak-Wawrzyniak, Pisarski; 2007).

It was shown, that infertile women are characterized by a greater anxiety. Difficulties in thinking about something different than infertility, lower efficiency while doing different tasks and difficulties in concentrating were also reported. Suicidal thoughts, emotional lability, strong negative emotions, feeling of being guilty and harmed as well as the need of isolation from other people may all appear because of infertility. Stress resulting from lack of children (Bielawska-Batorowicz, 1990; Janczur-Bidzan 1995, 2006) often leads to mental disorders. It is especially visible in women. It was shown that in comparison with fertile women, the frequency of mental disturbance among infertile women equals 44% and 28,7% among fertile women (Noorbala et al, 2009). The authors of the research conducted in Iran show that those women suffered from a higher risk of mood disorders, phobias and paranoid thoughts. The results of this research did not confirm the previous publications which stated that there were no differences in the occurrence of mental disturbance between these two groups (Downey, McKinney; 1992). It seems that the frequency of mental disorders may be related to taking up professional work (fewer disturbances were noted among women

who worked) and the culture dominating in particular society. The relation between the culture and experienced distressed is also visible in aforementioned Polish research. When having a child becomes the highest value and unique form of self-fulfillment, the probability of mental disorders increases.

Coping with the stress produced by infertility is an important problem. Berghuis and Stanton (2002) distinguish two models of coping with stress, which may consequently decide about both partners adaptation to the situation caused by infertility. In the first model the individual one, the adaptation is up to an individual's coping abilities. In the second one – partner's influence model – it is assumed that coping depends on the partner's coping abilities. The explanations resulting from treating coping abilities as the effect of interaction with a partner are more justified. It was shown for example that the similar attitudes of partners may influence the level of marriage satisfaction. Similar attitude towards coping with infertility may protect against distress experiencing. There may also be the processes of compensating the inability of coping of one of the partners. Burghuis and Stanton research (2002) showed that among the couples applying the model of avoidance, the level of distress increased as the trials of fertilization continued. The level of distress decreased among the couples turning to task, emotional and expressive coping abilities. The symptoms of depression also depended on the model of coping with stress.

The inability of fulfilling the need of having a baby leads to a decrease of mental well-being. Abbey and coworkers (1994) proved that women who gave birth to a child within two years since the moment of starting the treatment had a higher level of general mental well-being than the women who did not meet their life target. The difference was not noted among the men groups.

Summing up, it can be said that some social and demographical factors (having children, high social and demographical status) and personal factors (optimism, the ability of coping with stress) are linked with better adaptation to a stress situation resulting from infertility and its treatment. The styles of coping with stress play a special part as shown in many research. The stress coping model based on avoidance makes adaptation more difficult. (according to: Stanton et al, 2002).

SELF-ESTEEM AND INFERTILITY

Self-esteem is an evaluation of one's own personality and is usually understood as the feeling of self worth. It may refer to different aspects of personality such as: feeling of one's attractiveness, intelligence, interpersonal competences. It may

also generally present the fact of perceiving oneself – a complete self assessment (Doliński, Kofta 2006).

A person with a high self-esteem – which means being happy, active, trustworthy, has always been an attractive partner – a person with a high self-esteem has a higher appeal. The high level of self-esteem has always maximized the chances of promotion in a group hierarchy and minimized the chances of social rejection. It consequently guaranteed reproduction success: a high status was related with finding an appropriate partner. The offspring of the people with high self-esteem was rarely neglected due to a very low risk of social rejection (Sedikides, Skowroński, 2004).

Infertility and negative emotions related to it, stress resulting from treatment, poor prospects of successful curing methods, undoubtedly affect the way of thinking about oneself, who I am and what I am like.

Self-esteem and self-acceptance was researched by Kostyk (1996) in the Endocrinology and Fertility Clinic of CM of Jagiellonian University. 170 childless people were examined and they were divided into two groups depending on the character of infertility. The first group were the women suffering from other types of infertility than the ovarian one; the second group were the women suffering from the ovarian infertility, the third group was related to male infertility, the fourth group included women unable to carry a pregnancy to term. The research was conducted according to Spielberg Self-Esteem Questionnaire examining both the state and trait anxiety, Maudsley Personality Inventory (MPI) – the questionnaire elaborated by Eysenck, and Self-Assessment Questionnaire (Personality Questionnaire). The results obtained in the research indicate that men more often than women show higher level of state and trait anxiety and at the same time they apply defense mechanism of presenting themselves from a better perspective. Women were not so often diagnosed with state-trait anxiety. Women showed lower self esteem more rarely than men. Men admitted feeling lower self esteem or they said they did not have an opinion on that topic. The research did not show any differences between men and women when it comes to self-esteem. Men were more often characterized by a higher level of self-acceptance. The author provides the following explanation: higher self-acceptance among men results from a better compensation of the self-assessment of own activities in different areas and spheres of life where the defense mechanisms are applied (being recognized at work, money, occupational position held, successes).

The research conducted by Cieślik–Wierzba and Bidzan (1996) used the emotional reaction model in woman with a difficult procreation. They applied the Color Pyramids Test by Schaie i Heiss (14 colors). The research shows that women suffering from infertility are characterized by a determined model of emotional reaction and stimuli control. The women tended to choose the

colors that varied very little. It underlines that there was s strong tendency of choosing particular colors. If an examined person chooses "nice" colors in the Color Pyramids Test, it shows lower sensitivity to emotional stimuli, emotional deregulation, no stabilization in emotional life and unconscious feelings suppressing. Choosing "ugly" colors means the feeling of no adaptation and worthlessness. The combination of black and orange indicate that women with disturbed infertility tend to compensate their depressing emotional control through uncontrolled behaviors. The research showed that women suffering from infertility are characterized by emotional instability, similar reactions and at the same time, the defense mechanisms are withdrawn and limited (Cieślik-Wierzba, Bidzan, 1996). Most often infertile women staying in hospital, contacting doctors and undergoing medical examination, cope with the experienced failure through dreams, images of a future baby, they can cope through dependence and regression as well as constant care demand (Sęk, 1983).

Greil (1997), while analyzing the results of the tests concerning self-esteem, noticed that these results are not as unequivocal as they seem. Some research showed that infertile people are characterized by lower self-esteem, other research showed that the level of self-esteem is the same as among healthy population. The author emphasizes that different methods of self-esteem measurement were used and the people surveyed experienced infertility for a different period of time. Greil is of an opinion that the longer the treatment lasts and with a failure of fulfilling the need of having a baby, the lower the level of self-esteem is.

PERSONALITY AND INFERTILITY

The general definition describes personality as "a collection" which includes everything what can be said about a man. Other researchers emphasizes the organizational and integration function while defining personality. Personality understood in that way is something what organizes and integrates all human activities and adapts an individual to its environment (Pervin, John, 2002). This way of understating personality arises some questions if there is a relation between personality and infertility. Does a particular type of personality create some conditions towards pregnancy complications or makes the pregnancy impossible?

The research, conducted by Janczur-Bidzan (1995) among 70 women treated for infertility and 50 healthy women, proved that personality changes because of infertility. The research was conducted with the application of the Minnesota Multiphasic Personality Inventory MMPI. The results showed that there are no differences in the measurable quantity – all the people were qualified as being

mentally healthy. The research showed that the persons are able to give a realistic assessment of their situation, they do not show the tendency to exaggerate or diminish personality problems. They can admit experiencing difficulties in the particular areas of life. The differences appeared when the quality analysis was applied. The researched group varied in their masculinity and femininity scales, paranoid scales, and social status scales. Higher level of paranoia may indicate that these persons are in a high risk situation. It incurs high sensitivity and fear against society assessment. Combination of the results produced in those scales with psychasthenia scales confirms the existence of psychological stress. It is also influenced by the disease and the treatment. Higher results in masculinity and femininity scales show the difficulties in self-acceptance in the role of a woman. Lack of a child in our culture does not offer a possibility of full self-realization of a woman (Janczur-Bidzan, 1995). It must be underlined that some scientific research reveal the interpretation that 30% of women do not accept their own sex. This figure can be explained due to the pursuit of reaching the equality with men whose position is considered to be prestigious. The negative aspect of this phenomena may be the subconscious rejection of the procreation function by a woman (Łuczak-Wawrzyniak, Pisarski 1997). The causes may be found in the ambivalent attitude towards parenthood and the permanent feeling of stress. Another research was conducted by Motyka and Golańska (1981) among 150 hospitalized female patients diagnosed with primary and secondary infertility (*sterilitas prymaria, sterilitas secundaria*) and diagnosed with the impossibility of carrying a pregnancy to term (*infertilitas*), a control group (no problems with carrying a pregnancy to term and getting pregnant). The method applied in the research was Maudsley Personality Inventory (MPI) – a questionnaire elaborated by Eysenck. The research showed that average values of particular personality indicators were very similar among all the groups and slightly varied. There were no significant statistical differences in the neurotic scale among the particular groups. The same findings considered extraversion. Significant differences were found in L scale, where the average results in both clinical groups turned out to be statistically higher. The following conclusions were drawn from the conducted research: higher lie scales show that women feel their self-esteem is endangered because of the maternity failure. On top of that, women suffering from infertility revealed a strong need of social acceptance because they feel their self-esteem is endangered. There is also a tendency of suppressing the emotional tension (Motyka, Golańska; 1981). The conclusions can be drawn that lack of significant personality differences reveals some similarities among surveyed women. The same individual characteristics, determined among others by the functioning of the autonomic nervous system, lead to different obstetric complications.

Furthermore, no personal characteristics and behavioral patterns influence the appearance of the complications, but failures and complications become one of the factors creating the characteristics of an individual (Bielawska-Batorowicz, 1987).

Infertile women examined with Spielberg Self-Esteem Questionnaire STAI were diagnosed with a higher state anxiety. It was affected by the impossibility of giving birth to a healthy child and undergoing the treatment. Hospitalization and the experience of maternity failure produce constant stress to the female body and the effect may be the impossibility of getting pregnant (Janczur-Bidzan, 1995).

Currently run research described in scientific journals use more sophisticated methodological approach and aim at finding specified personal factors, which may influence the successful infertility treatment. Lancastle and Boivin (2005) analyzed the relation of the disposable optimism, trait anxiety and coping abilities and their influence on biological reaction in treating infertility. Three months before initiating the treatment, 97 women filled in the questionnaire measuring their optimism (LOT scale), anxiety (STAI-T scale) and coping abilities (Ways of Coping Questionnaire). The biological reaction towards IVF treatment was examined afterwards. After carrying out the statistical analysis, it turned out that disposable optimism was the best explanatory variable contributing to successful treatment.

PARTNER RELATIONSHIP AND INFERTILITY

Scientific research do not provide a clear answer how the infertility affects partner relationship or marriage of two people. There are two contradictory views on the influence of infertility on marriage. One theory says that continuing lack of children disorganizes family life, interferes in many areas of partners life, including sexual life and interpersonal communication.

Beisert (1980) carried out a research in 60 married couples, out of which 60 couples were childless (these couples have been married for 2-10 years and the infertility resulted from biological factors). Marriages with their own children formed the control group. Two methods were applied for the research: Interview Questionnaire and Interpersonal Adjective Scales by T. Leary in Polish adaptation by Stanik. This research procedure helped to distinguish three groups among those surveyed. The first group were the couples with some serious disturbances in mutual perception. There were significant differences between the assessment of the real characteristics of the partner in comparison with an ideal model. The

second group included couples where functioning styles of the partners were not completely contradictory. Those people accepted at least some of the spouses' traits and perception disturbances did not characterized both partners. The third group were the couples where the communication was correct, spouses accepted each other and they were characterized by a low level of perception disturbances of a partner. The result of the research show that the infertility changes the image of the partner. It is due to the fact that a change of the performed roles causes a change of personality. Infertility significantly influences the way of perceiving the partner. Specifying it further, almost half of the women and 60% of men from the experimental group expressed their will of having a husband (wife) and children as an essential reason of getting married. This result is much lower in the control group. It is clearly visible that the expectations concerning fertility towards the partner were not met in the experimental group. This discrepancy is the basic condition of the disturbances of the communication process. The most frequently found disturbances among infertile people included the assimilating projection which means perceiving the partner as similar to one's own created description of a partner. The second disturbance is halo effect, which means generalizing some of the partner's traits according to one of the traits noticed. There were elements of perceptual defense which are characterized by a failure to notice the partner's advance traits and distinctive projection which appeared in the relationship of two submissive people, who required domination from their partners. This state of affairs inevitably creates distance and the feeling of isolation.

Infertility undoubtedly affects negatively the sexual life of partners. Sex is very often treated as a mechanical way of child conception. Sex is often deprived of all the pleasures and emotional depth. An obsessed actions aimed at having children decreases lust among both partners (Motyka 1990).

Other research show that couples who have problems with procreation tend to isolate from social life. They avoid contacts with people who have children. The relations with the relatives also deteriorate as those affected do not wish to deal with the problem of infertility. They do not want to reveal their failure of getting pregnant to their nearest. Some infertile woman may even develop aversion towards other marriages who had the possibility of creating the family in a natural way. In that context, negative social relations may only favor and increase the probability of depression symptoms (Bidzan, 2006).

The second standpoint concerning infertile partners relations claims that this phenomena does not destroy the relationship. On the contrary, it strengthens the relationship between the partners. Bielawska-Batorowicz (1990, 1991) says that infertility is a kind of a test of the quality of mutual emotional relations. The woman being treated for infertility shows a strong need of an emotional

relationship with a partner. Loving a husband may be a sublimation of socially accepted maternity.

Functioning in a marriage may have an influence on adapting to infertility. Three researchers from Israel (Benyamini et al, 2009) assessed the influence of infertility perception on adaptation. The research was conducted from a cognitive psychology perspective, which uses the term of illness perception which equals the Polish term of an image of one's own illness. The researchers approached the problem from the perspective of the influence of partner – pair model. Two experimental groups of people suffering from infertility were researched. They differed when it comes to the length of the period of infertility treatment. The first group included 72 couples which were surveyed during their first visit in the infertility treatment clinic. The second group consisted of 49 pairs at different stages of treatment. Those questioned filled out the Illness Perception Questionnaire adapted to infertility and elaborated by Weinman and others. The level of the illness control, its consequences and time frames were measured. The adaptation was assessed according to Infertility Specific Well-Being and Distress Scale elaborated by Stanton. The statistical analysis used pair analysis based on Actor-Partner Interdependence Model.

It turned out that the level of adaptation depended on the infertility perception. During the first visit, the adaptation was most influenced by the perception of the illness consequences. The noticeable level of control correlated negatively with the women distress level. The results of this research confirm previously known cognitive processes role on adaptation. Importantly, it also shows that mutual examination of couples suffering from infertility should be standard while analyzing psychological aspects of infertility.

GENDER AND INFERTILITY

The last research brings us closer to one of the most important problems occurring while discussing psychological aspects of infertility – gender differences. Women are characterized by a higher level of distress resulting from infertility. It is most probably caused by restrains resulting from undergoing medical procedures used in infertility treatment among women (Halman et al, 1994), cultural causes (a role of the mother is still one of the most important social roles for a woman) or differences between men and women emotional functioning as shown in different research.

Meta-analysis of the research on gender differences in coping with infertility was conducted by Jordan and Revenson (1999). The authors

analyzed the results of eight different research which met the approved methodological criteria (all the research used the same method of The Ways of Coping Checklist–Revised created by Folkman and the coworkers). It turned out that women used some strategies more often than men. Those strategies included Seeking Social Support, Escape-Avoidance, Planful Problem-Solving and Positive Reappraisal.

Whiteford and Gonzales (1995) created the metaphor of emotional roller coaster aiming at describing the process of coping with infertility. The chances of success of the *in vitro* first trial are one to five. Most of the couples renew next attempts. As the treatment is related to menstrual cycle, a couple hopes every month that this time the attempt will end up with fertilization. If there is no fertilization it reminds the Sisyphean struggle.

Despite cultural changes related to social roles of women and men, the role of the mother is still most important. Despite lack of differences concerning women and men medical conditions, a woman is more often perceived as a person responsible for not having children.

All those factors contribute to different infertility experiencing by women and men. Men are likely to adapt better than women to not having a child and they get more involved in work and other activities.

SUMMARY

What generalizations can be drawn based on this review of chosen research dealing with the topic of psychological aspects of infertility? There is some evidence that people diagnosed with infertility function differently in the mental aspect. They are characterized by higher distress level, anxiety, lower satisfaction with life and lower self-assessment. Infertility significantly changes the functioning of the couples willing to have children.

Despite the aforementioned facts, it can be claimed that most research into infertility lack some methodology. There are often no control groups (especially in the research presented herein that was conducted in Poland). Selection of the participants for the needs of the research is also very important. The researched groups are mostly non-representative. Most of those surveyed were undergoing medical treatment. There is no information about those who do not undergo the treatment. It is known that a proportion of those diagnosed with infertility do not undergo medical treatment. It is probable that we examine just the ”tip of the iceberg”. The next problem is related to the time of infertility duration. It is difficult to compare those starting the treatment with those who have been

undergoing the treatment for a couple of years. It happens that these two groups are treated as one invariable group.

Greil (1997), while analyzing the results of psychological research into distress and infertility, made a few suggestions for the further research into this matter. First and foremost, people who do not undergo medical treatment must be reached. We still know nothing about people diagnosed with infertility but not undergoing the treatment. Obviously, it is very difficult for the researchers as there is no successful way of encouraging those people to participate in the infertility research if they do not start treatment. Perhaps electronic media may be a tool of reaching those people (the Internet research, the content analysis of different online discussion forums created by those people).

According to Greil, the basic problem of infertility research is approaching it as medical phenomenon from psychological perspective. Meanwhile, infertility must be analyzed first through social perspective. It is related to experiencing the crisis in more holistic way. Social factors affecting infertility must be included, not just the medical ones.

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