Emotional disorders in pairs treated with assisted reproductive technology

Artur Wdowiak, Anita Wdowiak, Magdalena Stec, Weronika Pucek

Medical University of Lublin

European Journal of Medical Technologies
2014; 4(5): 15-24

www. medical-technologies.eu
Published online 31.12.2014

Introduction

According to WHO, INFERTILITY is defined as the inability to obtain pregnancy despite a regular yearly sexual activity without the use of contraceptives. [21] Infertility is a very peculiar disorder. Contrary to any other, it always involves two young people in a period of their life when they are the most active. The inability to fulfil one of the most basic desires of man, conceiving a child, exerts a very strong influence on the psycho-emotional state of the couple, it is conducive to changes in the functioning of family, frustration and lower self-esteem in the society. [14] Having a child is the most important biological aim of man, which allows the survival of mankind. Childlessness is an issue involving 15% of married couples in Poland and may lead to misunderstandings and marital conflicts (also family conflicts), as well as to lower self-esteem of the woman and, sometimes, the man. The desire to have a child is usually so intense that often it overrides all other problems and life ambitions. Depending on the framework, different psychological factors are emphasized in the etiopathogenesis of fertility disorders. Psychosomatic conceptions show that psychological factors play a substantial role in the formation and continuation of fertility disorders. They assume that all links of the long chain of reproductive functions may be influenced by disorders as a result of adverse stimuli. The influenced functions may be as follows: sexual needs and activity, ovulation and sperm transport, the transport and the implantation of ovum, its development and maturation up till the beginning and the course of pregnancy. [20]

Corresponding address:

Dr n. med. Artur Wdowiak
Laboratory of Diagnostic Procedures. Faculty of Nursing and Health Sciences, Medical University, Lublin, Poland
Pracownia Technik Diagnostycznych,
ul. Staszica 4/6 Lublin

Key words:

infertility, emotional problems, depression

Psychological factors may play a considerable role in the creation of circumstances leading to infertility. The most frequently referred to are emotional oversensitivity and psycho-sexual development disorders. These states cause disorders in sexual life, while chronic emotional tension induces disorders of the functioning of the organism. Not only do they impact the experience of the state of the treated, but may leave a mark upon the whole treatment. However, in some cases these states may play a pivotal role in the genesis of the afore-mentioned disorders. [22] Usually, the flawed development of personality in both sexes is the basic factor in the psychogenesis of this type of disorder. This induces disorders in sexual life, negative attitude towards the partner and, at the same time, states of chronic emotional tension, impairing the proper functioning of organism. Apart from factors resulting from infertility itself, a very important issue having impact on mental state are the factors associated with infertility treatment. Even though they may feel the involvement from the treatment team, the treated are still susceptible to suffering from emotions inseparably tied to the process of infertility treatment. Those involved in the treatment of infertility say their lifestyle radically changes due to additional duties, painful procedures and surgical activities. [20] The well-known Wasser's theoretical model suggests that infertile couples involved in diagnosis and treatment show a high level in both stress as well as other psycho-pathological symptoms as a consequence of inability to conceive a child. The stress role theory in infertility is also described as a model of the closed circle: exposition to environmental stress, infertility disorders, diagnosis, treatment, situational stress, relationship disturbance, lack of conception, stress increase, deterioration of diagnostic test results, infertility. [11] In clinical examination, it is emphasised that intense stress and fear in the examined infertile couples subjected to assisted reproductive methods show negative correlation in comparison to treatment success rate. [11] For a woman, maternity plays a significant role in the society, a factor for development and an idea for self-fulfilment. Therefore, the inability to fulfil maternal needs may be conducive to psychological problems. A lot of psychological components are involved in the detection of infertility. It is concomitant with the lack of interest in daily activities, depression, tensed contact with family, partner and colleagues. Other problems involve: thinking about infertility all the time, intense anxiety, deteriorated effectiveness in tasks, lack of concentration. Among the psychological problems, the following are mentioned: sleeping disorders, changes in appetite (increased or decreased), drug and alcohol abuse as well as libido decrease. Thinking about death and suicide occurs, social isolation becomes a fact with accompanying pessimism, guilt and worthlessness. [10] The psychological factors having impact on the formation of infertility disorders are as follows: personal qualities, emotional states, inner conflicts relating to parenthood and expectations related to the future, marital relationships, sexual and psycho-sexual disorders, psychological shock and neuroses. [20]

The problem of infertility treatment is also a factor, spawning much controversy among the patients. New technologies raise many moral dilemmas, especially on religious grounds [5,13,20,21]. Undoubtedly, it has a severe impact on the emotional state of the patient.

Materials and methods

The examination has been carried out on a group of 110 patients treated for infertility. It took place in Lublin from November 2012 to May 2014. Respondents were chiefly patients of the OVUM and the OVEA clinics (Staszica Street and Szczerbowskiego Street, respectively) in Lublin. The obtained results were subjected to statistical analysis. The values of the analysed parameters were defined with the help of amount and rate or the value of mean, median and standard deviation. For measurable features, the W Shapiro-Wilk test was used to assess the normality of distribution of the examined parameters.

For the independent qualitative features, the χ^2 homogeneity test was used to detect differences between the compared groups. The χ^2 independence test was conducted to examine the existence of the researched features. The U Mann-Whitney test was carried out to assess the differences for constant variables between

two groups, and the Kruskal-Wallis test – for multiple groups. The 5% error in reasoning and significance level of $p<0.05$ were assumed, showing that there are statistically significant differences. Statistical analysis was conducted using the STATISTICA 8.0 software (StatSoft, Poland).

Results of the research

The characteristics of the examined group

The examination encompassed 110 people, of which 86.36% (n=95) were women and 13.64% (n=15) – men. The surveyed were aged 25-30 (n=40; 36.36%) and 30-35 (n=32; 29.09%), whereas people aged 20-25 constituted 14.55% (n=16) of the examined, aged 35-40 – 10.91% (n=12) and above 40 – 9.09% (n=12). We can deduce that the most numerous group were respondents aged 25-30, whereas the least numerous – aged 20-25. The majority of respondents (68.18%) lives in the city, whilst every third person (31.82%) lives in the country. The majority of respondents have good social and living conditions (70.91%), while 27.27% of the surveyed – very good, and only 1.82% – bad . Taking education into consideration, nearly a half (40.90%) have a Master's degree, 11.82% – Bachelor's degree, 40,00% – high school education, 4.55% – vocational education, and only 2.73% – primary education.

The presence of depression in the examined group based on Beck's scale

The mean level of depression in the examined group was 7,97 ± 7,66 pt (scope 0-48). Lack of depression (0-11 pt) was found in 78.18% (n=86) of the surveyed, whereas 20.91% (n=23) of the patients had slight depression and 0.91% – moderate.

From the conducted examination, we can deduce that depression occurred more frequently among women (24.21%) rather than among men (6.67%). However, the differences were not statistically significant (p=0.23). The obtained results are shown in table 1.

The statistican analysis did not show any significant correlation between depression and age (p=0.72). However, depression occurred more frequently in the group aged 20-30 (23.21%) than in those aged above 30 (20.37%). The obtained results are shown in table 2.

The conducted statistical analysis also did not show significant correlation between depression symptoms and education (p=0.29). The obtained results are in table 3.

The research also shows that the surveyed who had good social and living conditions more frequently displayed signs of depression (25.64%) in contrast to those with very good social and living conditions (13.33%). However, the differences were not statistically significant (p=0.29). The obtained results are shown in table 4.

The research shows us that the surveyed said that the source of infertility in their marriage is unknown (n=57; 51.82%); whereas 24.55% of the patients (n=27) stated that the female factor is the source of infertility, 10.91% (n=12) pointed at the male factor, and 12.73% (n=14) – both factors are to blame (table 5).

The research shows that 37.27% (n=41) of the surveyed said that infertility treatment has not decayed their emotional contacts in the relationship, whereas 8.18% (n=9) of the respondents admitted that their relations have slightly decayed and 3.64% – sexual relations have definitely decayed. On the other hand, 21.82% (n=24) of the surveyed said that emotional contacts have improved, while 29.09% (n=32) couldn't tell the difference.

The research shows that, during infertility treatment, the surveyed most frequently experienced emotional (53.64%) and financial (49.09%) problems. They rarely had family (4.55%), religious (5.45%) and other kinds of problems (0.91%). The majority of the respondents claimed that they are not concerned about the stability of their relationship due to their infertility (n=48; 43.64%), whereas 33.64% (n=37) of the respondents said that they are absolutely not concerned about it, 20.00% of them were slightly anxious, and 2.73% – definitely anxious about the future of their relationships.

Table 1.
The presence of depression including sex

Sex n %	No depression n %	Slight depression n %	Total
Women 75,79%	72 24.21%	23 100.00%	95
Men 93,33%	14 6.67%	1 100.00%	15
Total 78,18%	86 21.82%	24 100.00%	110
Chi^2=1,42; p=0,23			

Table 2.
The presence of depression including age

Age n %	No depression n %	Slight depression n %	Total
20-30 76,79%	43 23,21%	13 100,00%	56
Above 30 79,63%	43 20,37%	11 100,00%	54
Total 78,18%	86 21,82%	24 100,00%	110
Chi^2=0,13; p=0,72			

Table 3.
The presence of depression including education

Education n %	No depression n %	Slight depression n %	Total
Primary/Vocational 100,00%	8 0,00%	0 100,00%	8
High school 75,00%	33 25,00%	11 100,00%	44
Degree 77,59%	45 22,41%	13 100,00%	58
Total 78,18%	86 21,82%	24 100,00%	110
Chi^2=2,51; p=0,29			

Table 4.
The presence of depression including social and living conditions

Social and living conditions n %	No depression n %	Slight depression n %	Total
Very good	26	4	30
86,67%	13,33%	100,00%	
Good	58	20	78
74,36%	25,64%	100,00%	
Bad	2	0	2
100,00%	0,00%	100,00%	
Total	86	24	110
78,18%	21,82%	100,00%	
Chi^2=2,49; p=0,29			

Table 5.
The presence of depression including the assessment of infertility treatment on sexual relations

Sexual relations n %	No depression n %	Slight depression n %	Total
Decayed	8	4	12
66,67%	33,33%	100,00%	
Improved	15	5	20
75,00%	25,00%	100,00%	
No change	60	7	67
89,55%	10,45%	100,00%	
Became mechanical	3	8	11
27,27%	72,73%	100,00%	
Total	86	24	110
78,18%	21,82%	100,00%	
Chi^2=22,84; p=0,00004*			

The research shows a significant correlation between the presence of depression and the statement whether infertility treatment has an impact on the concern of the treated about the stability of relationship (p=0.009). Another visible thing is that depression occurred more frequently among those who had such concerns (44.00%) than in group with slight concerns about the future of their relationships (16.67%) and in the one that definitely did not feel any concerns (13.51%). The obtained results are presented in table 6.

The majority of the surveyed said that the current relationship is their first one (n=94; 85.45%), whereas for 14.55% (n=16) of the respondents this is not the first relationship.

As a result of the conducted statistical analysis, it has been found that the surveyed who have been in more than one relationship consider their sexual

relations worse (31.25%) than the ones who experienced their first relationship (7.45%) (p=0.04). The obtained results are shown in table 7.

The broad majority of the surveyed (n=86; 78.18%) said that they are in matrimony, whereas 12.73% (n=14) of the respondents remain in legal marriage and 9.09% (n=10) – in cohabitation. Some of the surveyed (18.75%) who had other partners (n=16) said that they have children from previous relationships, whereas 81.25% (n=13) – that they have no children.

The results of the research distribute in the following way according to Beck's scale. The mean depression level in the examined group was at 7,97 ± 7,66 pt (scoped 0-48). No depression (0-11 pt) was found in 78.18% of the surveyed, whereas every fifth respondent (20.91%) had slight depression, and 0.91% of them – moderate depression. The performed research shows that depression occurred more frequently with women (24.21%; every fourth woman) than men (6.67%). The found differences, however, were not

Table 6.
The presence of depression including the statement whether infertility treatment causes concern about the stability of the relationship

Concern about the stability of the relationship n %	No depression n %	Slight depression n %	Total
Yes/Rather yes	14	11	25
56,00%	44,00%	100,00%	
Rather not	40	8	48
83,33%	16,67%	100,00%	
Definitely not	32	5	37
86,49%	13,51%	100,00%	
Total	86	24	110
78,18%	21,82%	100,00%	
Chi²=9,45; p=0,009*			

Table 7.
The statement of the surveyed on whether infertility treatment influenced their sexual relations including the statement if their relationship is their first one

# Relationship n %	Decayed n %	Improved n %	No changes n %	Became mechanical n %	Total
First	7	18	59	10	94
7,45%	19,15%	62,77%	10,64%	100,00%	
Another	5	2	8	1	16
31,25%	12,50%	50,00%	6,25%	100,00%	
Total	12	20	67	11	110
10,91%	18,18%	60,91%	10,00%	100,00%	
Chi²=8,06 ; p=0,04*					

statistically significant (p=0.23). Depression occurred more frequently in the group up to 30 (23.21%) than in the group above 30 (20.37%). The conducted statistical analysis did not show any significant relation between depression and the level of education (p=0.29). The survey also shows that the examined with good social and living conditions frequently had slight depression (25.64%) compared to those who have very good social and living condition (13.33%). The found differences, however, were not statistically significant (p=0.29). The research shows that the surveyed stated they do not know the source of infertility in their wedlocks (n=57; 51.82%); whereas 24.55% (n=27) of the respondents pointed at the female factor, 10.91% (n=12) of them – that it is the male factor, and 12.73% (n=14) – both factors. Most frequently, the surveyed have been having problems getting pregnant from 2 to 5 years (n=63; 57.27%); whilst 26.36% (n=29) of the examined have been experiencing this for a year, 9.09% (n=10) – from 6 to 10 years, and 7.28% (n=8) – over 10 years. The research shows that depression more frequently occurred in the surveyed who have been having problems getting pregnant for over 5 years (27.78%) in comparison to those who had been being treated from to 5 years (22.22%), and 17.24% of the respondents – for a year. The statistical analysis did not determine any significant correlation between the duration of problems with getting pregnant and the presence of depression. The majority of respondents (n=68; 61.82%) said that infertility treatment has strengthened their marital bond, while 35.45% (n=39) of them said that they do not see any improvement, and 2.73% (n=3) – that marital bond has not been strengthened anyhow. The research shows that depression occurred more often among the surveyed who said that infertility treatment has not strengthened their marital bond (28.57%) in comparison to those who experienced strengthened marital bond with their partner (17.65%). The found differences, however, were not statistically significant (p=0.18). The conducted survey shows that the majority of the respondents said that, due to infertility treatment, their sexual relations have not changed (n=67; 69.91%); whilst 18.18% (n=20) of the surveyed said they have improved, 10.00% (n=11) stated it became mechanical, and 10.91% (n=12) – sexual relations decayed. As a result of the performed statistical analysis, a significant correlation has been found between the presence of depression and the assessment of infertility treatment with its impact on sexual relations (p=0.00004). Most frequently, depression occurred among the people who said that infertility treatment caused their sexual relations to become mechanical (72.73%) compared to the surveyed who said that their relations have not changed (10.45%), 25.00% – that they have improved, and 33.33% – that they decayed. The survey also shows that 37.27% (n=41) of the respondents said that infertility treatment has not damaged their emotional contacts in their relationship; whereas 8.18% (n=9) of them said that sexual relations slightly decayed, 3.64% (n=4) – that they decayed. On the other hand, 21.82% (n=24) of the surveyed replied that emotional contacts have improved, whilst 29.09% (n=32) of them did not present an opinion.

Discussion

The reference books on infertility are numerous. We can find a lot of information concerning infertility itself, as well as its social aspects. Besides the factors resulting from infertility itself, the factors associated with treatment are a very important issue. Even though they may feel the involvement of the treatment team, the infertile remain susceptible to suffering from emotions inseparably tied to infertility treatment. Those who get involved in infertility treatment say that their lifestyle radically changes due to additional duties, painful diagnostic procedures and surgical activity. In Kerr et. al's examination, it has been found that every fifth patient partaking in in vitro fertilisation think about suicide; every third patient experiences relationship disturbance; however, 25% of the patients feels understanding and closeness of the partner, which has been proved by our research. The data from "Reproduktive Medicine Unit" show that 79% of infertile couples accepts and takes advantage of the available forms of psycho-social help. In 86% of those who agreed to such help, emotional disorders began to fade. The results of our research shows that couples who are trying to have

a baby need psychological care. We can find in reference books that psychological care is offered in association with a specific method of infertility treatment, which is in the further stage of struggling with childlessness. Meanwhile, emotional consequences of infertility manifest much sooner, and it would be best if couples could get access to psychological care from the moment of suspection of infertility, which would positively influence their attitudes towards treatment and its outcomes. Such a solution seems to be perfectly justifiable, taking into consideration the results of the research which shows that infertile patients look for emotional support in their doctors first and foremost. Rejecting a psychologist's help is not equal to negation of psychological aspects of infertility treatment. The functions of the psychotherapist and counsellor are performed by the couple's doctor. For many couples, more frequently for women than for men, infertility is a sign of crisis and life failure. The intensification of psychopathological symptoms, like anxiety and depression, is tantamount to cancer, ischaemic heart disease or hypertension. However, the results of research carried out by other professionals in the field show improvement in marital relations with infertility duration. According to Drosdzoł, all problems connected with diagnosis and therapy, the struggle and aspiration to common goal, pregnancy anticipation, hope and faith increase trust, security, closeness and emotional intimacy of infertile couples. Our research confirms these relations. Taking into consideration the results of previous research, one can infer that what connects women treated for infertility are the desire to create a full and happy family. There are reasons to believe that overcoming various psychological barriers may improve the whole treatment of infertile couples. Another problem is being sexually active without emotional involvement, whose main aim is fertilization only, as well as the existing conflict in maternity desires. According to Podolska, the source of this conflict may be as follows: anxiety for giving birth to a disabled child, hidden pricks of conscience due to use of contraceptives or previous abortions, fear for changes in body shape, overweight, concern for losing husband's feelings, predicting problems that may appear at work and difficulties in career. Sexual intercourse becomes a routine for both partners, increasing tension and anxiety leading to disturbance in sexual life. Prof. Lew-Starowicz is of the opinion that infertility influences one's own femininity, which is perceived as inadequate. Maternity becomes an ideal perceived as a warrant of successful marital life. Considering the data from reference books, we can find that the stress associated with the issues of infertility creates and escalates conflicts in relationship. The married couple is repeatedly misunderstood and not accepted by the community. Sexual intercourse becomes devoid of emotional involvement. It may also lack spontaneity, which is limited only to the fertile period, because its only aim is to conceive a child. The treatment of an infertile couple may cause moral and religious dilemmas connected with the choice of the treatment method. These decisions are particularly difficult for Catholic women. Because some of the methods are not accepted by the Catholic Church, many women and their husbands suffer a conflict of conscience, which is described thoroughly by Podolska. The observation carried out in married couples suffering from unwanted childlessness shows that they experience more conflicts and anxiety in comparison to those having children. Underlying this is the emotional tension associated with anticipation for a baby, as well as long-term action of the stressor, which in this case is determining and removing reasons for infertility. The therapy completely changes the life of the married couple. As is shown by Łuczak-Wawrzyniak, the frequency of visits at the doctor's surgery and stays in the hospital makes one overconcentrate on one problem, which is childlessness. Long-term, everyday interference from a doctor considerably affect the quality of life, as well as emotional, social, physical, professional, intellectual and spiritual welfare of infertile couples. Patients utterly focus on the therapy and its procedures, exposing oneself to the loss of status professionally, financially and socially. Each hour, day and month is totally dominated by the hope of conceiving a child. There is also a darker side to this – waiting in anxiety and fear of another menstrual bleeding. According to Drosdzoł, such a labirynth leads to never-ending expectations, faith and dreams alternate with negative emotions: anxiety, anger, fear, envy, mood disorder, humiliation, helplessness,

shame and guilt. A very similar image of an infertile couple is drawn in our survey. It breeds the need to broaden this type of research among infertile couples, because emotional problems are the source of infertility on the one hand, but on the other – they are the consequence of childlessness.

Conclusion

1. Emotional disorders occur more frequently in couples unsatisfied with their sexual relations.
2. Depression occurs more frequently in the patients for whom the therapy gave the sexual intercourse a mechanical quality.

References

1. Anderson K.M., Sharpe M. Rattray A. Irvine D.S.: Distress and concerns in couples referred to a specialist infertility clinic. Journal of Psychosoamatic Research 54, 2003, 353-355.
2. Bielawska-Batorowicz E. et al.: Współpraca lekarza-ginekologa i psychologa w leczeniu niepłodności, (in:) Ginekologia po Dyplomie 1993; 64: 11.
3. Dmoch-Gajzerska E., Baranowska B.: Etyka sztucznej prokreacji. Położna, nauka i praktyka. PZWL, 2008, 4, 16-19.
4. Drosdzoł A., Skrzypulec V., Buchacz P., Bakon J.: Psychologiczne i społeczno-kulturowe aspekty niepłodności. (w:) Annales Academiae medicae Silesiensis 2006, 60, 5, 438-443.
5. Filipowicz A.: Biopsychiczne dylematy stosowania technik „in vitro", (in:) Grosfelt J.: Chrześcijaństwo, świat, polityka. Zeszyty Społecznej Myśli Kościoła. 2009; 8: 1.
6. Jakiel G.: Płodność kobiety i mężczyzny w różnych sytuacjach zdrowotnych i życiowych, zapłodnienie-współżycie seksualne, (in:) Stadnicka G.: Opieka przedkoncepcyjna. Wyd. Lek. PZWL, Warszawa 2009, 44.
7. Jaroszewicz P.: Czynniki psychologiczne związane z leczeniem zaburzeń płodności, (in:) Ginekologia po dyplomie. Zeszyt Edukacyjny 2006; 9.
8. Jędrzejczak P., Sokalska A.: Niepłodność żeńska, (in:) Słomko Z.: Ginekologia. Wyd. Lek. PZWL, Warszawa, 2008.
9. Kuczyński W., Rucińska E.: Zjawiska populacyjne i uwarunkowania biologiczne w rozrodzie człowieka, (in:) Kuczyński W. (red.): Biologia rozrodu oraz zdrowie reprodukcyjne człowieka. Wyd. Lek. PZWL , Białystok, 2004.
10. Łuczak- Wawrzyniak J., Pisarski T.: Psychologiczne aspekty w leczeniu niepłodności, (in:) Pisarski T., Szamatowicz M. (red.): Niepłodność. Wyd. Lek. PZWL, Warszawa 1997.
11. Makara-Studzińska M. Wdowiak A.: Diada małżeńska a niepłodność, (in:) Makara-Studzińska M.,Iwanowicz-Palus G. (red.): Psychologia w położnictwie i ginekologii. Wyd. Lek. PZWL, Warszawa 2009.
12. Makara-Studzińska M., Wdowiak A.: Psychologiczna sytuacja kobiety niepłodnej, (in:) Makara-Studzińska M., Iwanowicz-Palus G. (ed.): Psychologia w położnictwie i ginekologii. Wyd. Lek. PZWL, Warszawa 2009.
13. Mazurczak T.: Medyczne i genetyczne aspekty zapłodnienia „ in vitro", (in:) Chrześcijaństwo, świat, polityka. Zeszyty Społecznej Myśli Kościoła. 2009; 8: 1.
14. Newson L., Postmen T., Lea S.E.G., Webley P., Richerson P. J., Mcelreath R.: Influences on communication about reproduction: the cultural evolution of low fertility. Evolution and Human Behavior 2007; 28: 199-210.
15. Panagopoulou E., Montgomery A., Tarlatzis B.: Experimental emotional disclosure in women undergoing infertility treatment: Are drop outs better off? Social Science & Medicine 2009; 69: 678-681.
16. Pawelczyk L., Sokalska A.: Aktualne rekomendacje postępowania z parą niepłodną, (in:) Pisarski T.: Położnictwo i ginekologia. Wyd. Lek. PZWL, Warszawa, 1991.
17. Podolska M.: Niepłodność jako problem psychologiczny, (in:) Pielęgniarstwo Polskie 2007; 2-3: 88-91.
18. Pook M., Tuschen-Caffier B., Krause W.: Is infertility a risk factor for impaired male fertility? Hum. Reprod 2004; 19, 954-959.
19. Pook M., Krause W., Drescher S.:Distress of infertile males after fertility workup. A longitudinal study. Journal of Psychosomatic Research 2002; 53: 1147-1152.
20. Szamatowicz M.: Etyczne, społeczne i psychiczne aspekty niepłodności, (in:) Kuczyński W. (red.):

Biologia rozrodu oraz zdrowie reprodukcyjne człowieka. Wyd. Lek. PZWL, Białystok, 2004.
21. The Ethics Committee of the American Society for Reproduktive Medicine. Child-rearing ability and the provision of fertility services.Fertility and sterility. Vol. 82, suppl. 1, september 2004.
22. Wdowiak A.: Problemy psychologiczne w niepłodności, (in:) Makara-Studzińska M., Iwanowicz-Palus G. (red.): Psychologia w położnictwie i ginekologii. Wyd. Lek. PZWL, Warszawa, 2009, 5.