According to the definition of the fourth version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), postpartum depression may include any non-psychotic depressive disorder during the first four weeks of postpartum, according to research criteria during the first year after birth. The exact cause of postpartum depression is not yet known, and most researchers believe that postpartum depression is a bio-psycho-social problem. So far, the biological aspect of the disease is explained by changing the levels of estrogen and progesterone during pregnancy, and by decrease of hormone levels after birth. Psychological correlates are often associated with low self-esteem, pessimism as a personality trait, bad strategies of coping with stress, mood swings and emotional reactions. The social aspect of the disease is associated with the existential conditions of pregnant woman, support of partners and education level. This paper will include issues like hereditary causes and possible psychological factors of postpartum depression prevention.

Nowadays, it is estimated that on average 15% of women, regardless of the pregnancy outcome, are suffering from postpartum depression. However, this information includes only those women who were diagnosed with postpartum depression and who themselves reported about it. Almost every woman receives basic care during pregnancy to prevent complications in the physiological level. This paper has shown possible psychological factors of postpartum depression prevention, the impact of optimism, self-esteem and coping skills. Acta Medica Medianae 2011;50(4):62-68.

Key words: postpartum depression, optimism, self-esteem, stress, mother

Introduction

Depression during pregnancy is associated with reduced prenatal care for pregnant woman, including poor nutrition and irregular sleep. Postpartum depression is associated with disorder of general functioning between a mother and the child concerning their mutual care, vocal and visual communication and reduced frequency of interaction including touch and laughter as compared with non-depressed mothers (1, 2). Depressed mothers also show intrusive and irritable behavior toward their children (1, 2).

Infants, young children and young people are particularly reactive to the negative effects of postnatal depression. Children whose mothers suffered from postpartum depression have poor affection, disturbance in emotional and cognitive functioning and lot of dysphoric moods (3). In scientific psychiatric nomenclature exists the dilemma whether postpartum disorders represent distinct entities or whether they differ from non-puerperium disorders, or is it just about the already existing preferences (usually hereditary) to mental illness. According to the findings from the literature, it is certain that these are three separate entities with specific clinical features, course, and outcome. The most important task for any clinician raises the question of the need for fast, accurate and appropriate diagnosis and treatment of postpartum mental disorders. Evaluation of a group of researchers was that the average number of new mothers who have experienced a mood disorder or anxiety after childbirth was probably in the range of 20%, meaning about 1.3 million per year. When the number is compared with the incidence among women who have other diseases in the United States the proportions are as follows:

- Every year 800 thousand women get diabetes (National Information Centre on diabetes) (4);
- Every year about 300 thousand women experience stroke (Centre for Disease Control) (4);
- Every year about 205 thousand women are diagnosed with breast cancer (National Institute for Tumor Disease) (4).

In fact, each year more women will suffer from postpartum depression and other mood disorders than the combined number of new cases of men and women with tuberculosis, leukemia, multiple sclerosis, Parkinson's disease, Alzheimer's disease and epilepsy. By these data we do not wish to minimize and underestimate these diseases, but illustrate the presence of postpartum depression
However, the fact that is frightening is that postpartum depression has not been recognized as a real problem yet in spite of the information. Psychologists or sociologists, medicine and even pharmaceutical companies do not deal with this problem. We believe that our illustration of occurrence, possible causes and psychological correlates is a contribution to this major problem to deserve more attention and interest among experts who should be dealt with it.

**Epidemiology of postpartum depression**

An increase in maternal depression has been observed in the last twenty years. This data is inconsistent with the view that pregnancy is a period of prosperity and enjoyment. The researchers also agree that the problems with mood during pregnancy are risk factors for postpartum depression. Consequently, there has been a shift in the reports and literature, where researchers switch the focus of interest from the symptoms and treatment of postpartum depression to anxiety and depression during pregnancy, in order to avoid worsening of symptoms in the postpartum period. The rate of depressive symptoms was higher during the six months postpartum. The researchers found that symptoms of depression are the most intense during the first trimester, improved during the second trimester and that the rate of depression increases during the third trimester (5-7).

Baby blues is postpartum sorrow, the most common and most innocent form of postpartum depression. It usually lasts a few days after birth, followed by irritability, sadness and causeless crying (8). In those days, the most important is firm family support when it comes to child care.

Postpartum depression is much considerably common, and is recognizable by its long duration. If these symptoms last for several weeks, it is necessary to see a physician. In most cases, this form of postnatal depression is successfully treated with pharmacotherapy, and takes no longer than six months to a year. This type of depression does not always occur immediately after birth, it is possible to appear after a few months. Symptoms of postpartum depression are: extreme mood swings, ranging from very good mood to great sadness, excessive sleeping or insomnia (not related to the needs of the child), changes in appetite, chronic exhaustion or hyperactivity, feeling unable to cope with everyday problems, irritability, negative thoughts, difficulty with memory and concentration, loss of confidence, feelings of guilt, helplessness, loneliness, crying without reason, fear of contact with other people, feeling the lack of love for the child or family, anxiety and panic attacks, grief and excessive crying, loss of interest in hobbies and other daily activities (8).

Postpartum psychosis is extremely rare because it occurs at about 0.5% of pregnant women (8). This is the hardest and most serious form of postpartum condition and requires medical attention. Symptoms include excessive nervousness and irritability, confusion, insomnia, paranoia, hallucination, hyperactivity, rapid speech, and mania. They are very intense and can last from several weeks to several months. Medical help is needed because there is a risk of injuries. Care of mother and drug therapy is a must. Psychiatric statistics testify that even one in ten mothers suffer from postpartum depression. It is estimated that per 1000 births, 100-150 mothers (10-15%) develop symptoms of depression (9-11). According to the recent data, the rate of postpartum depression is growing; nowadays, it is estimated to be reaching 20% (8).

**Summary of disturbances etiology**

**Hereditary factors**

Genetic studies of postpartum depression are mainly performed by classical methods of genetics of behavior, family history method and by using twin studies method. A significant number of studies indicate a link between psychiatric disorders in the family and their heritage to the next generation (9). The study of monozygotic and dizygotic twins, where it is shown that the congruence of monozygotic twins is greater than that of dizygotic twins, cannot be explained by different experience from the environment (10). It has been shown that the serotonin system of women, who suffered from pre-menstrual complications (11), has been in close reciprocal relationship with the gonads of hormones. The author notes that changes in the endocrine system stipulate changes from sensitive, physiological and environmental to socio-psychological. These results indicate the preliminary evidence of genetic predisposition for the change of the activity of serotonin in women with severe premenstrual complications. Serotonin transporter is linked to polymorphism of serotonin receptors which in turn is related to depressive disorders (11).

According to recent studies (12), there is a correlation between the alleles of individual genes with the social and ecological environment, in terms of susceptibility to the development of certain psychopathological problems. Researchers have found (12) that each of the polymorphisms (5 - HTTLPR, A118G and MAO) affects the degree to which the benefit depends on the quality of social environment. As a part of closely knit and reliable social network it seems to benefit those with sensitive alleles (5 - HTTLPR). In contrast, the loss of social network and good connections can accelerate social psychopathology. People with A118G and MAO polymorphisms are likely to be excluded from social interaction and they may be particularly aversive. The researchers say that there is a correlation between the relative
proportion of these alleles and the prevalence of depression across the nation. The researchers explain their findings by SERT-gene responsible for the overall mood, which is also used in the study. SERT-gene is described as "a depression gene" because it is known that the mood regulation gene is serotonin.

The researchers studied three groups of genes, which are encoded protein sequences, in terms of their association with depressive disorder. However, determining polygenic determination of postpartum depression in this experiment did not give successful results. Clearer results were obtained later, when they made the study of the brain after birth. Changes in estrogen levels are associated with the change in the enzyme mono-oxidants amino MAO A (13). MAO-A is measured in the brains of 15 women in four to six days after birth. They found that the volume of MAO-A increased significantly (43%) in all regions of the brain that were studied, compared with 15 women who were in the control group (13). According to the authors, the main findings of this study are important implications for prevention of postnatal depression and the development of therapeutic strategies that would aim to compensate for the increased MAO in the postnatal period.

**Psychological correlates of postpartum depression**

Delivery and postpartum period represent a specific type of psycho-physiological maturation crisis in the life of every woman. Hormonal changes, changes in body schema, activation of conflicts related with pregnancy as well as intrapsychic reorganization that occurs by assuming the maternal role indicate factors that are the most important in perceiving psychiatric disorders during the puerperium. Numerous studies sought to know the factors of risk of psycho-social nature responsible for the development of postpartum depression. Expressed postpartum depression is associated with poverty (14). Interpersonal factors such as poor social support and poor partnerships are also identified as factors for the development of postpartum depression (15, 16). Lack of partner's support is also associated with poor progress in the treatment of postpartum depression (17), while the increase in social support is associated with positive treatment outcome (16).

Although the definition of the fourth version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) suggests that postpartum depression may include any non-psychotic depressive disorder during the first four weeks postpartum, and according to research criteria during the first year after birth, it can have a start during pregnancy. The existence of ante-partum depression can have a prognostic value for postpartum depression (16).

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**Self-esteem and optimism for postpartum depression**

Self-esteem is the aspect of self-concept that explains the way we see ourselves and refers to the general opinion that we have about ourselves associated with the value that we place on ourselves as persons. With the low self-esteem, the central beliefs about ourselves are negative, in other words, our general opinion of ourselves is that we are inadequate or inferior, that we do not possess any real value and the right to good things in life. In the classification of postpartum depression, low self-esteem is usually stated as the main symptom (17, 18). Self-esteem is significantly impaired when we cannot identify with the role that we have acquired or the one we possess at the moment, and judging by the fact that the role of the mother is one of the key in life of a women, it is clear that we should set aside a special area for the establishment of self-esteem during the treatment of postpartum depression with psychotherapy. The main cause of low self-esteem in mothers is the negative assessment of their own maternal abilities. Mother's attention is constantly focused on the present; her positive future expectations may be less effective in promoting the general welfare (19). Several studies have dealt with the issues of psychological factors which may be preventing postpartum depression factors. Starting from the fact that the postpartum period is a very stressful situation for a woman, her level of optimism, self-esteem and the selection and implementation of strategies for coping with stress may contribute to resistance against the development of postpartum depression. Dispositional optimism and self-esteem were studied as predictors of postpartum depression (19). Optimism is associated with low rates of depression during pregnancy and two weeks after pregnancy. Self-esteem is in low correlation with depression during pregnancy, after birth and three months after birth. These data suggest that self-esteem and optimism are reliable factors that contribute to differential susceptibility to depression during the postpartum period (19). In another study, optimism and pessimism during pregnancy were measured three weeks after delivery, provided that the postpartum depression was also estimated. According to a study in which pregnant women evaluated their level of optimism during pregnancy, and then evaluated their current state through Edinburgh postpartum depression scale, optimism was in high negative correlation with postpartum depression (20). The direct link between self-esteem and depression in primiparous women is different from the relationship between self-esteem and depression among women in the adolescent period (21). In women, adolescents, loneliness and social support were related to the depression that is experienced after birth to a greater extent. As adolescence is described as a period when man's consciousness is still developing
(22), it is possible that social support is developmentally more important for the mother-adolescent, and self-esteem is more important for adult mothers. The feeling of helplessness is a basic problem of depression. Simple immobilization of mental and physical system only deepens the sense of helplessness for a woman. Sometimes, additional risk for depression is uncertainty concerning their needs, goals and expectations.

**Stress and postpartum depression**

The term stress often means the physiological, behavioral, or emotional response to a threatening situation. The physiological level suggests that stress can be seen in the increased concentration of some hormones in the blood, increased skin conductance, rapid pulse, high blood pressure, digestive problems, headaches, hypertension status, and recent research suggests that stress could negatively affect the overall immunity of organism. This would mean that stress is linked to diseases such as tumors and allergies (23). In addition, some unpleasant feelings of fear, anger, helplessness, and a general feeling of discomfort and distress occur in the state of stress. Sometimes, stress can be observed in the behavior or through changes in cognitive functioning (e.g. through changes in the efficiency of problem solving). Therefore, knowledge of general strategies to cope with stress and general stress theory is important for understanding the reaction caused by certain specific stressors, such as job loss or unemployment situation. Generally, it can be concluded that the adaptive strategies to cope with stress are associated with positive personality traits, while less adaptive strategies are associated with less desirable characteristics. How will a person deal with stress in a given situation is primarily determined by characteristics of the situation itself although there is a disposition which can be called the style of coping.

The link between strategies of coping with stress and depression has not been studied in women with postpartum depression. Healthy stress-coping skills and a high level of optimism are associated with better psychological and physical adjustment for adults during stressful periods. Healthy coping skills and high self-esteem can contribute to adaptive psychological functioning in parenting (24). According to a survey (24), the results show that nearly 63% of the participants of research support the use of instrumental support, acceptance, active multiplication and planning obligations during the week following the birth. Less than 3% of women use denial as a strategy to cope with stress during the postpartum period, while 25% of women feel remorse for their behavior. Primiparous women with postpartum depression mainly use coping strategies of withdrawal and pangs of conscience. These results are similar to the study (25) which shows that there is a relationship between expression and withdrawal strategies with greater anxiety in women treated for breast cancer. Pangs of conscience were negatively associated with optimism and self-esteem, where the increase in optimism and self-esteem would mean reduction of the feeling of guilt and greater control over the situation. Reduction of guilt may be associated with an improved outlook on life and a higher level of self-esteem.

Implications of specific strategies for coping with stress and the effect of those strategies on health have been investigated in numerous studies. Coping strategies aimed at problem and emotions are the best way for a woman to expect a positive outcome if there are problems with infertility (26).

**Therapy of postpartum depression**

The increase in estrogen, progesterone and other hormones is largely responsible for the strong feelings experienced by almost every pregnant woman. After childbirth, hormone levels decline rapidly, and their decline is attributed to adjustment after delivery. It is very important that every pregnant woman is aware of the fact that it is normal to be emotionally unbalanced to some extent, but if these feelings are very strong, the woman should immediately seek medical help. Today, the most popular therapies are estrogen and progesterone therapies. More and more studies investigate the thyroid function.

**Estrogen therapy.** Researchers have shown that estrogen therapy may be useful in treating postpartum depression (27). In a study involving 23 women with postpartum depression who were treated with estradiol, after two weeks of treatment, 70% patients were completely cured of postpartum depression.

**Progesterone therapy.** Researchers have popularized the prophylactic use of progesterone for postnatal depression. Demonstrations have shown that in women who previously had postpartum depression, taking progesterone therapy reduced symptoms after birth from 68% to 10% (28). However, synthetic progestagens have been implicated in causing depression in women who use contraceptives (28). So, there is evidence to support the possibility that progesterone may either decrease or increase the risk of postpartum depression.

To resolve this issue, researchers conducted a double blind randomized controlled study to determine the impact of prolonged use of progestin contraceptives (29). One hundred and eighty mothers who use non-hormonal method of contraception were recruited from tertiary hospitals in South Africa. Women were randomized within 48 hours after birth, given a single dose of 1 ml injections of progesterone by intramuscular injection, or placebo 1 ml of normal saline placebo by intramuscular injection. After the intervention, researchers measured postpartum depression...
during the first, sixth and twelfth months after birth with the help of Edinburgh postnatal depression scale (EPDS) and Montgomery-Asberg depression scale (MADRS). Compared with the placebo group, women who received progesterin injections had a significantly higher risk of developing depression during the period of six weeks after delivery. The relative risk of disease (above 9 on the MADRS and above 11 on the EPDS) for women in the experimental group was 2.56 (95% CI =1.26-5.18) and 3.04 (95% CI=1.52-6.08). These investigative findings suggest a careful use of progesterone contraceptives after delivery.

The function of the thyroid gland. A research has shown that women who were positive for thyroid antibodies during pregnancy are at risk for developing postpartum depression (30). To test the hypothesis that the function of the thyroid gland is stable after delivery, with administration of a daily dose of thyroxin, they used a double-blind placebo-controlled study, conducted in the UK where 100mg of thyroxin or placebo was given to a sample of 446 women who had positive thyroid antibodies, in the period from 6-24 weeks after delivery (30, 31). Maternal mood and thyroid status were evaluated every four weeks after birth. The results showed that there was no evidence that thyroxin has an effect on depression. This study provides evidence that postpartum depression is most likely associated with risk factors such as negative life events, and that the causes of bio-chemical nature are not the causes of postpartum depression.

Hormonal changes begin with the first menstrual period, which increases their vulnerability to psychological, environmental and physiological changes during the reproductive period. In stressful situations, in pregnant women, changes in the physiological sense are more intense. Therefore, specific mood disorders occur at the time of high hormonal fluctuations, such as labor.

**Conclusion**

Problems with mood during pregnancy are the risk factors for postpartum depression. The prevalence of mood disorders during the early period of life in women with postpartum depression is more pronounced than in the general population, indicating potential genetic or family components of disorders.

Women who have premenstrual complications can have problems with mood after childbirth due to the activity of serotonin. Sudden increase in monoamine oxidase after birth causes phenomenon of postpartum depression, while in women who experience postpartum depression the symptoms of it may be reduced by progesterone and estrogen therapy. Imbalance in the secretion of thyroxin is not associated with the emergence of depressive symptoms.

Self-esteem and optimism are reliable factors that contribute to differential susceptibility to depression during the postpartum period.

Generally, it can be concluded that the adaptive strategies for coping with stress are associated with positive personality traits, while less adaptive strategies are associated with less desirable traits.

Owing to a wide range of psycho-pharmaceuticals (antidepressants and antipsychotics of new generation), and to psychotherapeutic techniques as well, the rapid and successful recovery of most patients have been enabled. However, it is necessary to emphasize that treatment of these disorders in any case should be in accordance with individual and specific needs of each woman.
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PSIHOLOŠKI KORELATI POSTPARTALNE DEPRESIJE

Anida Fazlagić


Ključne reči: postpartalna depresija, optimizam, samopoštovanje, stres, majka