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Factors influencing attachment in perinatal period as determinant of healthy development

ABSTRACT

The attachment theory by John Bowlby [2] and Mary Ainsworth [3], is an expression of the emotional attachment of a small child to the mother and other close persons. The essence of the study is to elaborate a theory of the factors of findings that influence attachment.

Historically, it was assumed that the foetus lives in the womb, separated from the outside world, then it comes into contact with the world after birth. In the course of time, it has been proven that a prenatal child responds to the external environment, that all its senses are developed and that it even remembers. These facts led to the establishment of a new scientific discipline of prenatal psychology that deals with the development, effect of emotions, behaviour and experiences of a human before birth. The attachment theory was developed in that relation. In the first place, the object of attachment is the pregnant woman, who has to deal with her own physical, psychological, social and economic changes resulting from the pregnancy. In the second stage, the woman has to learn about the foetus's – child's possibilities, especially sensory perception, i.e. music, touch, smell, taste, sight, and about the harmful effects of the external environment that disturb attachment such as drugs and nicotine. In the third stage, the pregnant woman should learn about the methods of communication with the child. Bowlby [2] and Ainsworth [3] advise the necessity to build proper attachment, especially of the mother, from the very beginning of the pregnancy. They point out that an imperfect or pathological attachment can cause lifelong harm of the individual [2,3].

The determinant of healthy development originates in early life as social determinants of health. The determinants related to social support, socialization and stress of the mother during pregnancy and the birth of the child are influenced in the same way. The child's perinatal and postnatal development is affected, for example, by the mother's addictions [4].

Motto [1]

“If we could ensure that each child is loved and wanted from the very beginning, and is respected, and that respect for life were one of the highest human values, and if we could optimise the prenatal and perinatal stages of life without disrupting the basic needs, without aggression and psychotoxic effects, we would have a society without violence. Our children will treat the world in the way we treat our children. And that also includes an unborn child”

Introduction

The definition of attachment was developed by Ainsworth [3], Benoit [5] and Brisch [6], who reported that the emotional tie (attachment) is an innate system of the brain function, through which the child naturally searches for a tie, most frequently with its mother [2,7], father or other person [8]. Safe attachment makes it possible for the child to communicate with close persons, thus enhancing his/her chances to survive. This relationship is based on communications by feeling, touching, perceiving voice and sound, seeing and hearing. The quality of the attachment is affected by a number of factors, for example by relations between partners, attitudes to the future child, the social situation of the woman and family in addition to the general psychosocial situation of the woman. The relationship between prenatal attachment and the occurrence of depression in woman was demonstrated [9]. The term “queen bee” means the woman's loss of interest in sexual activity [10]. Verny and Weintraubová [11] conducted deep analysis of this prenatal attachment. The emotional tie expresses the attachment of an infant to his/her mother [12,13,14] and to further close persons [8]. The new-born baby establishes a so-called hierarchy of related persons connected to him/her in stress situations [15,16]. Thus,

in the case of a stressful situation, the infant first starts searching for the primary close persons, usually his/her mother [7], who can provide him/her with feelings of emotional security and calming. If the mother is not available, then he/she aims at the second close person – the father, or another person [8].

The effects of developmental abnormalities and chronic disease disability may adversely affect physical, mental and social functioning [17]. This report describes the development of attachment between mothers or other family members and their children with somatic or social disabilities and which factors may affect these attachments [17].

Attachment

The attachment theory by John Bowlby [2] and Mary Ainsworth [3] is an expression of the emotional attachment of a small child to the mother and other close persons. The theory was formulated in 1969, and today it is one of the most influential theories in developmental psychology. The attachment theory is sometimes called the theory of early emotional bond. In Czech language, attachment is often used in the original English version and can refer to an emotional attachment in the general meaning [2,3].

The theory of perinatal attachment is closely related to the development of prenatal psychology, which is a new scientific discipline. Today, it is obvious that the psychological development of an individual starts at the time of intrauterine life of the foetus, and that is what the discipline studies. It strives to integrate the differences in fields that deal with the basic questions of life, which include medicine, psychology, ethology, philosophy, sociology and anthropology. Furthermore, it deals with the broad contexts of prenatal life, the effect of the mother's emotions on the foetus, social relations, and experiences during pregnancy [18].

However, when the caregiver's behaviour is evasive or inconsistent, it leads to one of the types of insecure attachment that negatively influences the development, causing the child to use different behavioural strategies. Dismissing attachment is a type of relationship caused by a dismissing mother when the child learns not to show negative emotions, that is, to scream or cry. Anxious ambivalent attachment occurs when the mother's responses are not consistent or predictable and when the mother does not respond in some situations; a typical symptom of this type of attachment is that the child's negative manifestations are overly intensive. Disorganized or disoriented attachment occurs when the carer is a source of safety as well as danger, such as in the case of abuse. A typical reaction of the child is chronic anxiety and disorganization in the models of behaviour [9].

The child can have a different type of attachment to different caregivers (father and mother), while it is important for the child's development that at least one of those attachments is safe [9].

The ability of the parents to respond to the child's attachment behaviour and the type of the child's reactions depend namely on the parent's own childhood experience; hence the type of attachment is quite likely to be passed on to the following generation. Velemínský [9] also points out the issue of establishing attachment in children with a disability.

This field of prenatal psychology is very new and deals with what happens inside the womb, what was hidden from people. It was all a matter of guesses and speculations. Modern technology has made it possible to watch the intrauterine life of a child; we are able to watch the child's growth, movements and reactions without influencing the foetus in any way thanks to sonography.

Today, both partners are more involved in pregnancy than before. Men should accompany their pregnant partner to prenatal classes, they should attend the sonographic check-ups of the foetus, they should be involved in selecting the hospital, the child's name, and above all, be present at the delivery [19]. The period immediately preceding the delivery or during the delivery, and also the early post-partum, are characterized by the dependency of the mother on close persons, above all, on the father of the child to be born. This especially includes psychological support when the feeling of safety that

the pregnant woman needs is created [20]. If we want the father to be active during the pregnancy, delivery and after the delivery, we need to speak of pregnant parents, not only of a pregnant woman.

Prenatal psychology does not only deal with the emotions of the pregnant woman, but also with their effect on the foetus, examines the mother's experience of the pregnancy, studies social relations in addition to other effects that can influence the development and life of the unborn child. Various studies imply that the memory functions of the foetus develop during the prenatal period. The foetus is able to receive and also process sensory information [21].

Pregnancy and prenatal psychology are closely linked to prenatal communication. It is very important that the pregnant woman starts speaking to the unborn child as early as possible. This communication is very important as it influences the development of the child's personality. The foundation of the "me-you" relationship in a human life is dialogue and it has a substantial impact on the encounters and relationships in the postnatal period of the individual. A prenatal child is not only a living biological and psychological individual, but also a social individual. It is the first contact between the expectant mother and her child.

There have been many studies and thoughts on the prenatal period. It is a child that often gives one's life direction, an objective, or purpose. A foetus, a child is someone to whom we can give our love, our abilities, our care, but also our time [22]. John Amos Comenius in his work entitled "Informatorium for Kindergartens" [23] emphasised that expectant mothers should be careful. They should make sure that they do not harm the foetus. Women should take care of their future child. They should be abstemious when it comes to food and drink, but they should not fast so that they do not kill the child. Pregnant women should eat healthily and have a healthy lifestyle. They should avoid falls. Furthermore, the woman should avoid stress, anger and sudden shock [23].

Obstetrics is a profession as old as humankind. Literature and research, however, mostly focus on the somatic development of the child, on the methods of childbirth and on the effect of noxious substances. Tens of thousands of scientists and clinical workers have participated in the research. The life of the mother used to be seen as more important than the life of the foetus – child.

Ancient medicine has been very important for Europe. The Hippocratic Corpus and information from his predecessors have been preserved. They mention both diseases and the instruments they used. Aristotle was an important trained physician. In his paper, he described bleeding during pregnancy, changes in pregnancy, miscarriages, multiple pregnancies and the course of childbirth. In 1510–1511, Leonardo da Vinci created a work with seven hundred and fifty beautiful drawings in collaboration with anatomist Marc Antonio della Torre.

In the second half of the 20th century, the interest of scientists shifted to the area of prenatal psychology. Some of the major representatives of this scientific discipline are S. Ferenczi, O. Rank, Peter Fedor-Freybergh, and John Locke. In the Czech Republic, Z. Matějček, J. Langmeier and J. Duňovský study this field.

Thomas Verny [11] is a Canadian obstetrician of Slovak origin. He was one of the first experts who formulated conclusions arising from observations using new technologies. He described three types of communication, i.e. physiological communication where blood passing through the placenta is the mediator. Various substances, such as sugar and adrenalin, flow through the blood. Stress may cause physiological reactions in the mother. There is sensory communication, when the foetus perceives sensory stimuli, but not all of them. This includes massaging of the belly, and the mother's voice. The movement of the child expresses its displeasure. There is emotional and rational communication between the mother and the foetus. The mother experiences the existence of the foetus in a specific way, she focuses on it, pays attention to it and contemplates. The author in his work "The Hidden Life of an Unborn Child" presents his ideas and findings, opinions on prenatal psychology [24]. He also states that, "an unborn child is a human being who is aware and that responds and who leads an active and emotional life from the sixth month" [24].

Verny [19] summarized his findings in four points. In the first point, he speaks about the human foetus that uses all the senses. This also includes the foetus's ability to sense. The second point is that as soon as the foetus is able to sense, its attitudes are formed. The behaviour and actions of the foetus are then related to its own feelings. The third point mentions the mother who has a negative effect on the personality of the developing foetus with her anxiety or worries. The fourth point talks about the father of the child and his relationship to the child. The author believes that his long-term observations indicate that parents have an effect on the physical and psychological traits of their children [19]. Parents influence their child with their thoughts as early as in the womb.

Another great personality in this area is Peter Fedor-Freybergh [25], who says "If we could ensure that each child is loved and wanted from the very beginning, and respected, and that respect for life were be one of the highest human values, and if we could optimise the prenatal and perinatal stages of life without disrupting the basic needs, without aggression and psychotoxic effects, we would have a society without violence. Our children will treat the world in the way we treat our children. And that also includes an unborn child." The individual prenatal stages represent a unique opportunity in the primary prevention of psychological, emotional and physical problems in subsequent life. Pregnancy is an active dialogue between the mother and the child, and also the broader environment. It points to the importance of prenatal care. This includes psychological, medical and social aspects.

Furthermore, it should be noted that Professor Fedor-Freybergh [26] intentionally used quotation marks for the word foetus as he had never met a pregnant mother that would speak about her "embryo" or "foetus", but always about her child.

Matějček [27] provides a summary of Verny's [24] basic findings. The foetus can see and hear. It senses, it has developed a taste, it can learn, but only at a simple level. The most important ability of the foetus is that it can sense. Whatever the child senses and feels forms its attitude and expectations towards itself. It results in how the child perceives itself, whether it is a happy or a sad child, how the child will behave as a person, whether he or she will be happy, or sad, or aggressive, or whether he or she will be confident, permissive, or full of envy, anxiety. All of that depends on what the child learns about himself or herself during the time in the womb. The child's mother is the source of everything. Deep and permanent forms of feeling are the most important. Long-term anxiety or insecurity concern motherhood and can scar the personality of the unborn child. On the other hand, positive emotions such as joy at having a baby considerably contribute to healthy emotional development. Current research focuses increasingly more on the father and his feelings towards the mother and the child [19,28].

There are now many literature sources concerning this issue, for example, by L. Takács [29], K. Evertz [30]. Some of the distinct psychologists in the Czech Republic include Prof. PhD. Zdeněk Matějček, CSc., and Prof. PhD. Josef Langmeier, CSc. Kohoutek [31]. According to Marek, the most important (1) both for the mother and the child is that the mother stays calm during the pregnancy, does not get upset for nothing, knows how to relax, does not smoke, does not take drugs or drink alcohol, which also has a negative effect on the development of the child, also after its birth. The woman should have a stable and harmonic relationship with her partner.

Childbirth is a crucial event in the life of a person. There are external stimuli. The childbirth itself is linked to unusual situations. That means light, changes in breathing and blood circulation, pain, but above all, life outside the womb. In psychology, the potential occurrence of a child's post-delivery trauma due to such stimuli is considered. Separation from the mother also contributes to that. To maintain the relationship and bond between the child and the mother during pregnancy as well as during and after delivery, development of the parental behaviour of the child's mother and father should be supported immediately after delivery so that the bond supported throughout the pregnancy can be further developed. Therefore, cooperation between the woman, obstetricians, paediatricians and psychologists is essential. All of society should respect the fact that everyone has the right to live in

a socially healthy world without violence. Each unborn child is a personality, a social and psychological partner of his or her loving parents. The history of a human starts at the beginning of our life, at the moment of conception. Many studies mention that how the child is loved, wanted and respected affects his or her ability to cope with problems later in life, both social and individual [1].

The womb is the child's environment before birth and the womb is a part of the woman's body. A woman as a mother is a person with a medical history, a family home, an experienced childhood, dreams, but also disappointments, successes or failures, pain and love. She lives in a specific world. She has a job, she studies or works, for example, in a factory, she might do shift work, she might be a manual worker, or be unemployed. She might have money, or maybe not. Maybe she drinks a lot of alcohol, or just a little, she might be a heavy smoker, or a non-smoker. She might spend her nights alone in bed, experiencing nightmares full of fear and horror with loud screams. She might be going through a period of falling in love, being in love, enjoying happiness with her partner.

In her womb, there is a child that lives together with its mother thanks to the symbiosis. The child's blood is the mother's blood. The mother's hormones are the child's hormones. The foetus drinks together with the mother, eats with the mother, loves or hates, has fun, suffers, is frightened, listens to her heart beats, shares everything with the mother. The child cannot live without the mother and is completely dependent on her.

The child's father also plays an important role. He is also a person with a medical history, lives his own life in his own world, and played a very important role in the child's conception. The father is the mother's closest environment.

A great deal is demanded from the child. Most of the time during the nine months that the child lives in the womb, he or she grows and learns to prepare for life. Therefore, it is important for the child to learn adaptation mechanisms that will help it survive. We need to ask a few questions. How many of us think about the child's environment before birth? How many psychologists think about this question? How many gynaecologists think of the "foetus's" environment when examining pregnant women? This concerns theoretical learning about the course of pregnancy, leading to a better understanding of the woman's problems, then monitoring the growth of the future family member, the woman's medical condition, participation in so-called games with the foetus.

Therefore, it is natural today that the father participates in the child's delivery. Today, it is expected that men will participate in prenatal courses, massages, learning about the symptoms and the start of labour. Men should support their partners during the pregnancy both physically and psychologically. Men should help with the household chores, with preparations for the new family member, but they should also help their wives to maintain a healthy lifestyle in pregnancy [32].

Vágnerová [18] states that the connection of the mother's body with an unborn foetus stays in the mother's womb for her entire life. The placenta is the main connection between the mother and the foetus. The changes in the mother's internal environment are also manifested in the foetus's body. Vágnerová [18] further states that, the human foetus manifests in a typical way during its development, in relation to the maturing of individual functions, as well as the result of basal experience. The behaviour of the foetus is individually typical in this stage. Its characteristic traits remain after birth. Usually, it is a manifestation of temperament. The foetus has an inherent ability to respond to various stimuli that may affect it in the intrauterine environment, and moreover, it behaves in a selective way so that it can be influenced especially by those who are desirable for the foetus. It is possible to assume that the foetus has, at least in the last trimester, an inherent ability to respond to new and unknown stimuli in a specific way. Its ability to receive information gradually develops and its responses to stimuli of various qualities differentiate. The foetus is able to learn in the simplest form. During the foetal stage, it creates an experience, distinguishes between known and unknown stimuli, and starts to differentiate between several stimuli that are the most common. It learns to respond to them in various ways. Brand new stimuli or stimuli that are too intense when compared with standard

stimuli induce a different activity. The basal feeling of safety, which is not always formed, is an important result of the complex prenatal experience. Its development continues in the postnatal stage, especially in relation to the mother.

Conditions essential for developing proper attachment

A. Factors influencing the physiological course of pregnancy

The time of changes in pregnancy

Leifer [33] in his book states that physiological pregnancy is time-limited and that it is a normal process. This process starts with the fertilization of the egg and ends with the delivery of the foetus. From a psychological point of view, pregnancy is perceived as a period of psycho-physiological crisis and instability [33]. Changes in pregnancy mostly include the somatic, physiological, endocrine, social and psychological areas [34]. Caron also describes pregnancy in a very similar way as he states that pregnancy and childbirth, as well as the period following childbirth, represent a sensitive phase in the woman's life that also includes major transformations, from the psychological view, as well as from the view of the woman's social role and from the physiological view [35].

Somatic changes in pregnancy

Heretik [34] states that women perceive somatic changes negatively. The body changes during pregnancy, body weight increases, pigmentation increases, stretch marks appear, the overall shape of the body changes and the breasts are tense. Women with a low self-esteem prior to pregnancy are more vulnerable. Women in late pregnancy are worried about losing their attractiveness, about weight gain, about permanent damage to their body, and about losing control over their body. Endocrine changes in pregnancy are distinct and influence the woman's psyche a great deal due to female hormones [34].

Physiological changes in pregnancy

Physiological changes in pregnancy are perceived as difficulties by women. They include nausea, backache, swelling, varicose veins in the lower limbs, vomiting, heartburn, constipation, shortness of breath, increased perspiration, fatigue, limited mobility and urinary problems. All of that is reflected in the woman's psychological reactions, experience and behaviour [36].

Emotional changes in pregnancy

Emotions are intensive signs of pregnancy. In pregnancy, the woman experiences conditions that can be labelled as pathological in the regular population. This includes depression, moodiness and a high level of anxiety [34]. Ratislavová [37] states that the psychological changes in pregnancy and after childbirth are largely conditioned by the personality of the pregnant woman, then by age, attitude towards pregnancy, maturity, current living environment, as well as the economic and social environment.

The first trimester is a stressful phase for the woman. The first psychological and physiological changes occur. The woman gradually comes to terms with the fact that she is carrying a living foetus that she does not feel yet. It is a time of insecurity, fear and doubts, but also a time of joy and happiness.

In the second trimester, positive feelings and also satisfaction come. The woman starts to feel the movements of the foetus, the foetus is starting to look like a baby on the ultrasound and the belly is growing. People talk about the foetus, what it looks like and what sex it is.

The third trimester is a time of preparation for the new family member. This time is very physically demanding on the woman and it seems to be never-ending. The large belly often gets in the way

and the woman cannot sleep very well. Some mothers experience the fear of labour towards the end of the pregnancy, but it is replaced with the joy of having a baby [37].

Changes in the hormonal system

Roztočil et al. [38] state that there are multiple changes in the activity of the endocrine glands during pregnancy that influence the body. Vágnerová [39] states that the body of a pregnant woman responds to hormonal changes as well as regular stress in a more intense way.

B. Influencing factors of the woman's needs

Sleep

The woman needs at least six hours of regular night sleep. Resting during the day is also important. Night work is not recommended [40].

Physical activity

Any physical activity is very important in life and also in the course of pregnancy, and as such it should not be neglected. Therefore, a pregnant woman should definitely not avoid exercise. Exercise during pregnancy is a part of the preparation for labour, but it is also important for maintaining a good physical and mental condition. There are many special exercises for pregnant women. Exercise from the beginning to the end of pregnancy is recommended. Some sports are less suitable. It is recommended to swim, do exercises for pregnant women, hike and walk in the countryside. Any excessive physical strain causing shocks to the body is not suitable. The woman should focus on strengthening her abdominal and breast muscles, pelvic floor, or on exercises to prevent varicose veins and flat feet. Nonetheless, there are also sports that a pregnant woman should avoid, including horse-riding, diving, ball sports, tennis, aerobics and adrenalin sports [41,42].

C. Factors influencing the development of the foetus

Roztočil et al. [38] write in their book that we meet various women in prenatal care. They might be addicted to drugs or too young, they might be homeless women or socially disadvantaged women. All these factors have a negative effect on the development of the foetus. According to Ratislavová [37], a midwife should be able to limit or suppress psychological stress, help the mother to have a positive relationship with herself and strengthen the maternal identity.

Social and economic situation

This concerns single women, homeless women and women living in a poor socio-economic environment. Such women do not have their basic needs satisfied, which include love, rest and support. They are more prone to depression, which aggravates the development of the foetus due to stress and the inappropriate lifestyle of the pregnant woman. The women might have infectious diseases, sexually transmitted diseases and be more likely to drink alcohol and smoke. That leads to a higher risk of premature birth of newborns with a low birth weight and worsened adaptation [37].

Drugs, alcohol, smoking

Women who are addicted to drugs, along with their fetuses, are exposed to various problems. There is a risk of premature birth, a delay in growth, and withdrawal symptoms occur in the newborns. The child suffers from increased saliva production, diarrhoea, and may experience cramps, fever and vomiting. This problem is also related to the risk of infections such as HIV and hepatitis B [36]. When the woman uses amphetamines during pregnancy, the child may suffer from behavioural disorders, or increased aggression. The use of heroin and cocaine may lead to premature placenta separation,

anaemia in women, but also inherent developmental defects in the foetus, increased womb activity, as well as low birth weight of the newborn [37].

Alcohol in early pregnancy has a teratogenic effect. It influences the growth of the foetus during pregnancy. The ability of the developing foetus to secrete alcohol from its body is fifty percent less than that of the mother. When the pregnant woman drinks more than twenty-five cl of alcohol per day, the child suffers from alcohol syndrome. Such a newborn has some typical facial features. The newborn has short ear apertures, a broad and flat nose, insufficiently developed philtrum, but above all, he or she suffers from mental retardation.

Such children are at risk of premature birth and a low birth weight [36]. Foetal alcohol syndrome caused by the woman's alcohol addiction affects the development of the unborn child and causes disorders of intelligence, counting, memory and attention. It can also lead to hyperactivity and behavioural disorders. Later in life, such children are at risk of becoming alcoholics [43].

Smoking during pregnancy causes premature birth or premature breaking of the amniotic sac, premature placenta separation, in addition to growth and weight retardation. Nicotine has a negative effect on the blood circulation in the placenta, therefore tachycardia may occur in the foetus. One cigarette is enough to increase the heart rate of the foetus. The only positive effect of smoking during pregnancy is the reduced occurrence of preeclampsia [37]. It is important to inform the pregnant woman of the negative effects of smoking on the foetus in prenatal care. Women should completely avoid smoking during pregnancy. If the pregnant woman cannot quit smoking, she should at least reduce the number of cigarettes per day to a minimum. She should avoid smoke-filled environments. Even passive smoking affects the foetus and influences its growth [36].

Psychological factors influencing pregnancy

In the first trimester, the woman focuses mostly on herself. She is introvert, she watches her body and the first signs of pregnancy. She slowly comes to terms with the fact that there is a new life inside her, a life that will change the life of the whole family after birth. The task of the pregnant women in the initial period is to accept the pregnancy. She has feelings of fear, doubts regarding early loss, hypersensitivity, moodiness and insecurity. In this stage, the woman deals with how to inform her partner or parents of the pregnancy. That can be very stressful for the woman, especially when she expects a negative reaction [37,38].

Roztočil et al. [38] state that the second stage of psychological pregnancy starts when the woman feels the movements of the foetus. She is aware of the existence of the foetus in this stage. She follows a healthy lifestyle, she is active, takes exercise classes for pregnant women, goes swimming and attends a birthing course.

In this time, the woman's task is to accept the foetus as an independent individual. The second and third psychological stage are the time when premature birth might occur. The woman also feels that she wants to deliver the baby as soon as possible. This period is called "nesting". The woman is getting her home ready for the child. She also feels vulnerable, she is worried about the pregnancy, afraid of labour, but she is also excited about the birth of the child. Most women feel uncomfortable towards the end of pregnancy. This stage seems to be never-ending. The woman's body is physically strained. She cannot sleep very well and she feels tired. She has feelings of clumsiness, and unattractiveness due to the size of her belly. Her task is to prepare for labour and for the existence of a new being [37,38].

Anxiety

Anxiety has played a positive and irreplaceable role in our lives for millennia. Together with fear, it protects us from real danger. It guides us towards healthy abstinence and prepares us for physical and mental performance. Fear and anxiety are adaptive emotions. Psychological trials have shown

that a person tends to perform at their best when they feel anxious. Physical manifestations of anxiety include perspiration, accelerated heart activity or nausea. When those manifestations are stronger, it is necessary to seek medical help. Nervousness is one of the basic forms of anxiety. Tension, restlessness and unease are synonyms of anxiety (Jaspers). Anxiety is not fear, anxiety is an emotional potential that activates fear. It has been proven that people better fight and escape something they can see, touch and measure [44,45].

Pregnancy and anxiety

Northcott (cited by Andersson [46]) states that anxiety during pregnancy and the postpartum period has not been as studied as much as depression. During pregnancy, women experience anxiety due to the transformation. Conception, pregnancy, labour and the time after the birth are important stages, both in the lives of the woman and the family. When the pregnancy is planned, it is a joyful event. All of that is related to calmness, and internal balance, which leads to the maturity of the woman, an increase in self-respect and self-acceptance. Pregnant women and new mothers especially tend to be anxious. To be a mother for the first time is a new role, with a new person and new responsibilities. An anxious reaction is understandable but many experts do not admit that. Ninety percent of women experience an ambivalent relationship to the future child during pregnancy and after the birth. They experience fatigue, worries and fear, feelings of weakness, moodiness, depersonalization, problems with concentration, insecurity, irritability and vulnerability.

In their study, Rouhe, Salmela-Aro, Halmesmäki and Saisto [47] state that an estimated five to ten percent of pregnant women in Scandinavian countries suffer from a great fear of labour. This idea is also confirmed by Areskog, (cited by Ryding [48]). Other studies have shown that increasing fear and anxiety may overshadow the entire pregnancy, lead to labour complications, problems between the mother and the child, in addition to postpartum depression. Fear has only been examined at the end of pregnancy, before labour. One study showed that fear is lower in the early stages of pregnancy than in the late stages. Anxiety in pregnancy is the lowest between the twenty-second and twenty-sixth week and increases after that. The result is that between the twenty-second and twenty-sixth week is a good time to start treating the fear of labour.

The effect of anxiety during pregnancy on the mother and the child

In 1941, Sontag pointed out that emotions influence the entire pregnancy (cited by Hofberg, [49]). Bergh et al. [50] state in their study that fourteen independent studies confirmed the connection between the mother's stress and prenatal anxiety. This was linked to cognitive, behavioural and emotional problems in children. From the psychosomatic point of view, we need to recognize that pregnancy may induce a maturity crisis in a person. That leads to hyperactivity of the limbic system, which subsequently activates a whole cascade of psycho-physiological reactions such as excessive secretion of serotonin, catecholamine, increased parasympathicotonia, with all the consequences for the pregnant womb [51]. Sjörgen's Swedish study (cited by Alehagen, Wijma and Wijma [52]) showed that pregnant women with a high level of anxiety had more epidural blocks during labour than women with less anxiety.

D. Fear of labour also leads to more frequent indications of C-section

The effect of anxiety on the somatic development of the child

The study by Teixeira, Fisk and Glover [53] points out that women suffer from anxiety during pregnancy. The authors were convinced that the mother's psyche can influence the unborn child. The studies showed that the children of anxious or stressed mothers had a lower average birth weight and a higher premature birth rate [53].

Stress

The low weight and the effect of stress in pregnancy were examined by comparing the life events of women. Two hundred and fifty women were selected. Three interviews were conducted with all the women during their pregnancies and also after childbirth. Some women lost their children during the pregnancy, one hundred and ninety-five women delivered a healthy baby that had no consequences or low birth weight. Twenty women delivered prematurely, or their baby had a low birth weight. All of that was related to an important life event, not to anxiety. Another factor in low birth weight was smoking. Smoking can be a stressor for the child [54].

Prenatal care has to pay attention to the mother's stress and prevent it in time. Feelings such as anxiety, fear and depression should be prevented. It all starts in the hypothalamus, from where it spreads to the endocrine and nervous systems. The pregnant woman experiences pupil dilation, increased blood pressure and heart rate, her hands sweat and her body produces stress hormones [28,55].

Deprivation

Deprivation means missing something that the body needs. Another definition is the insufficient satisfaction of basic needs [56]. Deprivation can be combined with other words. There is maternal deprivation, emotional deprivation or sensory deprivation. Deprivation can be assessed as no deprivation, slight deprivation, medium deprivation and serious deprivation.

Psychological deprivation

In his book, Matějček speaks of deprivation as a psychological condition incurred due to various life situations when the individual is not given the opportunity to satisfy some of his or her basic psychological needs [57]. Isolation means preventing contact with the natural and social environment. Separation is separation from the mother. The internal conditions of the child's development are influenced by health and sex. The child should establish a relationship with the mother. The relationship as well as the dependence of the child on the mother has great importance for the feeling of security. It is formed by the seventh month of the child's life. Health is also important. There can be sensory, motor or psychological disorders. When the parents have a disabled child and are not prepared for it, they can find themselves in a deprivation situation [58].

Lack of maternal love

This is often caused by a lack of interest in children, lack of time spent with children, lack of attention, expressions of love are compensated by material things, or long hours in front of the television. This also happens in families where professionally engaged parents do not have time for the child. It is manifested by behavioural disorders, worse performance at school, disorders in social relationships, alcohol and drug addiction of the child [59].

Deprivation in the family

The family is of great importance to the child. Each member plays a specific role. That fulfils the needs of the child. We distinguish between external and psychological causes of deprivation. The external causes include the composition of the family, its socio-economic and cultural level. The composition of the family concerns the role of the parents, and the overall atmosphere that helps form the child's personality. When one member is missing in the family without being replaced or represented, the child is at risk of deprivation [58].

Depression

Depression is a serious and long-term psychological disorder. It is manifested by reduced or complete elimination of the ability to enjoy oneself. The individual's mood becomes negative. According to the Agency for Healthcare Research and Quality, depression affects fourteen to twenty-three percent of pregnant women. Eleven to thirty-two percent of women suffer from depression during the first three months after childbirth. This mostly concerns a relapse. The study included two hundred and one participants who did not suffer from depression in pregnancy. There was a relapse in sixty-eight percent of women who interrupted their treatment during pregnancy [60].

Postpartum depression, described by Lazar as a condition among postpartum psychoses, can occur during the six months after birth. Suicidal tendencies are rare. The somatic symptoms include gastrointestinal issues. Depressed women breastfeed less and lactation may stop altogether [61].

Shari considers every depression diagnosed in the first year after childbirth to be postpartum depression. "Doctors and patients often wrongly assign the symptoms of depression such as insomnia, lack of energy and change in appetite or body weight to the changes expected during pregnancy. Sadness, depression, hopelessness or the feeling of helplessness are symptoms of a possible mood disorder; suicidal thoughts are never normal" [60].

Postpartum psychosis

This is a psychotic illness that used to be called "lactation psychosis"; however, it had nothing to do with lactation. It is the most serious psychological illness after childbirth. It occurs in the first week after labour. It occurs in 0.1-0.2% of women. The symptoms include exhaustion, psychotic rage, hallucinations, loss of reality, thoughts of suicide or of killing the child [36].

Aggressiveness

The Latin word *agressivus* means to attack. It is a trait, an attitude or inner readiness to aggression. The ability of the body to mobilize forces to fight, to reach one's goal and the ability to resist difficulties. The overall effort of the body to achieve the satisfaction of one's own needs [62]. Aggressiveness is a permanent predisposition to act aggressively in various situations. Aggressiveness is a tendency to act aggressively against things, as well as animals and people. It is mostly related to inner discomfort [63].

Fear

Fear is described as a short-term, emotional and unpleasant condition that the person cognitively processes as a threatening or harmful stimulus, or that can be dangerous. The individual is able to identify the cause of fear; an inner, subjective and specific experience of sudden excitement. Fear makes the individual want to avoid danger and escape from a situation or attack. The escalation of fear may lead to phobias [64].

As far as experience is concerned, fear creates feelings of restlessness, tension, paralysis or constriction. Fear is rather unspecific and it includes all the organs and functional systems, an increased heart rate, accelerated or slowed down breathing, dry mouth, goosebumps and increased muscle tension. The micro-facial expressions of a fearful, strongly anxious person are described as a scared expression. An open mouth, the micro-facial expression is rigid, a pale face, movements are uncoordinated and inaccurate [65].

Regression

This concerns an unconscious defensive mechanism, an escape to a developmentally lower level of behaviour that is often expressed by the rejection of independence, as well as a greater need for

dependence on one's environment [39]. It comes from the Latin word *regressus*, which means to return, decline, withdraw; an escape from stressful situations, an escape to the past [66]. A controlled remembering is a procedure in which the person can go back to his or her past under a therapist's supervision. He or she can recall repressed memories and come to terms with past traumas and negative experiences [66].

Feelings of guilt

Guilt is one of the basic human experiences. Sigmund Freud states that the starting point is not the weight of the conflict, frustration or stress from the inevitable experience of guilt that the person feels, but also a commitment. The person is not confronted by the depths of his or her soul. Guilt occurs when the person remains in a specific existence [67].

Frustration

Frustration occurs in conditions arising from the fact that the individual could not satisfy his or her needs appropriately. Frustration is defined as a "condition of the body where its integrity is endangered and he has to use all the skills to protect himself" [68].

Development of the child's senses in the womb

Teusen and Goze-Hänel [69] claim that the foetus starts to develop senses in the second half of pregnancy. The foetus is preparing for the world more intensely through the senses. Touch is the first and most important sense in the womb. The womb is an optimal interactive and stimulating environment. The lips, face and genitals are the first to respond to touch.

They are very sensitive areas. When the foetus moves, it touches the womb walls, the umbilical cord and the placenta. The foetus also touches itself due to the lack of space in the womb. It also senses when the mother, father and other family members touch the belly. The child seeks loving touches and presses against the abdominal wall. Touch is not connected to the brain yet. Therefore, the child knows that something is touching it but cannot determine the feeling on its body [1,69,70].

Smell is stimulated even through the wall of the placenta by many chemical signals in the form of various scents and tastes. After birth, smell plays a very important role as the baby is able to recognize its mother by her scent [1,69].

Taste is developed around the fourteenth week of pregnancy when the foetus regularly swallows the amniotic fluid. Taste changes in relation to what the mother eats. The child perceives the changes. The foetus prefers sweet flavours. The studies that have been performed indicate that the mother's diet influences the development of the child's taste [1, 69,70,71].

Sight is not stimulated in the womb. Around the twentieth week, according to the ultrasound, the foetus opens its eyes and reacts to light. It also reacts when the mother lets the sun shine on her belly. After birth, the newborn baby first learns to recognize its mother's face [40,69,70].

Hearing

There is a rich background sound in the intrauterine environment. The foetus hears the sounds of the intestines, the mother's heartbeat and more. The child feels safe thanks to the heartbeat and this feeling continues after the child is born. The foetus also hears sounds from the outside. Various voices, loud music, but above all, its mother's voice. The voice is transmitted directly into the womb. The child can recognize female and male voices. It responds to loud noises and shouting by jerking or hyperactivity. Peaceful music is pleasant for the child. When the child is in the womb, it is not recommended to play loud music. The child's hearing can be damaged even through the womb. Naturally, women should not work in a noisy environment [1,70,72]. Doctor Alfréd A. Tomatis discovered that

the foetus has ears as early as in the tenth week of pregnancy. The hearing apparatus is fully functional in the middle of the fifth month and the foetus can hear. The sounds that the foetus hears are divided into two groups. The first one includes sounds that the mother's body creates. It is the heartbeat, movements in the digestive tract, the mother's voice, her singing, the sound of the placenta, and the blood pulsing in the veins. The second group includes sounds that come from the outside. They must be loud enough to get to the foetus. Music accompanies us all our life. Research has shown that when the woman regularly sings or listens to music in the prenatal period, the child prefers music after birth. The child responds to music it knows more than to other music [73].

In the 1990s, T. Blum [74] created a study for pregnant women that he called Leonardo 180. He created a scheme of ten different pieces of music and the pregnant women listened to that music for fourteen months. There was always the sound of a gong at the beginning. It was to notify the unborn child of the music and the start of the experiment. About a week after delivery, many mothers had the impression that the child was anticipating the sound and responded to it [74].

Memories from the mother's womb and after birth

The foetus can be influenced in prenatal life, as described by Stanislav Grof [75], one of the founders of transpersonal psychology. In his work, the author studies the individual's inner world. He reached the conclusion that when a person reaches the condition when hallucinogenic substances or hyperventilation help him or her, it is possible to induce experiences as well as memories from early childhood, prenatal life or birth. Therefore, an adult person can experience his or her own birth or the time spent in the mother's womb.

Based on those studies, psychologist Grof [75] created four basal perinatal matrices. The first one focuses on experiences that occurred during the time the foetus developed in the womb. The foetus felt safe when there were no problems. It was loved by its parents. He compared that to the vision of an ocean or paradise. On the other hand, when the foetus felt endangered all the time, unloved, the visions were terrifying. In the second basal matrix, the person was taken back to the time when labour started. There were feelings of danger, despair, which were created by the contractions of the womb. The third stage falls into labour itself and the passage through the birth canal. The fourth matrix focuses on the period after birth. There are feelings of liberation and sudden relief [75]. All the experiences relate to the birth, the period after the birth and the course of the pregnancy lead to various forms of psychosomatic disorders, which tend to occur later in life as well.

Psychologist D. B. Chamberlain [76] studied the prenatal period, especially the related memories. He used hypnosis in his research. The study included ten mothers with children aged from two to twenty-three. The mothers were interviewed when under hypnosis and he then compared their statements. He was interested in the course of the birth. The statements of the mothers and the children were almost always identical. They remembered the number of people in the delivery room and how the nurses and doctors behaved. The children were able to recall their position in the womb and the delivery itself [37].

Prenatal communication

"Human society is basically a network of relationships between people. When we imagine it as a fishing net, the knots are the people and the strings or ropes are their mutual relationships. And what is it, what are the ropes in the human world? One answer is, communication" [77].

E. The meaning of prenatal communication

General part

Communication means providing information between the source and the recipient. It is not just a flow of information, but it also includes participation in the communication by being present [77].

Prenatal communication is varied contact between the mother and the unborn child who gradually develops in the womb. Women have been doing this since ancient times. Many women do prenatal communication instinctively, without being forced [69].

Solter [78] writes that communication strengthens the cognitive development of the foetus. Parents perceive their child before its birth and they create a bond that is important for the acceptance of the child after the birth. The foetus senses the mother's experiences, creates trust and openness. It has been proven that parents who are able to express love and fondness for their children, have children who are more physically relaxed and happier in the prenatal and postnatal period, and who even achieve better results at school later in their lives [79].

The mother is the first communicator and the main partner of the foetus in prenatal communication. She carries the child in her womb from the very beginning, before the sensory organs develop. Almost no mother calls her child an embryo or foetus. Mothers refer to them as babies from the very beginning. Later on in the pregnancy, they address their baby by a name. Other family members, especially the father, can also engage in prenatal communication. Other members usually join in prenatal communication later. Prenatal communication helps the foetus develop better and have a happier course of life in the mother's womb [1,42,69].

The child's father has the disadvantage of not being able to feel the foetus in his body, how it moves and develops. Nonetheless, he still has the opportunity to make contact with his unborn child. Touch is the father's main means of communication. The child can respond to the touch by movement. Speaking is another communication method. The foetus is able to recognize a deep voice and distinguishes the father's voice from the mother's [70].

Vágnerová [18] states three methods of prenatal communication between the mother and the child in her book, which overlap. Physiological communication is the communication that connects the mother and the foetus through the placenta and the blood that flows through the placenta. Substances that can influence the foetus reach it through the blood. The mother can experience undesirable stress when neurohormonal substances are released in the body, which can stress the foetus's body. The second method of prenatal communication is sensory or behavioural communication that depends on the activity of the foetus and its mobility. The foetus expresses dislike by kicking and responds to external stimuli from the mother. It also includes voice and changes in position. The last method of prenatal communication is the mother's emotional and rational attitude to the foetus. The mother focuses on the foetus with her thoughts. The foetus can be influenced positively. Women that did not want to get pregnant send negative information to their foetus [18].

Impulse for prenatal communication

"It is never too soon to love and be tender. The new baby needs affection to develop well" [69]. A pregnant woman starts to communicate with the foetus instinctively. She can start the communication before she feels the foetus. The foetus might start moving in the womb at the end of the third month. The woman might feel small twitches [69].

Methods of prenatal communication

There are various methods of communicating with the foetus. At the beginning, the communication between the mother and the foetus is based on feelings. The foetus is very sensitive and able to sense, absorb emotions and feelings that the pregnant woman experiences. Women can quickly learn

to recognize the individual movements of the foetus and what it is trying to say. A jerky movement means that the foetus was startled. There are rocking and cuddling movements, or joyful movements by which the foetus can get the whole belly moving. The foetus also soon recognizes the mother's voice from the other voices in the family. The child hears as if it were submerged in water. The child can also recognize the tone of the mother's voice [69].

The foetus also hears the sounds of the mother's body. It hears the heartbeat, the blood pulsating, the sounds of the stomach or the intestines. The sounds are transmitted at an intensity of sixty decibels. The sounds transmitted into the womb from the outside are heard by the foetus at an intensity of twenty to thirty decibels. They can slow down or accelerate the foetus's heart rate [79].

Psychologist Hepper carried out a study in which he tested whether or not an unborn child can remember a TV series theme tune. The participating women watched a specific TV series every day, sometimes twice a day, and then there were women who never saw the series or only saw a few episodes. When the children were born, the theme tune was played to them. The children of the mothers who watched the series regularly responded differently than the children of the mothers who did not watch the series. The newborns who were used to the theme tune were calm, their heart rate slowed down, they moved more and turned towards the sound they knew. That occurred for up to three months after birth. The outcome is that an unborn child is able to remember music and sounds that repeated during the pregnancy [80].

Another study included twelve pregnant women. In the last six weeks before the due date, they read a story to the foetus and repeated the same passage again and again. About two to three weeks after the birth, they checked whether or not the child could recognize the particular passage after birth. To find out how the child responded, the scientists gave the newborns special pacifiers. The pacifiers were to assess the force of sucking. When the mother or another person read the passage to the child after the birth, the scientists recorded a greater sucking force than when another passage of the story was read out that the newborns had not heard. In the conclusions of the study, it can be stated that a child after birth prefers stories and tones known from its prenatal period [80].

Communication by touch

The mother expresses affection by touch. This method of communication can be observed at any moment and also in any activity of the woman. The foetus's reaction to the mother's touch changes during the pregnancy. At the beginning, the child moves away and turns away from the source. Later on in the pregnancy, the foetus turns towards the source of irritation and the woman feels its response. Studies have shown that when a woman used touch throughout the pregnancy, the child tended to be more attentive, it started speaking earlier and adjusted better to various situations. On the other hand, when there was a lack of communication by touch from the mother, the child had emotional problems, it found it more difficult to integrate into a social life and tended to cry more. A belly massage is also excellent [79,81,82].

Communication by singing

The women who sing to their children during pregnancy pleasant, calm and melodic songs tend to have more relaxed, less crying children after birth. Singing also develops talent and creativity in children. Experts claim that well-chosen music can influence the psychological development of the child [79,83].

Bonding

It is the mutual relationship between the child and its parents. It is a lifelong connection between the mother and the child. Bonding is formed from the conception. Scientists believe that cells have

consciousness, the consciousness of the entire process of the sperm winning the egg. At that moment, the development of a human being starts. The physical and psychological health of the woman, family and the husband is essential for the healthy development of the foetus. The first contact with the child shows the child that it is welcomed with love [84]. Hašto [15] is the author of “Emotional Attachment” and a supporter of postnatal bonding. A natural vaginal birth, skin-to-skin contact right after the birth, at least until first nursing, has a positive effect on the mother, the child and their relationship and interaction. The child knows the mother’s voice from the prenatal period, but it can also recognize her by smell. When the mother picks up the newborn child, she usually touches it softly with the tips of her fingers. She touches the limbs, the head, the cheeks and then touches the baby with her palms. Then she holds the baby in her arms. The child stays awake and is more active for an hour longer. After twenty or thirty minutes from birth, the child latches on to the breast. Prolactin is released. Oxytocin is released into the blood stream and it also works as a neurotransmitter. Both hormones have a positive effect on the mother.

Oxytocin induces womb contractions and reduces bleeding, but it also brings mental peace, trust and responsiveness, as well as tenderness towards the child. Mothers that had continuous and early uninterrupted contact with their child expressed even greater affection towards their child one month later. They talked to their child more, they were more willing to breastfeed and they breastfed for a longer period of time. This fact was compared with a group of mothers that had a natural delivery but whose child was removed from them for twelve hours within the hospital routine. Therefore, they only saw the child briefly. In conclusion, it can be stated that early uninterrupted skin-to-skin contact helps set the mother up for her parenting role. It is the foundation for the healthy psychological development and psychological resilience of the child in later life. A mother who is separated from her child after birth has a difficult start for no reason. It is also stressful for the child, who cries and is restless. Sucking and the formation of the mother’s milk take longer, which makes the mother insecure, and this feeling increases when the child is weighed, measured, dressed and bathed. Even a twenty-minute separation disrupts the sucking reflex. Fortunately, both interactions and relationships are adjusted in the course of time. Mothers who stay with their child right after the birth and have full room-in service are less likely to experience postpartum blues. This is a condition of tearfulness, worries, irritability, sleeping disorders and concentration disorders [15].

Research in Austria showed that one-third of mothers had a skin-to-skin contact with their babies for only five to fifteen minutes, and only twelve percent of mothers had the child with them at all times. The study was carried out in 2006 and published in 2007. Since then, the situation has improved, which we can also ascertain from our friends, acquaintances, colleagues, etc.

The child learns all the important things by the age of one according to the quality of the communication between the mother and the child. It also helps the child establish relationships with people, in adulthood as well. A mother that reads her child’s needs correctly allows the child to learn to trust people, to trust itself, the world, and to establish harmonic relationships. Cold mothers or anxious mothers who do not want to be disturbed by their child create insecurity in their child and can frustrate, or physically and psychologically abuse or neglect their child. It all leads to depression, anxiety disorders, addictions, personality disorders, and somatic illnesses. Only intense psychotherapy can help. Therefore, there should be cooperation, both at the working and professional level, between gynaecologists, obstetricians, neonatologists, nurses, doulas, psychiatrists, as well as psychologists and psychotherapists. A natural vaginal birth, in a familiar environment, in a peaceful atmosphere, without noise, loud voices, uninterrupted bonding until the baby first latches on and subsequent bonding should all be provided in every gynaecological-obstetric clinic, or in neonatology.

Bonding is also carried out abroad. Rubashkin, a gynaecologist from the USA, says that when the birth is without complications, he places the baby on the woman’s belly, skin to skin, right after the birth. When there are some worries about the child, the paediatrician examines the baby on the

mother's belly. The baby is placed in an incubator right next to the mother when some special tasks need to be done. The baby is placed on the mother's breast as soon as possible. They welcome the presence of family members during the examination of the baby. Routine procedures, such as weighing, measuring, washing, are not performed until several hours after the birth at their clinic. After a C-section, undisturbed contact between the mother and baby is provided. Evans [30] from Great Britain writes that as soon as the child is born, it is placed on the mother's chest or in her arms so that it is in skin-to-skin contact. The women in the hospital either lie in bed, or sit up. The instructions are as follows: place the baby on the mother's belly. At first, she looks at the child and later, when she is ready, she touches the child and then she lifts the child into her arms. There is a big difference when the child is born and someone places it in your arms, or when the woman takes the child into her arms when she is ready. Each of these options is good and both promote breastfeeding. Jorgensen from Denmark writes that the newborn baby is placed on the mother's chest immediately after a vaginal birth or a planned C-section. When the mother is in such close contact with her baby right after delivery, most women spontaneously start to welcome and cuddle their baby. At that time, the children are very calm and happy and they feel safe. If for any reason it is not possible for the woman to have her baby with her right away, the father is allowed to have skin-to-skin contact, and the father also welcomes the baby with joy. In relation to the needs of the baby, the parents or the staff, the mother stays with the baby, skin to skin, for at least an hour, or even longer, then the baby is attached to the breast. Then the baby is examined, weighed and measured. All of that takes place in the presence of both parents [50].

Conclusions

The idea of attachment – the bond between the mother and the child – was created at the moment when humankind realized that the prenatal development of a child does not only concern physical development, but also includes psychological and social development in the prenatal stage.

A correctly formed attachment has a positive effect, and vice versa, an incorrectly formed attachment has a negative effect on the individual. The issue of attachment is covered by a new scientific discipline – perinatal psychology. A proper early relationship has a positive effect on the development of a new human being. The positive course of attachment depends on a whole range of factors that are related to the active involvement of the pregnant woman. The pathological course of attachment leads, above all, to social disruption of the development. Therefore, it is essential that such a relationship is supported by all the parties involved, as well as all professional and social areas.

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