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## **Pregnancy after the age of 35 as a pregnancy of high obstetric risk – the demand for education**

**Ciąża po 35. roku życia jako ciąża wysokiego ryzyka położniczego – zapotrzebowanie na edukację**

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**Keywords:** pregnancy, high-risk pregnancy, advanced maternal age, late maternity

**Słowa kluczowe:** ciąża, ciąża wysokiego ryzyka, zaawansowany wiek ciężarnej, późne macierzyństwo

### **Abstract**

The age is the basic factor influencing the woman's fertility. The older woman is, the biological fertility is reduced. A woman reaches the maximum fertility at the age of 20-25 years, after which fertility gradually decreases, until the age of 35, when it drastically decreases.

Late motherhood is associated with an increased risk of complications for woman and developing fetus's health. Pregnancy after the age of 35 is considered to be a high-risk

pregnancy since the possibility of the development of abnormalities in the functioning of the woman's body and the course of pregnancy and childbirth.

The phenomenon of postponing motherhood for a time when a woman acquires a good education and a stable financial situation requires undertaking educational and information activities about the biological, psychological and social consequences of late motherhood. It is definitely better to plan maternity at the most optimal age to minimize the risk of pregnancy and health of the child complications.

### **Streszczenie**

Wiek jest podstawowym czynnikiem wpływającym na płodność kobiety. Im kobieta starsza tym płodność biologiczna jest zmniejszona. Maksymalną płodność kobieta osiąga w wieku 20-25 lat, po czym płodność stopniowo maleje, aż do 35 roku życia, kiedy drastycznie się obniża. Późne macierzyństwo związane jest ze zwiększonym ryzykiem wystąpienia powikłań dla zdrowia kobiety i rozwijającego się płodu. Ze względu na możliwość rozwoju nieprawidłowości w funkcjonowaniu organizmu kobiety i przebiegu ciąży oraz porodu, ciążę po 35. roku uznaje się za ciążę wysokiego ryzyka.

Zjawisko odkładania macierzyństwa na czas, kiedy kobieta zdobędzie dobre wykształcenie i stabilną sytuację materialną wymaga podjęcia działań edukacyjnych i informacyjnych społeczeństwo o biologicznych, psychicznych oraz społecznych konsekwencjach późnego macierzyństwa. Zdecydowanie korzystniej planować jest macierzyństwo w najbardziej optymalnym wieku, tak aby zminimalizować ryzyko powikłań przebiegu ciąży i zdrowia dziecka.

### **Introduction**

Pregnancy is considered as a very special time in a woman's life. The moment of birth of a child is often treated as a turning point in every woman's life and changes current life in all spheres of functioning [1, 2].

Nowadays, there is a big change in the perception of motherhood, social and economic women's life observed. Young women are more and more interested in obtaining education and career development and in achieving the appropriate material status, which leads to postponing the decision of having first child [3, 4].

The data analysis shows that the number of births and the fertility rate in Poland is systematically decreasing. On the other hand, the number of pregnancies and births of women

who give birth to the first child in adulthood increases. Statistics show an increase in the number of women giving birth for the first time after the age of 35 by 100% in the last decade. [4, 5, 6]. According to Central Statistical Office data, in Poland since the 1990s there has been a clear shift in the highest fertility of women in the 20-25 age group to 30-35 and more. This phenomenon is a consequence of postponing procreation which is the result of reaching a good education, stable professional situation, housing and economic situation. The Central Statistical Office calculated that women aged 30-35 and over, give birth to children with the same intensity as younger women in the early 70's and 80's [7].

The age of a woman is the basic factor that significantly affects fertility and, above all, limits her. The decrease of fertility due to age is multifactorial, depends on changes in the hypothalamus, pituitary gland and directly in the reproductive organs, ovary and uterus. Ovaries play a decisive role in reducing fertility. Moreover ovaries influence indirectly the processes and changes in the functioning of other organs [8, 9].

Although pregnancy is a physiological condition, it leads to many changes in the functioning of the woman's body, which are needed for the proper development of the fetus. The adaptation of the body of a woman after 35 years and childbirth changes it is slower, with numerous loads from all systems, as well as disorders of contractions and delivery. Therefore, pregnancy in a woman over 35 is considered a high risk pregnancy [6, 10].

### **The aim of the study**

The aim of the study is to discuss fertility issues, to indicate factors affecting the postponing of motherhood among women over 35 years of age and to present the risks and complications in the course of pregnancy and delivery among patients from that age group.

### **Late motherhood**

In the 1960s, women giving birth for the first time after the age of 35 were referred to as "old mothers". Such naming was introduced in 1958 by the International Federation of Gynecology and Obstetrics. Nowadays, medical literature uses a different terminology for women giving birth after the age of 35. It is used to determine the advanced age of the pregnant woman, mature older woman giving birth or late maternity [4, 9].

Lesińska-Sawicka claims that, late motherhood might be considered in three aspects - as the age limit dividing a group of younger and older women of childbearing age and an increase in the likelihood of complications in the course of pregnancy and childbirth related to the advanced

mother's age. The third aspect of late motherhood is the definition of women who gave birth to the first child after exceeding a certain age censorship, i.e. 35 years or more [5, 6].

Late motherhood should be analyzed in many aspects, because the motherhood of older women might have medical, psychological and sociological problems [3, 4, 11].

### **The fertility of women over 35**

The age is the basic factor affecting female fertility, significantly limiting woman's reproductive potential. With age, the woman's biological fertility decreases as the procreative potential and the likelihood of becoming pregnant at a given time with regular intercourse without using contraception. A woman reaches the maximum fertility at the age of 20-25 years, after which fertility gradually decreases, and after the age of 35 drastically decreases [12, 13, 14].

The woman's biological fertility from sexual maturity to menopause is characterized by a decrease in the likelihood of conception with the growing age of the woman, and also differ in the length of the menstrual cycle [11, 12].

The decisive influence on the reduced reproductive capacity is constantly decreasing with the age of women, the quality of oocytes and changes associated with the biological aging of the body, especially neuroendocrine changes. Physiological changes make it impossible to conceive naturally [12, 15].

The period of the most intense decline in biological fertility is observed when women are 32 and 42 years old. During this period there is a sudden drop in the number of ovarian follicles produced, with a constantly increasing share of qualitatively very weak oocytes. A marked decline in fertility and a significant reduction in the possibility of conception are visible after the age of 42. Irregular menstrual cycles become frequent until menopause and are the reasons of the described phenomenon [12, 13, 17].

The percentage of anovulatory cycles increases in older women. Women over 45 years of age achieve the number of ovulatory cycles reduced by approximately 95% compared to younger women. In the perimenopausal period, the luteal phase of the cycle is also significantly shorter, and this could lead to a miscarriage if pregnancy occurs [15, 16].

With the age of a woman, the structure of the ovary changes, especially the interstitial tissue. The total number of oocytes and mature oocytes is also reduced, which is the basic mechanism that impairs fertility [15].

Gadomska et al. point out that the premature termination of ovarian's hormonal function in mature women. This problem is diagnosed on the basis of menstrual stop before 40 years of

age. The authors among the causes mention autoimmune diseases, myasthenia, idiopathic thrombocytopenic purpura, autoimmune hemolytic anemia, rheumatoid arthritis or vitiligo [16]. With the age of a woman, ovaries become less sensitive to gonadotrophin stimulation. The hormonal stimulation causes the formation of antral follicles regardless of the woman's age, however, the number of follicles able to develop and ovulation is much lower in women over 35 [16].

The ovum is always as old as the woman. The aging gamete produces a deficient zygote and leads to aberrant organogenesis, resulting in impaired growth. Incorrect development contributes to the formation of chromosomal abnormalities, hence the children of mature mothers are exposed to the occurrence of genetic defects [6, 20].

Other factors associated with abnormal functioning of the reproductive system, such as chronic pelvic infections, and pathological processes occurring in it (endometriosis, myomas), also affect the reduction of the possibility of getting pregnant in women over 35, because with age the probability of occurrence these pathologies increase significantly [11, 19].

Many authors claims that the age of a woman of 35 years is the limit of fertility, because after that time, the first symptoms of decreased fertility appear, which significantly prolongs the period needed for fertilization. The biological fertility of women over 35 is only 60% of the maximum fertility value for previous years [11, 12, 13, 15, 17].

The pregnancy in a woman over 35 and older is, of course, not excluded, despite the incomplete biological value of the egg cells. For this reason, we might expect more complications in the course of late pregnancy and childbirth [6, 11].

### **The causes of late motherhood**

For contemporary women education, career development, striving to acquire the right material status are extremely important first, these leads to postponing the decision to have a child. Nowadays, thanks to a better quality of life, promotion of a healthy lifestyle, the average life expectancy of women has been extended, while at the same time extending its reproductive period. Women decide, therefore, to postpone motherhood and deliver babies at a mature age [11, 21].

As Plinta and Launtenbach indicate, the average age of women during the first pregnancy depends mainly on the duration of education, the pace of career development, the position at work as well as the material situation of the woman [13, 21].

The data presented by Central Statistical Office show a significant increase in deliveries of women over 35 years of age in the last 10 years. In 2000 in Poland, only 25% of all women were women after the age of 30, while in 2013 this number increased to 40% of all births [22]. The study carried out among women aged 30-35 in 2001, showed that 15% of women did not have a child, and in 2010-2013, childless women in this age were already 25%. A clear decline in the percentage of women without children indicates that the maternity plans are postponed for a later period [12, 21].

Sawicka in her research characterizes women who decide to have a child after 35 years of age. According to the study these women live mostly in cities where access to specialists and genetic counseling is facilitated. In the countryside, where unemployment is higher, motherhood is treated as a way of life [5, 6].

Woman's marital status is also important in parenthood planning. Fear of an unsuccessful marriage or the inability to find a suitable partner shows that contemporary women prefer living in free relationships, change partners and more consciously choose their children's fathers, which takes time [6, 24].

Respondents consider early marriage simultaneously with the child's early birth. Thus, 40% of women are concerned that this situation will prevent them from developing and implementing professional plans [24].

Machaj observed that threat of unemployment and the exclusion from professional life is also the reason for postponing motherhood. The professional status is put above family life and maternity plans. [13, 24].

The studies indicate that another important reason for postponing motherhood is the mental, emotional and social immaturity of young people, which prevents independent and independent coping with problems. The birth of a child is often associated with numerous limitations and even exclusion from a social life. Young people are not fully aware of the limitation of freedom and carefree life, which changes with the appearance of a child. For them, motherhood means a lot of duties, giving up their own needs, and above all, responsibility for another person. Mature motherhood, on the other hand, enables a woman to understand motherhood as a natural course of things [5, 6, 13].

Anxiety and fears related to the course of pregnancy and childbirth, as well as later difficult motherhood are also the causes of late motherhood. The mental state of a woman makes it impossible to create positive emotions, which in turn blocks her from deciding about the motherhood [13].

Women who give birth to children over the age of 35 are often women who are stable in their financial situation and have appropriate education and professional experience. The appearance of a child at this time does not complicate mother's life, and becomes the next step to self-realization. Mature motherhood also brings positives to society because it helps to reduce the absences of women in work due to childcare, while increasing women's participation in social life. Such behavior also increases the creativity of women in creating and developing a profession [6, 11, 13].

As Lesińska-Sawicka and Mark and Sauer claim, the mature age of a woman is the cause of prolonging the time of pregnancy. This is directly related to the decreasing fertility with age, and thus the ability to fertilize. In addition, this time prolongs the long-term use of hormonal contraception [5, 15].

In addition to the aforementioned causes of late parenthood, Major and Carolan also point the lack of an appropriate partner, lack of maternal instinct and readiness to become a mother and further development of their professional status [4, 25].

Authors also reports the positive aspects of late parenthood for the child. Better knowledge and life experience of mature parents translates into better psychosocial development of the child and later better academic results. Stable financial and social situation allows parents to put their attention and time only on the child, enabling them to achieve better life opportunities and their realization [1, 6, 7, 26].

The development of medicine and progress in obstetrics, neonatology, genetics and biology, as well as the use of modern methods of assisted reproductive techniques, enable pregnancy at a later age of the woman and the birth of a healthy child [11].

### **High-risk pregnancy (dangers, risks, complications)**

The risk in midwifery should be considered in many aspects. Problems, both medical and psychological, that might occur during pregnancy, contribute significantly to the development of risk for pregnancy [27].

The presence of an increased risk of abnormalities that are diagnosed in the mother, fetus or newborn, is directly associated with an increased risk of diagnosed diseases or pathological conditions. These diseases might be observed before pregnancy, they might develop during its duration, as well as after delivery [21, 29, 30, 31, 32].

The high-risk pregnancy affects woman and her family daily functioning, and also significantly disturbs woman's emotional sphere. This is a highly stressful situation that requires the

reorganization of everyday life, verifies the plans and life values of the whole family [29, 30, 31, 32, 33].

The high-risk pregnancy is often associated with a woman's hospitalization and significant limitations of everyday life. The pregnant woman becomes a patient of the pathology of pregnancy ward, where she must obey the rules, the necessity of undergoing examinations and treatments as well as doctor visits. All these situations are an additional source of stress and might create negative emotions. Stress is compounded by fear for the health and child's life and the possibility of further complications that might occur in pregnancy. A woman whose pregnancy is at risk needs a much greater effort to accept the new situation [29, 30, 31, 33, 34]. The pregnancy after the age of 35 is associated with an increased risk of complications for a woman, her family and the whole society. Due to the possibility of development of the generalized diseases, this pregnancy is considered as a risk pregnancy [11].

Many authors, both Polish and foreign, present numerous health risks for a woman resulting from late motherhood. Most often, they mention the increased risk of gestational diabetes and obesity, as well as hypertension [4, 5, 15, 17, 21, 32].

Higher occurrence of irregularities in the functioning of the body, which are characteristic for adulthood, is observed in woman over 35 years of age. The risk of ischemic heart disease, gastric ulcer disease, diabetes, hypertension, overactive thyroid gland or obesity is significantly increased. Women might already have degenerative changes in the spine or rheumatism. There is also an increased incidence of valvular defects and cardiac arrhythmias eligible for pharmacological treatment. These threats are associated with common risk factors and might affect younger people [3, 6, 11, 16, 21, 32].

Kubiak-Fortecka, Wilczyński and Jagielska et al clearly mention that among the typical obstetric abnormalities that might compound pregnancy in women over 35, miscarriages, premature births, intrauterine fetal death, genetic defects, and the risk of preterm delivery are much more common. Sawicka also reports pregnancy-induced hypertension, pre-eclampsia, preterm premature rupture of membranes, placenta previa, and post-partum bleeding [6, 8, 32]. Gadomska presented in her study that among women over 35 years of age, the risk of both diagnosed and unrecognized miscarriages is 4 times more common (75%) compared to women before 30 years [15].

Hoffman et al. noted the mother's age, which is an independent risk factor for fetal death. About 3.0% of cases among women over 35 years of age compared to 1.7% in women before 35 years of age. Walker also noted a twofold more prevalence of intrauterine fetal death in patients over 35 years of age [35, 36].

The articles also describes numerous cases of mortality of mothers in the perinatal period and it has been shown that the mortality rate of mothers over the age of 35 years is larger, compared to younger women [3, 17, 36, 37].

The results of many studies confirm a significant increase of the operational completion of pregnancy in women over 35 years of age. The percentage of deliveries completed by cesarean section varies from 35% to 64%. In the group of patients over 40 years of age, both Hincz and Mark noticed that the percentage of caesarean sections reached 55%. Among indications for caesarean section, there are not only obstetrical pathologies, such as threatening asphyxia, hypertension, preeclampsia or placenta previa, but also psychological exhaustion of the woman in labour. They are, therefore, mainly electric operations [15, 16, 21, 23, 32].

According to the literature, the pregnancies of late maternity are often terminated by elective caesarean sections due to the so-called estimated childbirth risk. This is due to the dysfunction of the endometrium, which might occur with the progressive age of the woman and a reduction in the number of oxytocin receptors. In mature women the vulnerability of the pelvic rim to the delivery force also changes, hence the risk of uterine contraction dysfunction is high and complications during delivery might occur [11, 21, 20].

Jagielska's studies confirm the frequency of caesarean sections performed in mature women - in the 35-39 age group it is 37.86%, 40. years old - 48.3%, and the percentage of elective caesarean sections in women after 35 years is 46.29% [32].

If the mother is 35 years old, her age is a direct indication for prenatal diagnosis, which together with genetic counseling is an integral part of maternity care [23].

Late initiation of efforts for becoming parents unsuccessful attempts at conceiving might delay the diagnosis of fertility disorders and definitely reduce the time needed for possible treatment or use of methods of assisting conception [12, 32].

Numerous scientific studies prove that the procedure of in vitro fertilization is much more often subjected to older women. Hincza's study show that pregnancy after IVF constituted 5% for women in the 35-40 age group [11, 19, 38].

The pregnancies obtained as a result of stimulation of ovulation should be treated as high-risk pregnancies even if there is no evidence regarding the risk to the child. The stimulation of ovulation is associated with an increased risk of preterm delivery and a threefold increase in the risk of low neonatal weight. Hence these pregnancies need special care [38].

The studies carried out among patients after ICSI and IVF procedures indicate comparatively 15-25% of pregnancies that completed in miscarriages. This number is significantly increased in the age group of women over 35, where age is naturally a higher proportion of miscarriages.

In the case of women over 40 years of age, IVF increases the incidence of miscarriages. This applies to 30% of pregnancies [38, 39].

The pregnancy due to in vitro fertilization might lead to an increased risk of pregnancy-induced hypertension and gestational diabetes. Numerous studies have confirmed that this kind of pregnancy is also associated with a threefold greater risk of premature separation of the placental abruption compared to physiological pregnancies. These complications are also frequent in the course of pregnancy in women over 35 years of age [21, 38].

Studies have shown that pregnancies after infertility treatment are characterized by an increased risk of pathology which occur during pregnancy and delivery. Although the recommendations of the Polish Gynecological Society indicate that pregnancy after IVF might be complicated in vaginal delivery or cesarean section, much more often these pregnancies are terminated by caesarean section, while induction is more often used in physiological births [38].

### **Health education**

The period of procreation is an important stage in woman's life. Literature and medical studies clearly show that properly preparation for pregnancy and health-promoting behaviors, increase the chances of a proper course of pregnancy, delivery and ensure relevant development of the child [41].

Health education is described as knowledge, behavior, beliefs and ways and styles of life that should maintain health at a certain level. Thanks to the undertaken educational activities, person's lifestyle is often changed by eliminating negative health behaviors and replacing them with positive ones. Health education also encourages and activates for making good choices for people's health, by providing knowledge and support [40, 41].

The pregnant woman education is an extremely important part of the perinatal care. Medical staff is obliged to promote a healthy lifestyle and implement health education in relation to possible complications which might occur during pregnancy and delivery [40, 42].

Health education and health promotion in the perinatal period mainly focuses on pro-health behavior counseling, knowledge about pregnancy, childbirth and parenthood at the most optimal time and age of parents for the proper development of the fetus and child [40].

Medical staff assesses the woman's health behaviors in terms of risk factors for many diseases in the woman's environment or possible complications during pregnancy by organizing education for women in the procreative age [42, 43].

Properly planned and conducted health education of mature women contributes to the reduction of perinatal complications. Mature age of a woman, however, should not be an indication to

treat pregnancy and childbirth as a pathology. Pregnancy and delivery of a woman over the age of 35 requires proper care and increased vigilance of medical staff. With proper obstetric control, pregnancy and childbirth could be normal and comparable to young woman's delivery [4, 6, 19, 21].

### **Summary**

The use of modern methods of infertility treatment and the development of medicine resulting in the reduction of perinatal mortality of women and newborns, as well as methods for quickly diagnosing pathological conditions, enabled women to postpone mothering until the fourth or fifth decade of life and the birth of a healthy child in such a late age [18, 26].

Postponing motherhood is most often the result of the desire to have children with the economic and social stability of the woman. Acquiring education and strengthening a professional career become for women a determinant of good and safe development of a child [16].

Late motherhood becomes an universal phenomenon and has a developmental character. For this reason, there is a growing need for specialist literature on health problems of mature women and psychological issues related to parenthood [13].

Some women are not aware of the risks factors for mother and baby of becoming pregnant after the age of 35. Hence, there is a need to undertake educational activities in this area and to support both women and medical staff, so that the relationship between mature mothers, doctors and midwives might become more affiliative [6].

It should be emphasized that constant postponing of parenthood, as well as the phenomenon of reproductive aging of women, requires undertaking educational and information activities about the biological, psychological and social consequences of late maternity. Maternity should be planned at the most optimal age to minimize the risk of pregnancy complications and child's health [12, 15, 37].

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