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[RECCOMENDATIONS]

The Polish Society of Gynecologists and Obstetricians' Expert Group Recommendations regarding adolescent pregnancy

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ABSTRACT

The recommendations present current methods of treatment that may be subject to modification and change in justified cases, after careful analysis of the given clinical situation. In the future, this may be the basis for their modification and updating.

Key words: adolescent pregnancy; adolescent health; recommendations

INTRODUCTION

Recent decades have seen an improvement in the quality of life in both social and economic terms. This translates into a reduction in the incidence of problems which in previous years were due to poorer access to sexual education. We are currently seeing a significant shift in the average age of patients who have their first pregnancy. However, the problem of teenage pregnancy has not disappeared and, with the shift in the age limit for first pregnancy, has often become more stigmatized by society than in previous decades. Early sexual initiation is associated with high risk of pregnancy and sexually transmitted diseases (STD). Teenage pregnancy is very often an unwanted and unaccepted pregnancy, with mothers reporting too late to the doctor due to fear or ignorance, and lack of accessibility to a gynecologist. This requires a more empathetic and supportive approach on the part of us doctors, to guide often very young girls through this special time.

The purpose of these recommendations is to present the current state of knowledge based on the authors' experience and sound scientific data. It also aims to identify the social background and potential complications of adolescent pregnancy and the management of their

outcome. The management of pregnancy with particular reference to ultrasound diagnosis is also included, as well as its termination. In addition, guidelines on contraception and prevention of unwanted underage pregnancies are included.

Definition

Adolescent pregnancy is defined when a pregnant woman is between 10 and 19 years of age. This paper uses data from the Central Statistical Office, whose index includes pregnancies '19 years and under' [1].

EPIDEMIOLOGY

Most teenage pregnancies are related to unprotected intercourse and early sexual initiation. It is a global problem, with nearly 16 million teenage girls aged 15–19 and two million girls under 15 becoming pregnant each year. According to the United Nations Children's Fund (UNICEF) data for highly developed countries, the country with the lowest percentage of births per 1,000 pregnant women under 20 is South Korea — 2.9, and the highest in the USA — 52.1. For Poland the indicator is 18.7 [2–4]. It should be remembered that adolescent pregnancy is associated with more complications and risk of maternal and child death. Based on the available data, it is the leading cause of death for adolescents aged 15–19 years in the world [5–7]. Increased mortality is also associated with poorly performed abortions that led to permanent damage to health, complications or outright death, it is reported that 5.6 million abortions are performed annually on girls aged 15–19, of which 3.9 million are improperly performed [1–3, 7].

The young age of the mother leads to an increased risk of systemic infection, eclampsia, puerperal endometritis, premature birth and is also associated with low birth weight and severe neonatal morbidity [5].

It is worth noticing that according to a World Health Organization (WHO) report, in Scandinavian countries where access to contraception and abortion is very easy, it is reflected in the rate of underage pregnancies, which is much lower compared to other countries [1].

General Statistics of Poland (GUS, *Główny Urząd Statystyczny*) data for 2020, state that in Poland mothers aged 19 and under gave birth to 7118 children. This compares to 11,230 in 2016 for the same age group. Year on year, we are seeing a downward trend in our country [6].

SOCIAL BACKGROUND

Adolescent pregnancy is a challenge not only from the medical side but also from the social point of view. There is now a reduced age of first menstruation, which is associated with better nutrition and increased standards of living and health care [1, 2]. The problem of unwanted pregnancy is often associated with low socioeconomic status, although it affects all levels. This is related to poorer access to education, lack of money for contraception or family patterns [1]. Table 1 summarizes the causes of adolescent pregnancy.

In many countries around the world, adolescent pregnancy is primarily related to the cultural pattern of the age of marriage. It is concluded earlier in developing countries. In developed nations, the scale of the phenomenon is decreasing [1, 7]. Based on the GUS data, in Poland in 2020, 1367 women aged 19 and less were married. This compares to 29,345 for those aged 20–24. Interestingly, only 245 men aged 19 and below got married, while for those aged 20–24 it was 13,444. In 2015, the numbers were as follows women married at age 19 and below — 3797, and aged 20–24 — 53359, men aged 19 and below 526, while for those aged 20–24 it was 26909. Therefore, we observe a decreasing trend in both age groups irrespective of gender, which is also reflected in the number of children born to women in these age groups [6–9].

In recent years, we have observed a significantly earlier sexual initiation. The results of analyses conducted by Woynarowska et al. [9] on a group of 15-year-old adolescents have shown that 9.2% of 15-year-old girls have had sexual initiation (mean age of initiation — 14.7 years), among all sexually active 15-year-olds 27% have declared that neither they, nor their partners have used any contraceptive methods during the last intercourse. Among sexually active 18-year-olds, one in four young people had three or more sexual partners. 49% use ineffective methods of contraception, such as intermittent intercourse or natural methods [10]. In comparison, in the USA 25% of adolescents report that they did not use protection during the first time, in the United Kingdom and Sweden 21–22%, and in France 11% [1]. These data are alarming because lack of knowledge or difficult access to contraception for adolescents is also associated with a higher risk of sexually transmitted diseases (STDs) including HIV. Therefore, young women are most vulnerable to STDs at the beginning of their reproductive period [1, 5, 11].

The sexual education is another aspect. It is most important during childhood and adolescence. It is a lifelong process and therefore should be adapted to the level of psychosexual development. A study conducted by Skonieczna et al. [12] for secondary school students and their parents found that 96.1% of parents and 94.3% of students consider sex education to be important. However, the most frequently indicated sources of students' knowledge were colleagues (61.7%, 208 persons) and Internet portals (60.5%, 204 persons). As we know, these are points of quite disputable quality and reliability of information. Only 43% of respondents declared the school as the place where they gain their knowledge. A study by the Institute of Educational Research (IBE) showed that the teacher is the second main source of knowledge in this area (38%), just after peers (56%) [13]. Adolescents in Poland often do not have access at school to reliable, complete and world-view ambivalent knowledge on sexuality. The family also often does not fulfill its duty of sexual education of a young person, which is due to, among others, the common stereotypes that sex is a taboo subject. It occurs that parents shift the responsibility for this area of education to the teaching system [12]. Another important problem is the support of a young girl in the face of the vision of motherhood. The challenges of pregnancy overlap with the difficulties of adolescence, difficulties at school and the problem of social stigma. The support of the family, medical staff and a psychologist may be crucial not only for the proper course of pregnancy, but also for preparing a young girl to take up the challenge of parenthood.

LEGAL DIFFERENCES IN ADOLESCENCE PREGNANCY

According to art. 200 of the Polish Penal Code, a person who has sexual intercourse with a minor under the age of 15 or commits another sexual act towards such a person or causes him to submit to such acts or to perform them, shall be punishable by imprisonment from 2 to 12 years. The legislator has assumed that anyone who engages in sexual activities with a minor thereby violates his/her sexual freedom not because it violates his will in this respect (a minor may in fact allow or even inspire such acts), but because the victim of such an act is unable to express a legally valid decision to consent to the acts in question. If such a crime is suspected, it should be reported in person, by reporting such a fact to the Police station competent for the place of the crime, or in writing, by sending an appropriate letter to the appropriate Police unit or the District Prosecutor's Office competent for the place of the crime. If a suspected crime is not reported, in such a situation the person who had reliable information is exposed to criminal liability.

Situations in which a person before the age of 15 becomes pregnant are extremely difficult because they also involve the court, whose role is to verify the circumstances surrounding the sexual relationship of such young people and the correctness of the care that is given to them [11]. A woman under the age of 18 is not entitled to parental authority over a child. In such a situation, the child's legal guardian is the person indicated by the child's mother/father (usually these are the parents of the child's mother/father).

INFORMED CONSENT FROM A MINOR PATIENT

The general rule is that the consent to the provision of health services is given by the patient himself. However, this does not apply to the treatment of minors, i.e., people under 18 years of age. In this case, we can deal with two types of consent:

1. Substitution consent — when consent for treatment of a child under 16 is generally expressed by the patient's parent (or other legal representative).
2. Cumulative consent — when consent for treatment of a child over 16 years of age expressed by the patient himself and his parent (or other legal representative). The doctor should remember that granting consent should be preceded by comprehensive and understandable information - provided to the parent and the minor patient who is over 16 years old.

As for patients under 16, they also have the right to obtain information, but in the scope and form necessary for the proper course of the treatment process. This aspect is of course subject to the assessment of the doctor who should consider not only the child's age, but also his emotional maturity and developmental level.

The decision regarding the medical procedures applied to the newborn is taken by his statutory representatives.

Recommendations
<ol style="list-style-type: none">1. Who recognizes a pregnancy in a minor patient is obliged to inform the patient's parents/legal representatives.2. If you suspect a crime involving a minor, report it to the nearest police station.3. In the case of a minor, it is good practice to sign an informed consent with the child's parents for all possible medical procedures.

4. When consent for treatment of a child under 16 is generally expressed by the patient's parent (or other legal representative).
5. When consent for treatment of a child over 16 years of age expressed by the patient himself and his parent (or other legal representative).

MANAGEMENT OF PREGNANCY

Pregnancy in an adolescent should be treated as a high-risk pregnancy (especially for girls aged 11–14) [1]. Such a pregnancy requires from the doctor experience and knowledge of possible risks and complications that may complicate pregnancies in a adolescence. Conducting such a pregnancy requires periodic visits to the pregnancy pathology clinic under the 3rd degree of reference or to reference clinics specializing in pediatric and adolescent gynecology with appropriate obstetric/perinatal facilities.

It should be emphasized that for a young girl who becomes pregnant, this is a heavy burden, both financially, physically, and psychologically. It's later reflected during the pregnancy. Adolescent mothers are very often at risk of malnutrition, resulting from an inadequate diet. The mental pressure leads to the use of stimulants. As reported by Jessica Dalby et al, underage pregnant women are more likely to use tobacco products (36% vs 7%) and alcohol and recreational drugs (1.1% vs 0.2%). They also face housing problems, domestic violence and abandonment by their partner [14]. It is therefore important to diagnose pregnancies early to avoid increased perinatal risk. The family, especially the teenage mother's partner, should be involved as much as possible to ease her through this difficult time, and they should be educated about infant care and development. WHO recommends at least four gynecological visits in uncomplicated pregnancy — at 16 weeks, between 24 and 28 weeks, at 32 and 36 weeks [1]. In contrast, the Canadian Paediatric and Adolescent Gynaecology and Obstetricians (CANPAGO) recommends that visits especially in the second and third trimester be more frequent to regularly assess fetal well-being and prevent preterm birth [15]. In principle, the obstetric medical supervision of a pregnant adolescent is no different from the perinatal care of a pregnant adult [1].

Teenagers may present to the doctor's office with quite non-specific symptoms and, as clinicians, we must be very sensitive especially to irregular menstrual periods and other cycle disorders typical for their age. Strong denial of the possibility of pregnancy must be taken under consideration. The presence of a caregiver additionally influences the embarrassment

and openness of adolescents about starting intercourse. The typical symptoms most reported by girls on suspicion of pregnancy are amenorrhea, nausea and vomiting, breast tenderness, weight change, abdominal pain, and dizziness [14].

Mukhopadhyay et al. [16] compared the perinatal differences between 350 adolescents (13 to 19 years) and 350 adults (20 to 29 years), their study found that the 13–19 age group was at higher risk of preterm birth (27.7%), low birth weight (38.95%) and stillbirth (5.1%) [16].

The main cause of the above-mentioned complications seems to be uterine immaturity. Brosens Ivo et al. [17] used the term “great obstetrical syndromes” to describe the clinical heterogeneity related to impaired vascular adaptation of the maternal spiral arteries in the process of intravascular trophoblast invasion. This term covers the range of pregnancy complications, preeclampsia, small for gestational age, preterm labor, premature rupture of the membranes, late spontaneous abortion and placental abruption. These pathologies are characterized by the presence of obstructive lesions in the myometrial segment of the uteroplacental spiral arteries and reduced vascular remodeling in the placenta [17, 18].

Attention should be paid to the structure and dimensions of the bony pelvis. It has been shown that in girls under 16 years of age, who are in addition measure less than 150 cm, a constricted pelvis is more frequently diagnosed. The bony skeleton is formed for up to 3–5 years after the onset of menarche, hence the pelvis often has a small volume, and this makes natural childbirth more difficult. In addition, the smaller pelvic diameter in adolescent mothers has been shown to have a direct effect on the weight of the baby, which was significantly lower in these mothers, often leading to intrauterine growth restriction. We must also bear in mind the increased calcium requirements of adolescent girls during pregnancy and lactation, both due to pregnancy and the ongoing skeletal ossification process. It has been proven that young mothers are more likely to lose bone mass during breastfeeding than adult women. It is therefore important to ensure that the pregnant woman has an adequate supply of not only vitamin D but also calcium [17–19].

Education on proper nutrition should be carried out at the first visit. Adolescents are increasingly suffering from eating disorders (ED), so during the medical interview, attention should be paid to the perception of body image. During pregnancy, the need for folic acid, iron or iodine increases [1, 15, 20, 21].

During the first visit, we should screen for sexually transmitted diseases (STDs), as teenagers are much more vulnerable to them than adult women. This is because teens are much more likely to exhibit unsafe sexual behavior, have sex without mechanical protection and with many casual partners. Re-examination should be carried out in the third trimester. Potential infection with HIV, *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, *Treponema pallidum*, HPV, HSV, bacterial vaginosis should be excluded. If a positive test is obtained, a follow-up swab should be done after treatment has been completed for up to 3–4 weeks. The young mother's partner should also be referred for a screening. Education should be introduced on the use of condoms to protect against STDs [1, 15, 22].

Another aspect to be addressed during the first visit is the plan of birth. It is important to establish it as soon as possible since minors are at risk of preterm delivery. The patient's age (especially if the underage girl is less than 14 years old), the referral level of the hospital, the patient's mental state, and the pelvic anatomy should be considered when selecting the facility and the method of delivery [1].

We should not forget about the stimulants used by minors. According to the National Survey on Drug Use and Health conducted by the Substance Abuse and Mental Health Administration and NSDUH, younger pregnant women were much more likely to use drugs than their peers who were not pregnant. They were most likely to use marijuana, cocaine, opioid and painkiller drugs [23].

Other studies report that the most frequent substance used by teenagers is alcohol, as much as 15.85% of those surveyed. The second most frequent is marijuana — 14.55%, while the third is other drugs — 5.30%. We observe a decrease in the consumption of drugs by half in the second trimester, compared to the first. The same pattern applies to the third trimester, compared to the second [24]. Young patients should be sensitized to the consequences of drug use during pregnancy, such as intrauterine growth restriction (IUGR), preterm delivery, fetal malformations, placental pathology or increased perinatal mortality. We should also carry out screening for intoxicating substances and provide appropriate education [1, 15, 23, 25].

Recommendations
1. Pregnancy in an adolescent should be treated as a high-risk pregnancy (especially for girls aged 11–14).
2. Conducting such a pregnancy requires periodic visits to the pregnancy pathology clinic

under the 3rd degree of reference or to reference clinics specializing in pediatric and adolescent gynecology with appropriate obstetric/perinatal facilities.

3. Education on proper nutrition should be carried out at the first visit. Dietary recommendations for pregnant teenagers include:
 - The caloric value of the diet depending on the nutritional status should be approx. 2200 to 2500 kcal.
 - Supplementation of 0.4 mg of folic acid and 30-60 mg of elementary iron for 3 months.
 - Iodine intake of 200 µg per day.
 - Taking 200 mg DHA daily.
 - Taking 2000 IU of vitamin D daily.
 - Taking 1.0 g of Calcium daily.
4. During the first visit, screening for STDs and TORCH should be performed.
5. Screening for intoxicating substances and provide appropriate education.

ANAEMIA

Anaemia is a decrease in hemoglobin (Hb), hematocrit (Ht) and the number of erythrocytes in the blood below normal values for age and sex. According to WHO, anemia can be diagnosed in pregnant women with hemoglobin levels < 11 g/dL, severe anemia with levels of 7 g/dL [20, 24]. The most frequent causes of anemia are poor nutritional habits, genetic factors or an infectious disease. The consequences of anemia can be prematurity, fetal growth restrictions (FGR) and low birth weight. Hemoglobin and ferritin levels should be monitored regularly. In case of severe anaemia, hospitalization of the patient should be recommended.

According to the guidelines of the Polish Society of Gynecologists and Obstetricians (PTGiP), women with an iron reserve of about 500 mg (ferritin 60–70 µg/L) have a low risk of anaemia during pregnancy, despite the lack of supplementation. Iron supplementation should be considered in women with ferritin levels below 60 µg/L, despite the absence of anemia. A ferritin level of less than 12 µg/L indicates depletion of iron stores. After the 16th

week of pregnancy, iron supplementation of up to 30 mg/day should then be introduced. In case of normal test results PTGiP does not recommend iron supplementation during pregnancy [24]. In case of anemia due to folic acid deficiency, it is necessary to administer folic acid at a dose of 2.5 mg/day in girls up to 5 years of age and 5 mg/d in older girls. Treatment should be carried out from 1–4 months. The effectiveness of the treatment is demonstrated by the rapid increase in the number of reticulocytes in the 4th to 7th day after starting the treatment [1, 20, 26].

Recommendations

1. Iron supplementation is not recommended in the presence of normal blood results.
2. Iron supplementation at a dose of 30 mg/d is acceptable in non-anemic women with ferritin levels below 60 µg/L after the 16th week of pregnancy.
3. In case of anemia due to folic acid deficiency, it is necessary to administer folic acid at a dose of 2.5 mg/day in girls up to 5 years of age and 5 mg/d in older girls. Treatment should be carried out from 1–4 months.

PERINATAL CARE

The analysis of literature data shows differences in the number of vaginal deliveries and cesarean sections in the group of teenagers. The results of many retrospective studies in highly developed countries have shown a higher percentage of vaginal delivery and a lower rate of cesarean sections in the group of teenagers compared to the group of adult women. A shorter duration of the active stage of labour was also observed with a comparable time of the second stage of labour and a lower rate of the use of vacuum extractor and obstetrical forceps. Additionally, it is noteworthy that most cesarean sections are performed due to emergency indications. Literature data also show that in the group of adolescents during childbirth the epidural anesthesia is used less frequently [27–29].

Karataşlı et al. [30] observed a higher rate of cesarean sections in adolescents < 15 years of age which may be due to their biological immaturity. The pelvis in juveniles is not fully developed which is reflected in its small capacity and anthropoid structure (transversely constricted pelvis). Malabarey et al. [31] conducted a large cohort study, the results of which confirm that a higher rate of cesarean sections correlates with a younger age of a pregnant

adolescent (19.59% in the group of pregnant adolescents at the age of 12 vs 13.92% at the age of 15).

Data on attempted trial of labour after cesarean (TOLAC) in the group of adolescents are limited and inconsistent. The Israeli study showed that TOLAC was successful in 83% of the study group (117 women), while low birth weight is an independent risk factor of vaginal birth after cesarean (VBAC) failure [31]. Damle et al. [33] observed a significantly lower VBAC rate among adolescents who attempted vaginal delivery after cesarean section — 48% of the study group [33].

Contentment and satisfaction related to perinatal care in adolescents is much lower. Juvenile patients more often perceive the birth experience as traumatic which is mainly influenced by the pain of labour and fear [28]. An extremely important role in this age group of pregnant patients should be played by antenatal education, which according to the standard of perinatal care of the Ministry of Health, should start between 21st and 26th week of pregnancy. Antenatal education is not only a significant point in preparing a teenager for childbirth and childcare but is also associated with the increase of the sense of security and acceptance of pregnancy by the teenager, thus reducing, among others, the risk of postpartum depression [34].

Researchers emphasize the continued need to conduct large, multicenter studies in order to establish the most effective model of adolescent pregnant patients' perinatal care. In the opinion of experts, adolescent pregnancy is not an indication for caesarean section, unless there are clear indications for surgery. It is recommended that perinatal care in the group of adolescent patients < 19 years of age is based on the guidelines of the Polish Society of Gynecologists and Obstetricians and the Regulation of the Minister of Health on the organizational standard of perinatal care of 16th August 2018 [34–36].

Recommendations
1. Adolescent pregnancy is not an indication for caesarean section, unless there are clear indications for surgery.
2. TOLAC is not a contraindication in adolescent pregnancy.
3. Antenatal education is a significant point in preparing a teenager for childbirth and childcare.

ULTRASOUND FOR FETAL ANOMALIES AND COMPLICATIONS

Adolescent pregnancies are associated with a higher risk of complications such as preeclampsia, fetal growth restrictions, preterm labor, low birth weight, prematurity and stillbirth. Statistically, newborns of adolescent mothers are more likely to require admission to the intensive care units. Moreover, non-chromosomal anomalies (NCA) are common in adolescent pregnancies [37–40]. It is estimated that 26.5/1000 births of teenage mothers are associated with the occurrence of NCA. For comparison, the incidence of defects decreases with increasing maternal age (22.5/1000 births for mothers aged 25–29, 21.5/1000 for mothers 30–34 years old, 21.4/1000 for mothers aged 35–39 years old), until a slight increase in the number of defects at the age of 40–44 (22.6/1000 births) and a further increase in the incidence of NCA for mothers aged 45+ (25.3/1000 births). The non-chromosomal anomalies in adolescent pregnancies include musculoskeletal anomalies, defects of the abdominal wall, anomalies of the gastrointestinal tract, central nervous system, and heart. Studies have reported that younger women have lower awareness of folic acid supplementation which causes more frequent occurrence of spina bifida/meningocele in this group. Statistically, non-immune hydrops associated with maternal infection is more common, especially related to rubella, toxoplasmosis, cytomegaly, herpes simplex and parvovirus. It should be emphasized that compared to the general population, teenage mothers are six times more likely to have a child with gastroschisis and almost five times more likely to suffer from malformations and non-immune hydrops associated with maternal infection. Adolescent pregnancies are associated with almost three times the risk of having a child with atresia or stenosis of the tricuspid valve, and almost twice as high the risk of anencephaly. An additional factor causing fetal defects in adolescence pregnancy is amniotic band syndrome (ABS) and/or limb body wall complex (LBWC), which is more common in this group [40–43]. The more frequent abuse of psychoactive substances contributes to the increase in the number of pregnancy defects and complications in this group of patients. Some data show that 33.4% of adolescents consume alcohol and 34.8% of adolescents are sexually active by the age of 15 without any form of contraception. This contributes to the higher incidence of Fetal Alcohol Syndrome (FAS) in newborns [44]. The most common abnormalities of young mothers' fetuses are presented in Table 2.

The risk of chromosomal abnormalities increases with the mother's age; therefore the incidence of these defects is low in the group of adolescent mothers. The estimated frequency

of births of a child with Down's syndrome in patients under the age of 15 is 0.634/1000 births and remains at a similar level to around the age of 25. The estimated birth rate for a child with Edwards, and Patau Syndrome is even lower, less than 0.112/1000 and less than 0.0764/1000 births respectively. However, it should remember about diseases that do not show a correlation between the mother's age and the risk of its occurrence, such as X-chromosome monosomy (Turner syndrome) or 22q11.2 deletion syndrome (DiGeorge syndrome) [45].

The most common obstetric pathologies in young mothers, including preeclampsia, hypertension, fetal growth restriction and premature birth, are a consequence of severe pathology of the uteroplacental vessels, with origins in early pregnancy. Also, uterine immaturity in very young teenagers is likely a major cause of defective deep placentation and adverse reproductive outcome. Additionally infrequent menstruations may prolong uterine immaturity because of lack of “menstrual preconditioning”. The pathogenesis of preeclampsia in adolescence is associated with abnormal deep placement in the immature uterus, impaired uterine decidualization, intrinsic decidual resistance and uterine maturation and spontaneous decidualization. There is also a link between cardiovascular risk factors in young women and early-onset preeclampsia associated with atherosclerosis of the uteroplacental arteries. The risk of preeclampsia among those younger than 20 is 1.25 times higher than that among 20- to 24-year-old women, and the risk of eclampsia is 2.3 times higher. Preeclampsia/eclampsia may affect up to 15 % of adolescent pregnancies [46–47]. The above changes in the placenta may be related to the fact that studies suggest that young maternal age is also more significantly associated with placental abruption than the advanced maternal age [48].

Premature delivery is an important indicator of newborn welfare and is associated with severe morbidity and mortality. In the group of adolescent women, preterm labor occurs with a frequency of about 15%. Additionally, young mothers have a significantly increased risk of having extremely premature babies and newborns with extremely low birth weight. Low birth weight (LBW) is a complication that occurs much more frequently in pregnant teenagers (about 33%) than in adult women. It mainly affects girls aged 10–14 years. LBW is one of the main causes of neonatal mortality. In adolescents it is a consequence of lack of proper prenatal care, malnutrition, smoking and the use of other stimulants. Low birth weight and very low birth weight (VLBW, < 1500 g) predispose to preterm delivery [1, 27, 49].

According to the standards and protocols of the Polish Society of Gynecologists and Obstetricians, the ultrasound assessment should be performed on the 11th–14th, 18th–22th, 28th–32nd and 40th (with CTG) weeks of pregnancy additionally the risk of growth restrictions

should be assessed in each adolescent patient at the beginning of pregnancy and at each visit. [50–52].

Recommendations

1. In the 11th–14th week of pregnancy, the assessment of the anatomical structures of the fetus, the search for early structural defects, the assessment of the size of the fetus and the determination of the duration of pregnancy. Risk assessment of the most common chromosomal aberrations based on the combined test (assessment of fetal nuchal translucency and maternal serum free beta-hCG and PAPP-A).
 - a. In the case of diagnosis of fetal malformation, amniocentesis and array comparative genomic hybridization (aCGH) and genetic consultation is recommended.
 - b. We recommend that each pregnant woman use screening to assess the risk of developing FGR with early onset, with maternal factors, uterine artery pulsatility index (UtA PI), mean arterial pressure (MAP), and gestational placental growth factor (PlGF). When PlGF cannot be used, pregnancy-associated plasma protein A (PAPP-A) values below 0.4 multiple of the median (MoM) suggest an increased risk of developing preeclampsia. When PAPP-A cannot be used, maternal factors, UtA PI, mean arterial pressure (MAP) should be used to calculate risk. In high-risk situations (> 1:100), it is justified to start the administration of 150 mg of acetylsalicylic acid before 16 weeks of gestation and continue it until the 36th week.
 - c. In a group at high risk of FGR and/or preeclampsia identified on the basis of the first trimester screening, a screening between 19th–24th weeks of gestation should be considered using the patient's history and UtA PI, mean arterial pressure (MAP) and if it possible with PlGF and soluble fms-like tyrosine kinase-1 (sFlt-1) evaluation.
 - d. In a group of low risk of FGR and/or preeclampsia, the assessment of UtA PI should be considered. In the case of normal biometry and PI UtA above the 95th percentile, we recommend an additional control of growth dynamics between 34th–38th week of pregnancy.

- e. In a high-risk pregnancy, fetal growth should be assessed additionally at week 26th–28th and at 34th–38th week of pregnancy.
 - f. If FGR is diagnosed, further proceeding should be based on the Recommendations of PTGIP [53, 54].
2. In the 18th–22th week of pregnancy, a detailed assessment of the fetus in terms of the presence of congenital abnormalities, taking into account typical abnormalities for an adolescent pregnancy. In the case of fetal malformation, amniocentesis and aCGH and genetic consultation is recommended. Transvaginal assessment of cervical length is recommended as prevention of preterm labor.
 3. In the 28th–32th and in the 40th week of pregnancy, an assessment of the fetus in terms of the presence of congenital abnormalities, taking into account typical abnormalities for an adolescent pregnancy and an assessment for fetal well-being and growth.

POSTPARTUM CARE

Both WHO/UNICEF and Polish Society for Pediatric Gastroenterology, Hepatology and Nutrition recommend exclusive breastfeeding during the first 6 months. Young breastfeeding mothers may additionally benefit from increased intervals between pregnancies and stronger mother-infant bonding. Unfortunately, teenage mothers are less likely to start breastfeeding compared to older mothers (44% mothers \leq 19 years vs 65% mother $>$ 19 years) [55–57]. Factors diminishing breastfeeding rate include poor socioeconomic status, limited social support, the lack of prenatal intervention, obesity, cesarean delivery, and preterm birth [58].

Adolescent mothers are twice more likely to suffer from postpartum depression (PPD) compared to adult mothers. Most investigators estimate the prevalence of adolescent postpartum depression on approximately 25%. The most important risk factors are limited social support, low socioeconomic status, and depression prior to pregnancy. There are specific psychosocial challenges making teenage mothers more vulnerable to PPD, such as isolation from peers, family and partner conflict, single motherhood, low self-esteem, and body dissatisfaction. Adolescent mothers in postpartum depression are at high risk for near future pregnancy. The peak onset of depression in adolescent mothers shifts to four months after birth. This justifies starting screening in pregnancy and continuing during the first year after birth. According to Polish Perinatal Standard of Care, screening for depression is

recommended in the first and third trimester of pregnancy, as well as in the postpartum period [58]. Edinburgh Postnatal Depression Scale questionnaire serves as a first-line diagnostic tool. Creating a support network for adolescent mother is one of the most important preventive strategies, as it reduces five times the risk of PPD [59–61].

In a well effective contraceptive method for young women, we must consider the following factors age, education, economic situation, obstetric history and dosage. Patients should also be asked about issues of accessibility to health care, in order to regularly check the prescribed pharmaceutical [1]. Adolescent mothers are at significant risk for repeat pregnancy, with 25% becoming pregnant again within two years of delivery [62].

Recommendations
<ol style="list-style-type: none">1. Breastfeeding should be recommended and sufficient support for those in high risk for discontinuation.2. It is recommended that pregnant adolescent women are monitored for depression in the first and third trimesters of pregnancy, and adolescent mothers are monitored for up to a year after delivery.3. Effective contraception should be offered.

SUMMARY

The issue of teenage pregnancy has major social implications. Teenage mothers are more likely to drop out of school, which results in worse living conditions for her and her child. Therefore, the priority of adolescent sexual health should be sound sexual education about puberty, contraception, family planning and, above all, sexually transmitted diseases.

Conflict of interests

All authors declare no conflict of interest.

REFERENCES

1. World Health Organization. Adolescent pregnancy. WHO Library Cataloguing-in-Publication Data 2004.

2. Girlhood, Not Motherhood: Preventing Adolescent Pregnancy. United Nations Population Fund UNFPA, New York 2015.
3. A league table of teenage births in rich nations', Innocenti Report Card No.3. UNICEF Innocenti Research Centre, Florence 2001.
4. Doroftei B, Ilie OD, Maftei R, et al. The pregnancy rate among Romanian adolescents: an eleven years (2009--2020) observational, retrospective study from a single center. *Ginekol Pol.* 2022; 93(1): 42–43, doi: 10.5603/GP.a2021.0132, indexed in Pubmed: 35072236.
5. WHO. Global health estimates 2015: deaths by cause, age, sex, by country and by region, 2000–2015. Geneva: WHO; 2016.
6. Urodzenia żywe według płci, wagi noworodka przy urodzeniu, kolejności urodzenia i wieku matki.
http://swaid.stat.gov.pl/Demografia_dashboards/Raporty_predefiniowane/RAP_DBD_DEM_9.aspx (28.03.2023).
7. WHO. Global and regional estimates on violence against women: Prevalence and health effects of intimate partner violence and non-partner sexual violence. Geneva: WHO; 2013.
8. Nowożeńcy, którzy zawarli związek małżeński w Polsce według wieku i miejsca zamieszkania przed ślubem. Główny Urząd Statystyczny.
<https://demografia.stat.gov.pl/BazaDemografia/Tables.aspx> (28.03.2023).
9. Woynarowska B, Izdebski Z, Kołolo H, et al. Inicjacja seksualna i stosowanie prezerwatyw oraz innych metod zapobiegania ciąży przez młodzież 15-letnią w Polsce i w innych krajach. *Ginekol Pol.* 2004; 75(8): 621.
10. Sowińska-Przepiera E, Andrysiak-Mamos E, Syrenicz A. Nieletnia jako pacjent w poradni ginekologii wieku rozwojowego. *Endokrynol Pol.* 2008; 59: 412–419.
11. Ustawa z dnia 6 czerwca 1997 r. - Kodeks karny, Dz. U.1997 nr 88 poz.553 z późn. zm.
12. Skonieczna J, Olejniczak D, Kielan A. Porównanie oceny poziomu edukacji seksualnej w szkołach średnich przez uczniów i rodziców Comparison of the assessment of the level of sexual education in secondary schools by adolescents and parents. *J Edu Health Sport.* 2017; 7(7(6)): 155–172, doi: [10.5281/zenodo.804347](https://doi.org/10.5281/zenodo.804347).
13. Opinie i oczekiwania młodych dorosłych (osiemnastolatków) oraz rodziców dzieci w wieku szkolnym wobec edukacji dotyczącej rozwoju psychoseksualnego i seksualności. Raport z badania Warszawa, lipiec 2015. Wydawca: Instytut Badań Edukacyjnych.
14. Dalby J, Hayon R, Carlson J. Adolescent pregnancy and contraception. *Prim Care.* 2014; 41(3): 607–629, doi: [10.1016/j.pop.2014.05.010](https://doi.org/10.1016/j.pop.2014.05.010), indexed in Pubmed: [25124209](https://pubmed.ncbi.nlm.nih.gov/25124209/).

15. Fleming N, O'Driscoll T, Becker G, et al. CANPAGO COMMITTEE. Adolescent Pregnancy Guidelines. *J Obstet Gynaecol Can.* 2015; 37(8): 740–756, doi: [10.1016/S1701-2163\(15\)30180-8](https://doi.org/10.1016/S1701-2163(15)30180-8), indexed in Pubmed: [26474231](https://pubmed.ncbi.nlm.nih.gov/26474231/).
16. Mukhopadhyay P, Chaudhuri RN, Paul B. Hospital-based perinatal outcomes and complications in teenage pregnancy in India. *J Health Popul Nutr.* 2010; 28(5): 494–500, doi: [10.3329/jhpn.v28i5.6158](https://doi.org/10.3329/jhpn.v28i5.6158), indexed in Pubmed: [20941901](https://pubmed.ncbi.nlm.nih.gov/20941901/).
17. Brosens I, Muter J, Gargett CE, et al. The impact of uterine immaturity on obstetrical syndromes during adolescence. *Am J Obstet Gynecol.* 2017; 217(5): 546–555, doi: [10.1016/j.ajog.2017.05.059](https://doi.org/10.1016/j.ajog.2017.05.059), indexed in Pubmed: [28578177](https://pubmed.ncbi.nlm.nih.gov/28578177/).
18. Hagen CP, Mouritsen A, Mieritz MG, et al. Uterine volume and endometrial thickness in healthy girls evaluated by ultrasound (3-dimensional) and magnetic resonance imaging. *Fertil Steril.* 2015; 104(2): 452–459, doi: [10.1016/j.fertnstert.2015.04.042](https://doi.org/10.1016/j.fertnstert.2015.04.042), indexed in Pubmed: [26051091](https://pubmed.ncbi.nlm.nih.gov/26051091/).
19. O'Brien KO, Nathanson MS, Mancini J, et al. Calcium absorption is significantly higher in adolescents during pregnancy than in the early postpartum period. *Am J Clin Nutr.* 2003; 78(6): 1188–1193, doi: [10.1093/ajcn/78.6.1188](https://doi.org/10.1093/ajcn/78.6.1188), indexed in Pubmed: [14668282](https://pubmed.ncbi.nlm.nih.gov/14668282/).
20. WHO/CDC. Worldwide prevalence of anaemia 1993–2005. WHO Global Database on Anaemia. Geneva, World Health Organization 2008.
21. Harrison ME, Balasubramaniam B, Robinson A, et al. Adolescent pregnancy and eating disorders: a minireview and case report. *Eat Weight Disord.* 2018; 23(3): 389–393, doi: [10.1007/s40519-017-0380-2](https://doi.org/10.1007/s40519-017-0380-2), indexed in Pubmed: [28361214](https://pubmed.ncbi.nlm.nih.gov/28361214/).
22. Fisher M. Foreword: Update on sexually transmitted infections (STIs) in adolescents. *Curr Probl Pediatr Adolesc Health Care.* 2020; 50(7): 100833, doi: [10.1016/j.cppeds.2020.100833](https://doi.org/10.1016/j.cppeds.2020.100833), indexed in Pubmed: [32718897](https://pubmed.ncbi.nlm.nih.gov/32718897/).
23. Substance Abuse and Mental Health Services Administration . Results from the 2012 National Survey on Drug Use and Health: Summary of National Findings. Substance Abuse and Mental Health Services Administration; Rockville, MD: 2013. NSDUH Series H-46, HHS Publication No. (SMA) 13-4795.
24. Zimmer M, Sieroszewski P, Oszukowski P, et al. Polish Society of Gynecologists and Obstetricians recommendations on supplementation during pregnancy. *Ginekol Pol.* 2020; 91(10): 644–653, doi: [10.5603/GP.2020.0159](https://doi.org/10.5603/GP.2020.0159), indexed in Pubmed: [33184834](https://pubmed.ncbi.nlm.nih.gov/33184834/).
25. Salas-Wright CP, Vaughn MG, Ugalde J, et al. Substance use and teen pregnancy in the United States: evidence from the NSDUH 2002-2012. *Addict Behav.* 2015; 45: 218–225, doi: [10.1016/j.addbeh.2015.01.039](https://doi.org/10.1016/j.addbeh.2015.01.039), indexed in Pubmed: [25706068](https://pubmed.ncbi.nlm.nih.gov/25706068/).
26. WHO. Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity. WHO. Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity. Vitamin and mineral nutrition information system. Geneva: World Health Organization; 2011.

27. Guimarães AM, Bettiol H, Souza Lde, et al. Is adolescent pregnancy a risk factor for low birth weight? *Rev Saude Publica*. 2013; 47(1): 11–19, doi: [10.1590/s0034-89102013000100003](https://doi.org/10.1590/s0034-89102013000100003), indexed in Pubmed: [23703125](https://pubmed.ncbi.nlm.nih.gov/23703125/).
28. Torvie AJ, Callegari LS, Schiff MA, et al. Labor and delivery outcomes among young adolescents. *Am J Obstet Gynecol*. 2015; 213(1): 95.e1–95.e8, doi: [10.1016/j.ajog.2015.04.024](https://doi.org/10.1016/j.ajog.2015.04.024), indexed in Pubmed: [25935776](https://pubmed.ncbi.nlm.nih.gov/25935776/).
29. Fleming N, Ng N, Osborne C, et al. Adolescent pregnancy outcomes in the province of Ontario: a cohort study. *J Obstet Gynaecol Can*. 2013; 35(3): 234–245, doi: [10.1016/S1701-2163\(15\)30995-6](https://doi.org/10.1016/S1701-2163(15)30995-6), indexed in Pubmed: [23470111](https://pubmed.ncbi.nlm.nih.gov/23470111/).
30. Karataşlı V, Göksel KA, Inan HA, et al. Maternal and neonatal outcomes of adolescent pregnancy. *J Gynecol Obstet Hum Reprod*. 2019; 48(5): 347–350, doi: [30794955](https://doi.org/30794955), indexed in Pubmed: [10.1016/j.jogoh.2019.02.011](https://pubmed.ncbi.nlm.nih.gov/10.1016/j.jogoh.2019.02.011).
31. Malabarey OT, Balayla J, Abenhaim HA. The effect of pelvic size on cesarean delivery rates: using adolescent maternal age as an unbiased proxy for pelvic size. *J Pediatr Adolesc Gynecol*. 2012; 25(3): 190–194, doi: [10.1016/j.jpag.2012.01.002](https://doi.org/10.1016/j.jpag.2012.01.002), indexed in Pubmed: [22578479](https://pubmed.ncbi.nlm.nih.gov/22578479/).
32. Levin G, Meyer R, Mor N, et al. Trial of labor after cesarean in adolescents - a multicenter study. *J Pediatr Adolesc Gynecol*. 2020; 33(4): 398–402, doi: [10.1016/j.jpag.2020.02.006](https://doi.org/10.1016/j.jpag.2020.02.006), indexed in Pubmed: [32087403](https://pubmed.ncbi.nlm.nih.gov/32087403/).
33. Damle LF, Wilson K, Huang CC, et al. Do they stand a chance? Vaginal birth after cesarean section in adolescents compared to adult women. *J Pediatr Adolesc Gynecol*. 2015; 28(4): 219–223, doi: [10.1016/j.jpag.2014.07.010](https://doi.org/10.1016/j.jpag.2014.07.010), indexed in Pubmed: [26024936](https://pubmed.ncbi.nlm.nih.gov/26024936/).
34. Annex to the Regulation of the Minister of Health of 16th August 2018 (pos. 1756).
35. Wielgos M, Bomba-Opoń D, Breborowicz GH, et al. Recommendations of the Polish Society of Gynecologists and Obstetricians regarding caesarean sections. *Ginekol Pol*. 2018; 89(11): 644–657, doi: [10.5603/GP.a2018.0110](https://doi.org/10.5603/GP.a2018.0110), indexed in Pubmed: [30508218](https://pubmed.ncbi.nlm.nih.gov/30508218/).
36. Bomba-Opoń D, Drews K, Huras H, et al. Polish Gynecological Society recommendations for labor induction. *Ginekol Pol*. 2017; 88(4): 224–234, doi: [10.5603/GP.a2017.0043](https://doi.org/10.5603/GP.a2017.0043), indexed in Pubmed: [28509326](https://pubmed.ncbi.nlm.nih.gov/28509326/).
37. Malabarey OT, Balayla J, Klam SL, et al. Pregnancies in young adolescent mothers: a population-based study on 37 million births. *J Pediatr Adolesc Gynecol*. 2012; 25(2): 98–102, doi: <https://doi.org/10.1016/j.jpag.2011.09.004>.
38. Loto OM, Ezechi OC, Kalu BKE, et al. Poor obstetric performance of teenagers: is it age- or quality of care-related? *J Obstet Gynaecol*. 2004; 24(4): 395–398, doi: [10.1080/01443610410001685529](https://doi.org/10.1080/01443610410001685529), indexed in Pubmed: [15203579](https://pubmed.ncbi.nlm.nih.gov/15203579/).

39. Chen XK, Wen SWu, Fleming N, et al. Teenage pregnancy and adverse birth outcomes: a large population based retrospective cohort study. *Int J Epidemiol*. 2007; 36(2): 368–373, doi: [10.1093/ije/dyl284](https://doi.org/10.1093/ije/dyl284), indexed in Pubmed: [17213208](https://pubmed.ncbi.nlm.nih.gov/17213208/).
40. Shrim A, Ates S, Mallozzi A, et al. Is young maternal age really a risk factor for adverse pregnancy outcome in a canadian tertiary referral hospital? *J Pediatr Adolesc Gynecol*. 2011; 24(4): 218–222, doi: [10.1016/j.jpag.2011.02.008](https://doi.org/10.1016/j.jpag.2011.02.008), indexed in Pubmed: [21620742](https://pubmed.ncbi.nlm.nih.gov/21620742/).
41. Reefhuis J, Honein MA. Maternal age and non-chromosomal birth defects, Atlanta--1968-2000: teenager or thirty-something, who is at risk? *Birth Defects Res A Clin Mol Teratol*. 2004; 70(9): 572–579, doi: [10.1002/bdra.20065](https://doi.org/10.1002/bdra.20065), indexed in Pubmed: [15368555](https://pubmed.ncbi.nlm.nih.gov/15368555/).
42. Gill SK, Broussard C, Devine O, et al. National Birth Defects Prevention Study. Association between maternal age and birth defects of unknown etiology: United States, 1997-2007. *Birth Defects Res A Clin Mol Teratol*. 2012; 94(12): 1010–1018, doi: [10.1002/bdra.23049](https://doi.org/10.1002/bdra.23049), indexed in Pubmed: [22821755](https://pubmed.ncbi.nlm.nih.gov/22821755/).
43. Loane M, Dolk H, Morris JK, et al. EUROCAT Working Group. Maternal age-specific risk of non-chromosomal anomalies. *BJOG*. 2009; 116(8): 1111–1119, doi: [10.1111/j.1471-0528.2009.02227.x](https://doi.org/10.1111/j.1471-0528.2009.02227.x), indexed in Pubmed: [19485989](https://pubmed.ncbi.nlm.nih.gov/19485989/).
44. Allard-Hendren R. Alcohol use and adolescent pregnancy. *MCN Am J Matern Child Nurs*. 2000; 25(3): 159–162, doi: [10.1097/00005721-200005000-00010](https://doi.org/10.1097/00005721-200005000-00010), indexed in Pubmed: [10810850](https://pubmed.ncbi.nlm.nih.gov/10810850/).
45. Cuckle H, Morris J. Maternal age in the epidemiology of common autosomal trisomies. *Prenat Diagn*. 2021; 41(5): 573–583, doi: [10.1002/pd.5840](https://doi.org/10.1002/pd.5840), indexed in Pubmed: [33078428](https://pubmed.ncbi.nlm.nih.gov/33078428/).
46. Azevedo WF, Diniz MB, Fonseca ES, et al. Complications in adolescent pregnancy: systematic review of the literature. *Einstein (Sao Paulo)*. 2015; 13(4): 618–626, doi: [10.1590/S1679-45082015RW3127](https://doi.org/10.1590/S1679-45082015RW3127), indexed in Pubmed: [26061075](https://pubmed.ncbi.nlm.nih.gov/26061075/).
47. Brosens I, Muter J, Ewington L, et al. Adolescent preeclampsia: pathological drivers and clinical prevention. *Reprod Sci*. 2019; 26(2): 159–171, doi: [10.1177/1933719118804412](https://doi.org/10.1177/1933719118804412), indexed in Pubmed: [30317927](https://pubmed.ncbi.nlm.nih.gov/30317927/).
48. Kyojuka H, Murata T, Fukusda T, et al. Japan Environment and Children's Study (JECS) Group. Teenage pregnancy as a risk factor for placental abruption: Findings from the prospective Japan environment and children's study. *PLoS One*. 2021; 16(5): e0251428, doi: [10.1371/journal.pone.0251428](https://doi.org/10.1371/journal.pone.0251428), indexed in Pubmed: [33984034](https://pubmed.ncbi.nlm.nih.gov/33984034/).
49. Macedo TCC, Montagna E, Trevisan CM, et al. Prevalence of preeclampsia and eclampsia in adolescent pregnancy: A systematic review and meta-analysis of 291,247 adolescents worldwide since 1969. *Eur J Obstet Gynecol Reprod Biol*. 2020; 248: 177–186, doi: [10.1016/j.ejogrb.2020.03.043](https://doi.org/10.1016/j.ejogrb.2020.03.043), indexed in Pubmed: [32283429](https://pubmed.ncbi.nlm.nih.gov/32283429/).

50. Rozporządzenie Ministra Zdrowia z dnia 16 sierpnia 2018 r. w sprawie standardu organizacyjnego opieki okołoporodowej. Dziennik Ustaw Rzeczypospolitej Polskiej poz. 1756.
51. Borowski D, Pietryga M, Basta P, et al. Practice guidelines of the Polish Society of Gynecologists and Obstetricians - Ultrasound Section for ultrasound screening in uncomplicated pregnancy - 2020. *Ginekologia Polska*. 2020; 91(8): 490–501, doi: [10.5603/gp.2020.0110](https://doi.org/10.5603/gp.2020.0110).
52. Sieroszewski P, Haus O, Zimmer M, et al. Recommendations for prenatal diagnostics of the Polish Society of Gynaecologists and Obstetricians and the Polish Society of Human Genetics. *Ginekol Pol*. 2022; 93(5): 427–437, doi: [10.5603/GP.a2021.0255](https://doi.org/10.5603/GP.a2021.0255), indexed in Pubmed: [35315029](https://pubmed.ncbi.nlm.nih.gov/35315029/).
53. Kwiatkowski S, Torbe A, Borowski D, et al. Polish Society of Gynecologists and Obstetricians Recommendations on diagnosis and management of fetal growth restriction. *Ginekol Pol*. 2020; 91(10): 634–643, doi: [10.5603/gp.2020.0158](https://doi.org/10.5603/gp.2020.0158).
54. Kosinska-Kaczynska K, Torbé A, Kwiatkowski S, et al. The Polish Society of Gynecologists and Obstetricians Guideline for the diagnostic assessment and management of multiple-gestation pregnancy complicated by fetal growth restriction. *Ginekol Pol*. 2022; 93(3): 256–263, doi: [10.5603/GP.a2021.0244](https://doi.org/10.5603/GP.a2021.0244), indexed in Pubmed: [35315031](https://pubmed.ncbi.nlm.nih.gov/35315031/).
55. T Ganchimeg, E Ota, N Morisaki, et al. Pregnancy and childbirth outcomes among adolescent mothers: a World Health Organization multicountry study *BJOG*, 121 (Suppl 1) (2014), pp. 40–48.
56. Szajewska H, Horvath A, Rybak A, et al. A Position Paper by the Polish Society for Paediatric Gastroenterology, Hepatology and Nutrition. *Stand. Med*. 2016; 13: 9–24.
57. Muelbert M, Giugliani ERJ. Factors associated with the maintenance of breastfeeding for 6, 12, and 24 months in adolescent mothers. *BMC Public Health*. 2018; 18(1)–675, doi: [10.1186/s12889-018-5585-4](https://doi.org/10.1186/s12889-018-5585-4), indexed in Pubmed: [29855364](https://pubmed.ncbi.nlm.nih.gov/29855364/).
58. Dinwiddie KJ, Schillerstrom TL, Schillerstrom JE. Postpartum depression in adolescent mothers. *J Psychosom Obstet Gynaecol*. 2018; 39(3): 168–175, doi: [10.1080/0167482X.2017.1334051](https://doi.org/10.1080/0167482X.2017.1334051), indexed in Pubmed: [28574297](https://pubmed.ncbi.nlm.nih.gov/28574297/).
59. Dominiak M, Antosik-Wojcinska AZ, Baron M, et al. Recommendations for the prevention and treatment of postpartum depression. *Ginekol Pol*. 2021; 92(2): 153–164, doi: [10.5603/GP.a2020.0141](https://doi.org/10.5603/GP.a2020.0141), indexed in Pubmed: [33448014](https://pubmed.ncbi.nlm.nih.gov/33448014/).
60. Samochowiec J, Rybakowski J, Galecki P, et al. Recommendations of the Polish Psychiatric Association for treatment of affective disorders in women of childbearing age. Part I: Treatment of depression. *Psychiatr Pol*. 2019; 53(2): 245–262, doi: [10.12740/PP/103385](https://doi.org/10.12740/PP/103385), indexed in Pubmed: [31317956](https://pubmed.ncbi.nlm.nih.gov/31317956/).
61. Kim THM, Connolly JA, Tamim H. The effect of social support around pregnancy on postpartum depression among Canadian teen mothers and adult mothers in the

maternity experiences survey. BMC Pregnancy Childbirth. 2014; 14: 162, doi: [10.1186/1471-2393-14-162](https://doi.org/10.1186/1471-2393-14-162), indexed in Pubmed: [24884410](https://pubmed.ncbi.nlm.nih.gov/24884410/).

62. Marvin-Dowle K, Kilner K, Burley V, et al. Impact of adolescent age on maternal and neonatal outcomes in the Born in Bradford cohort. BMJ open. 2018; 8(3): e016258, doi: [10.1136/bmjopen-2017-016258](https://doi.org/10.1136/bmjopen-2017-016258), indexed in Pubmed: [29549196](https://pubmed.ncbi.nlm.nih.gov/29549196/).

Table 1. Biological, sociological and psychological factors that may predispose to teenage pregnancy [1]

Factors influencing the adolescent pregnancy	
Early puberty in girls	Early sexual initiation
Risky sexual behaviour	Sexual violence
Lack of proper education	Ineffective pro-family education
Social pressure — media	Low self-esteem
Lack of proper role models	Low socio-economic status
Lack of family care and support	Lack of affection and family warmth

Table 2. The most common abnormalities of young mothers' fetuses

Central nervous system	
Anencephaly	Microcephaly
Spina bifida	Caniorachischisis
Holoprosencephaly	Hydrocephalus
Craniofacial	
Cleft face	Cleft lip
Ear defects	Cleft palate
Heart	
D-transposition of the great arteries	Right ventricular outflow tract obstruction
Tricuspid atresia/stenosis	Mitral valve atresia/stenosis
Total anomalous pulmonary venous return	Heterotaxia with Congenital heart
Double outlet right ventricle	Pulmonary valve anomalies
Digestive tract	
Omphalocele	Gastroschisis
Duodenal atresia	Anorectal atresia/stenosis
Urinary tract	
Kidney agenesis	Genital defects
Limbs	
Polydactyly	Syndactyly
Genu varum	Clubfoot