

PHYSIOLOGICAL PREGNANCY IN OBSTETRIC PRACTICE: MAIN STAGES OF PREGNANCY AND PRINCIPLES OF ANTENATAL MONITORING

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Annotation. *Physiological pregnancy is a complex period characterized by progressive maternal adaptation and continuous fetal growth and development. Appropriate antenatal monitoring is essential for assessing maternal and fetal well-being, identifying potential risk factors, and preventing pregnancy-related complications. The aim of this study was to evaluate the main physiological stages of pregnancy and the principles of antenatal monitoring in obstetric practice. The study included 30 pregnant women who were assessed according to gestational age, maternal clinical condition, blood pressure, body weight, laboratory parameters, ultrasound findings, and fetal development. The results demonstrated that the majority of women had an uncomplicated physiological course of pregnancy, while a small proportion required additional clinical observation. Regular antenatal assessment, timely ultrasound examination, monitoring of maternal parameters, and evaluation of fetal growth were important components of pregnancy management.*

Keywords: *Physiological pregnancy, antenatal care, pregnancy monitoring, maternal health, fetal development, obstetric care, pregnancy trimester, ultrasound examination, fetal growth, maternal and fetal well-being.*

Introduction

Physiological pregnancy is a complex natural process characterized by the development of the fetus and gradual preparation of the maternal organism for childbirth. During pregnancy, significant hormonal, anatomical, and functional changes occur in the maternal body. These adaptations provide the necessary conditions for normal fetal growth and development.

Maintaining a physiological pregnancy requires regular assessment of both maternal and fetal well-being throughout the gestational period. Pregnancy is conventionally divided into three trimesters, each characterized by specific developmental and physiological processes. During the first trimester, implantation of the fertilized ovum, embryonic development, and formation of the major organ systems take place. The second trimester is mainly characterized by active fetal growth and functional maturation of developing organs. During the third trimester, fetal weight and length increase considerably, vital organ systems continue to mature, and the maternal organism gradually prepares for labor and delivery.

Antenatal care is an essential component of safe pregnancy management. During antenatal visits, the general condition of the pregnant woman, blood pressure, body weight, fetal growth, and other important clinical parameters are assessed regularly. Appropriate laboratory and instrumental examinations are also performed when indicated to identify factors that may affect the normal course of pregnancy. One of the main objectives of antenatal care is the early identification and prevention of possible pregnancy complications. Pregnant women should also receive appropriate counseling regarding nutrition, physical activity, personal hygiene, healthy lifestyle, warning signs, and preparation for childbirth. Regular antenatal monitoring contributes to maintaining maternal and fetal health and improving pregnancy outcomes.

Understanding the physiological stages of pregnancy and applying appropriate principles of antenatal monitoring are important components of modern obstetric practice. A systematic approach to pregnancy surveillance allows physiological changes to be distinguished from potential pathological conditions and supports timely clinical intervention when necessary.

Relevance

Physiological pregnancy is one of the most important periods in a woman's reproductive life and requires systematic medical observation. Although pregnancy normally proceeds without complications in many women, physiological changes may sometimes be accompanied by conditions that can negatively affect maternal or fetal health. Therefore, timely and regular antenatal monitoring is essential for assessing pregnancy progression and identifying potential risks at an early stage.

Aim

The aim of this study was to characterize the main stages of physiological pregnancy and to describe the fundamental principles of antenatal monitoring, including assessment of maternal and fetal well-being, identification of potential risk factors, and prevention of pregnancy-related complications.

Main part

Pregnancy is associated with a series of physiological adaptations that support fetal development and prepare the maternal organism for childbirth. Hormonal changes begin from the early stages of pregnancy and influence almost all major organ systems. Increased production of progesterone contributes to maintaining the pregnancy and reducing uterine contractility.

Estrogen levels progressively increase and support uterine growth, placental development, and preparation of the mammary glands for lactation. Cardiovascular adaptation is characterized by increased cardiac output and changes in circulating blood volume. Respiratory changes develop gradually and support increased oxygen requirements of the mother and fetus.

Renal function also adapts to the increased metabolic demands of pregnancy.

Hematological changes include an increase in plasma volume and changes in red blood cell mass, resulting in physiological hemodilution. The gastrointestinal system may also be affected, with symptoms such as nausea, vomiting, and constipation occurring in some pregnant women. These changes are generally considered physiological when they remain within expected limits. Understanding normal maternal adaptations is important because it allows healthcare professionals to distinguish physiological changes from pathological conditions. Therefore, assessment of maternal well-being should be based on gestational age and the expected physiological changes of each stage of pregnancy.

Pregnancy is traditionally divided into three trimesters, each characterized by specific developmental processes. The first trimester represents a critical period during which implantation, embryonic development, and formation of major organ systems take place. During this stage, confirmation of pregnancy and assessment of gestational age are important components of clinical care. The second trimester is characterized by rapid fetal growth, maturation of organs, and increasing fetal activity. During this period, maternal physiological adaptation generally becomes more stable, although regular monitoring remains necessary. The third trimester is associated with continued fetal growth and maturation of the respiratory, nervous, and other vital systems. The fetus progressively prepares for extrauterine life, while the maternal organism undergoes further changes in preparation for labor. Assessment of fetal growth and maternal condition becomes increasingly important during this period.

Ultrasound examination and other investigations may be performed according to clinical indications and local antenatal care protocols. Understanding the physiological characteristics of each trimester allows healthcare professionals to select appropriate monitoring strategies. It also facilitates timely identification of deviations from normal pregnancy development.

The initial antenatal assessment represents an important stage in the management of pregnancy. A detailed medical and obstetric history should be collected to identify factors that may influence pregnancy outcomes. Information regarding previous pregnancies, deliveries, miscarriages, abortions, infertility, chronic diseases, medications, allergies, and previous surgical procedures should be considered. Maternal age, nutritional status, body weight, blood pressure, and general health are also important components of the initial evaluation. Physical examination helps identify conditions that may require additional monitoring. Laboratory investigations are selected according to gestational age and clinical circumstances and may include blood and urine tests, blood group and Rh status, and screening for relevant infectious diseases. Ultrasound examination can contribute to confirmation of gestational age, assessment of fetal development, and identification of multiple pregnancy or structural abnormalities when performed at the appropriate stage. Identification of risk factors at the beginning of pregnancy allows women who require additional surveillance to be recognized early. At the same time, women with an uncomplicated pregnancy can receive appropriate routine antenatal care without unnecessary interventions. Thus, the initial antenatal visit establishes the basis for an individualized pregnancy monitoring plan.

Regular antenatal monitoring is essential for evaluating maternal and fetal well-being throughout pregnancy. At antenatal visits, maternal blood pressure, weight, general clinical condition, and pregnancy-related complaints should be assessed. As pregnancy progresses, fetal growth and development are evaluated according to gestational age. Fetal heart activity, uterine growth, and other clinical parameters may be assessed during routine examinations. Laboratory and ultrasound investigations are performed according to established antenatal care recommendations and individual clinical indications. Particular attention should be given to symptoms such as vaginal bleeding, severe abdominal pain, persistent headache, visual disturbances, marked edema, fever, leakage of fluid, or reduced fetal movements at appropriate gestational ages. These symptoms may require urgent clinical assessment. Antenatal care should also include counseling regarding balanced nutrition, appropriate physical activity, avoidance of harmful substances, vaccination where indicated, and preparation for childbirth. Communication between the pregnant woman and healthcare provider is an important component of effective antenatal care.

Prevention of pregnancy complications is an important objective of antenatal care even when pregnancy initially appears physiological. Regular monitoring allows potential risk factors to be identified before they become clinically significant. Appropriate nutritional counseling supports maternal health and fetal development, while supplementation may be recommended according to individual needs and national clinical guidelines. Pregnant women should receive information about warning signs that require medical attention and should be encouraged to seek care promptly when such symptoms occur. Preparation for childbirth should begin before the final weeks of pregnancy and should include information about the expected course of labor, delivery options, breastfeeding, and newborn care. Psychological preparation and clear communication may help women develop realistic expectations regarding childbirth.

In the third trimester, assessment of fetal presentation and maternal condition becomes particularly important for planning delivery.

The healthcare provider should also review the woman's birth plan and determine whether additional obstetric consultation is necessary. Effective antenatal care does not focus exclusively on detecting disease but also promotes healthy pregnancy behaviors and informed participation in healthcare decisions. Therefore, preventive care and childbirth preparation form an integral part of comprehensive management of physiological pregnancy.

RESULTS

The study included 30 pregnant women with a physiological course of pregnancy.

Maternal clinical status, gestational age, blood pressure, body weight, laboratory parameters, ultrasound findings, and fetal development were evaluated during antenatal follow-up. The obtained results demonstrated that regular antenatal monitoring enabled timely assessment of maternal and fetal well-being. The mean maternal age was 27.8 ± 0.6 years. Of the examined women, 9 (30.0%) were in the first trimester, 11 (36.7%) in the second trimester, and 10 (33.3%) in the third trimester.

Primigravidas accounted for 17 (56.7%) women, while 13 (43.3%) had previous pregnancy experience.

Table 1. General characteristics of the examined pregnant women

Parameter	n	%
Total number of pregnant women	30	100
First trimester	9	30.0
Second trimester	11	36.7
Third trimester	10	33.3
Primigravida	17	56.7
Previous pregnancy	13	43.3
Physiological course of pregnancy	26	86.7
Required additional monitoring	4	13.3

Regular antenatal follow-up was documented in 28 (93.3%) women. Blood pressure was monitored in 29 (96.7%) participants, while maternal body weight was assessed dynamically in 29 (96.7%) cases. Routine laboratory investigations were completed in 28 (93.3%) women.

Ultrasound examination was performed in 29 (96.7%) pregnant women. Fetal growth corresponded to gestational age in 28 (93.3%) cases. Normal fetal cardiac activity was observed in 30 (100%) women.

Table 2. Main antenatal monitoring indicators

Monitoring indicator	n	%
Regular antenatal follow-up	28	93.3
Blood pressure monitoring	29	96.7
Maternal weight monitoring	29	96.7
Routine laboratory investigations	28	93.3
Ultrasound examination	29	96.7
Fetal growth appropriate for gestational age	28	93.3
Normal fetal cardiac activity	30	100

Several physiological pregnancy-related complaints were also recorded. Nausea was reported in 8 (26.7%) women, general fatigue in 7 (23.3%), mild lower back discomfort in 5 (16.7%), and occasional mild lower abdominal discomfort in 4 (13.3%) participants.

Table 3. Main clinical complaints during pregnancy

Clinical finding	n	%
Nausea	8	26.7
Fatigue	7	23.3
Mild lower back discomfort	5	16.7
Mild lower abdominal discomfort	4	13.3
No significant complaints	18	60.0

Overall, 26 (86.7%) women had an uncomplicated physiological course of pregnancy, while 4 (13.3%) required additional monitoring because of individual risk factors. The findings indicate that regular assessment of maternal and fetal condition, monitoring of blood pressure and body weight, and timely laboratory and ultrasound examinations are important components of antenatal care during physiological pregnancy.

Discussion

The findings of this study demonstrate that regular antenatal monitoring plays an important role in maintaining maternal and fetal well-being during physiological pregnancy.

Among the 30 women included in the study, the majority had an uncomplicated pregnancy course, while a smaller proportion required additional observation because of individual risk factors. The distribution of pregnant women across the three trimesters allowed the physiological characteristics of different stages of pregnancy to be considered. The largest proportion of participants was in the second trimester, followed by the third and first trimesters.

This distribution is clinically relevant because maternal physiological adaptations and fetal developmental processes change progressively throughout gestation.

The high proportion of women who underwent regular antenatal monitoring indicates the importance of systematic observation during pregnancy. Blood pressure and maternal body weight were monitored in the majority of participants, while laboratory and ultrasound examinations were also performed in most cases. These assessments provide important information about maternal adaptation to pregnancy and fetal development. Ultrasound findings showed that fetal growth corresponded to gestational age in most women. Normal fetal cardiac activity was observed in all examined participants. These findings indicate that the majority of pregnancies demonstrated appropriate fetal development without clinically significant abnormalities. The most frequently reported complaints were nausea and fatigue, followed by mild lower back and lower abdominal discomfort. Such symptoms may occur as part of normal physiological adaptation during pregnancy; however, their intensity, duration, and association with other clinical signs should be considered during antenatal assessment.

Conclusion

The study results demonstrated that physiological pregnancy requires regular and systematic antenatal monitoring to ensure maternal and fetal well-being. Among the 30 pregnant women included in the study, the majority had an uncomplicated course of pregnancy, while a smaller proportion required additional clinical observation. Regular assessment of maternal blood pressure, body weight, laboratory parameters, and ultrasound findings provided an opportunity to monitor pregnancy progression and fetal development. In most women, fetal growth corresponded to gestational age, and normal fetal cardiac activity was observed. The most frequently reported complaints, including nausea, fatigue, and mild back or lower abdominal discomfort, were generally consistent with common physiological changes during pregnancy.

However, their clinical assessment remains important for distinguishing normal pregnancy-related symptoms from potential complications.

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