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THE SIGNIFICANCE OF PSYCHOEMOTIONAL STRESS AND LIFESTYLE AS RISK FACTORS FOR SPONTANEOUS ABORTION IN EARLY-AGE PREGNANCY AND ITS PREVENTION

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Abstract

Relevance of Early Pregnancy. Worldwide statistics on early (adolescent) pregnancy cover girls aged 15–19 years. Despite a global decline in adolescent birth rates, approximately 21 million girls become pregnant each year in developing regions, of whom nearly 12 million give birth.
Regional Statistics:
1. Africa (Sub-Saharan Africa). This region has the highest rates in the world. Approximately 25% of girls give birth before the age of 18. The adolescent birth rate is 98 births per 1,000 girls.
2. Latin America and the Caribbean. The average birth rate is 51 births per 1,000 adolescent girls.
3. Asia. The most significant decline has been observed over the past decades. In Central and South Asia, adolescent birth rates have decreased by more than 75%.
4. Europe. Europe has one of the lowest adolescent birth rates worldwide. According to the World Health Organization, the adolescent birth rate in the European Region is approximately 13 births per 1,000 girls. In European Union countries, the average age at first childbirth is around 30 years.

Psycho-emotional stress is recognized as one of the major risk factors adversely affecting maternal and fetal health during pregnancy. This study comprehensively analyzed the role of psycho-emotional stress in the development of miscarriage risk during early pregnancy, as well as stress-related emotional changes, lifestyle factors, dietary habits, and sleep patterns. In addition, the neuroendocrine and immunological mechanisms of stress and preventive approaches aimed at reducing its negative effects were reviewed based on scientific literature.

According to epidemiological data, spontaneous abortion occurs in 10–20% of early pregnancies, and psycho-emotional stress is considered one of the leading risk factors in 30–40% of these cases. This factor may negatively affect the physiological course of pregnancy through dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis, increased cortisol secretion, and alterations in immune responses.Therefore, maintaining emotional stability in pregnant women, promoting a healthy lifestyle, and implementing early preventive measures are essential components of preserving reproductive health.

Under conditions of severe stress, activation of the hypothalamic-pituitary-adrenal axis leads to increased cortisol secretion and decreased progesterone synthesis. As a result, uterine hypertonicity develops, placental blood circulation is impaired, and the process of embryo implantation may be disrupted. Studies indicate that the risk of spontaneous abortion increases by approximately 2–3 times in the presence of severe stress and unhealthy lifestyle factors during

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pregnancy.Consequently, comprehensive preventive measures, including psychological support, balanced nutrition, adequate sleep, social and emotional support from family members, and regular medical supervision, play a crucial role in maintaining pregnancy and reducing the risk of spontaneous abortion.

Keywords: Psycho-emotional stress, early pregnancy, miscarriage risk, hypothalamic-pituitary-adrenal axis, progesterone deficiency, uterine hypertonicity, reproductive age, PSS (Perceived Stress Scale).

1. Introduction

Early spontaneous abortion (miscarriage) is a pathological condition characterized by the spontaneous loss of pregnancy before 20–22 weeks of gestation and remains one of the most pressing and clinically significant problems in reproductive medicine. According to data from the World Health Organization (WHO), approximately 10–20% of all clinically recognized pregnancies end in spontaneous abortion, with nearly 80% of pregnancy losses occurring during the first trimester.The etiology of spontaneous abortion is multifactorial and includes chromosomal abnormalities, endocrine disorders, infectious factors, immunological dysregulation, and anatomical abnormalities of the reproductive tract. In recent years, increasing evidence has demonstrated that psychoemotional stress and lifestyle-related factors may also play a significant role in the development of spontaneous abortion. These factors are considered modifiable risk factors and may adversely affect the course and outcome of pregnancy.

Contemporary socioeconomic conditions, accelerating urbanization, increased occupational workload, family and social problems, as well as inadequate coping with stressful situations, contribute to elevated levels of psychoemotional stress among women of reproductive age. Consequently, persistent psychological stress may adversely affect the physiological course of pregnancy and contribute to an increased risk of spontaneous abortion. Clinical observations indicate that moderate-to-high levels of psychoemotional stress may be present in approximately 20–30% of pregnant women of reproductive age. Such stress may contribute to dysregulation of reproductive hormonal homeostasis and consequently impair the physiological maintenance of pregnancy.

Adverse lifestyle-related factors, including sleep disturbances, inadequate and unbalanced nutrition, reduced physical activity leading to hypodynamia, insufficient emotional support from family members, and the presence of harmful habits, may further potentiate the biological effects of stress and increase its adverse impact on pregnancy. The combined effects of these factors may contribute to the development of uterine hypertonicity, impaired embryo implantation, and an increased risk of pregnancy loss during the early stages of gestation.

According to the findings of previous studies, women experiencing high levels of psychoemotional stress have a 1.5–2.0-fold increased risk of spontaneous abortion. In pregnancies complicated by adverse lifestyle factors, the risk has been reported to be 1.3–2.2 times higher. Furthermore, spontaneous abortion has been reported to occur 20–25% more frequently among women with low levels of physical activity.

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The highest frequency of spontaneous abortions associated with psychoemotional stress and unhealthy lifestyle factors has been observed at 7–9 weeks of gestation, accounting for approximately 50–60% of all cases. These findings indicate that maintaining psychological well-being during pregnancy, promoting a healthy lifestyle, and implementing timely preventive measures are of considerable importance in reducing the risk of spontaneous abortion.

2. Materials and Methods

The study included 60 pregnant women in the early stages of pregnancy, with gestational ages ranging from 6 to 12 weeks. The participants were women aged 20–35 years. All participants provided voluntary informed consent to participate in the study.

The study was conducted at the Bukhara District Maternity Complex, Bukhara Region, Republic of Uzbekistan.

Clinical and Research Methods:

2.1. Clinical and anamnestic assessment. A comprehensive obstetric and gynecological history was obtained, including assessment of reproductive health indicators and outcomes of previous pregnancies, including a history of spontaneous abortion and the course and outcomes of previous deliveries.

2.2 Assessment of psychoemotional stress. The level of perceived stress was assessed using the internationally validated Perceived Stress Scale (PSS-10) questionnaire.

2.3. Assessment of lifestyle-related factors. Lifestyle factors were evaluated using a specially designed questionnaire that included sleep duration and quality, dietary patterns, level of physical activity, harmful habits, and the level of emotional and interpersonal support provided by family members.

2.4. Instrumental assessment. Ultrasonographic examination was performed to assess fetal status and evaluate the course of early pregnancy.

3. Results

Among the 60 women who participated in the assessment of psychoemotional stress using the PSS-10 questionnaire, the levels of perceived stress were distributed as follows:

Perceived stress level	Score range	N (nomber)	%
Moderate stress	14 – 26	48	80,0
High stress	27 – 40	12	20,0
Low stress	0 – 13	0	0
Total	-	60	100

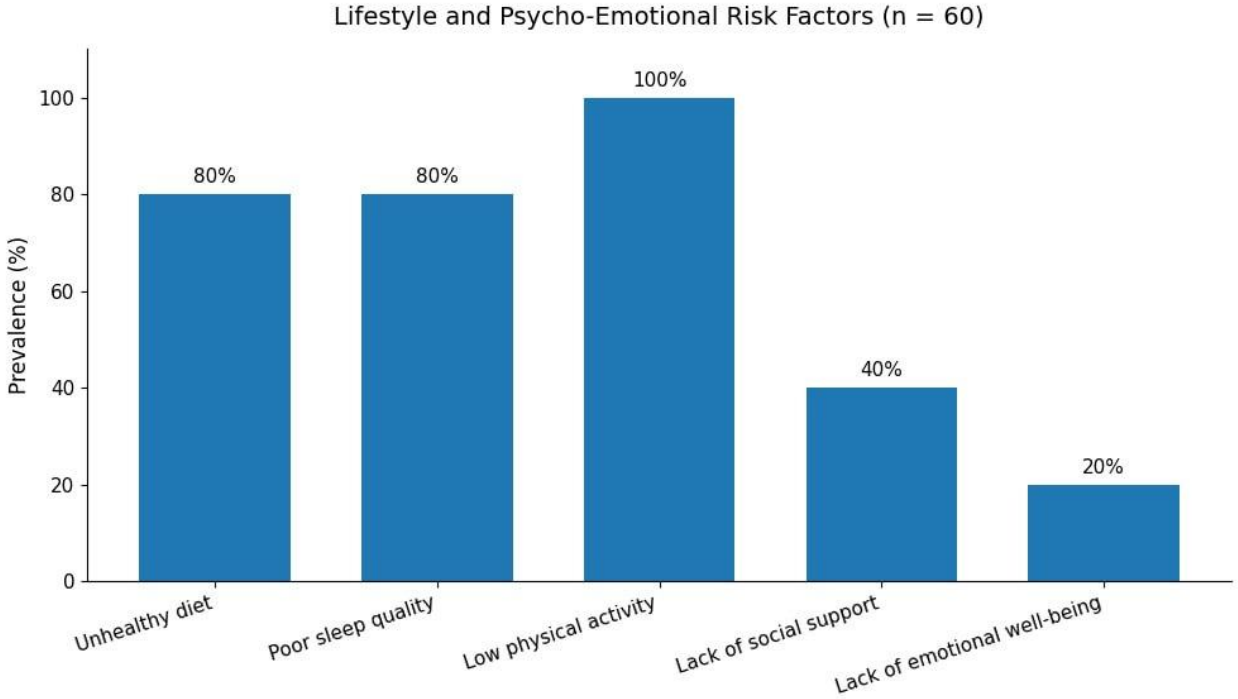
The results obtained from the assessment of lifestyle-related factors using a structured questionnaire were as follows:

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A healthy lifestyle was identified in 24 women (40%; 95% CI: 27.6–52.4), whereas partially adverse lifestyle factors were identified in 36 women (60%; 95% CI: 47.6–72.4).

Dietary disturbances were identified in 48 women (80%), characterized predominantly by frequent consumption of fast food and insufficient intake of fruits and vegetables as part of the daily diet.

With regard to sleep duration and quality, poor sleep quality was identified in 48 women (80%).
Assessment of physical activity demonstrated a predominantly sedentary lifestyle among all study participants.Insufficient emotional support from family members was reported by 24 women (40%). Furthermore, 12 women (20%) reported a lack of a sense of safety and emotional well-being.



4. Discussion

The results of the present study confirmed a close association between psychoemotional stress and lifestyle-related factors during early pregnancy, as well as their significant impact on reproductive health. The majority of study participants demonstrated moderate (80.0%) and high (20.0%) levels of stress according to the Perceived Stress Scale (PSS-10), indicating that psychoemotional distress is a common problem among pregnant women.

Furthermore, partial lifestyle-related risk factors were identified in 60.0% of the women, and these factors were found to be closely associated with increased stress levels. The most frequently observed factor was impaired sleep quality (80.0%). Poor sleep may

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adversely affect central nervous system functioning, hormonal balance, and the body's adaptive mechanisms in response to stress. Insufficient and poor-quality sleep may contribute to activation of the hypothalamic–pituitary–adrenal (HPA) axis, increased cortisol secretion, and impairment of the embryo implantation process during the early stages of pregnancy.

In addition, insufficient family support was reported in 40.0% of cases, while 20.0% of women reported feeling insufficiently calm or emotionally secure. These findings may reflect increased psychological tension and anxiety levels. Such conditions may adversely affect uteroplacental blood flow through autonomic nervous system mechanisms and potentially interfere with the physiological course of pregnancy.

Thus, the findings of the present study indicate that psychoemotional stress and unhealthy lifestyle factors represent important modifiable risk factors associated with the development of spontaneous abortion. The results obtained using the integrated risk index further confirm that early identification of these factors, provision of psychological support to pregnant women, promotion of a healthy lifestyle, and timely implementation of preventive measures are of substantial importance for preserving reproductive health and reducing the risk of spontaneous abortion.

Based on the calculated integrated risk index, the participants were classified into the following risk categories:
High-risk group: 30–35%
Moderate-risk group: 45–50%
Low-risk group: 15–20%

The study findings demonstrated that more than 60% of the participants had multiple risk factors and were therefore considered predisposed to an increased risk of spontaneous abortion, corresponding to the high-risk category.

5. Preventive Measures

5.1. Psychological intervention: Individual psychological counseling should be provided to pregnant women identified with moderate or high levels of stress, with cognitive behavioral therapy (CBT) implemented when appropriate. Reduction of stress levels through targeted psychological interventions may decrease the risk of spontaneous abortion by approximately 1.8–2.2-fold.

5.2. Improvement of sleep duration and quality: Pregnant women should be encouraged to establish a regular sleep pattern with 7–8 hours of restful sleep per night and to limit evening screen time. Improving sleep quality may reduce the risk of spontaneous abortion by approximately 20–25%.

5.3. Strengthening social support: Psychological counseling sessions involving family members, individualized counseling for couples, and access to appropriate forms of social support should be provided. Strengthening social support may contribute to a 1.5–2-fold reduction in the risk of spontaneous abortion.

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5.4. Optimization of physical activity and dietary habits: Maintaining an appropriate level of physical activity and improving dietary patterns may reduce the overall risk of spontaneous abortion by approximately 20–30%.

5.5. Timely obstetric and gynecological follow-up: Regular visits to an obstetrician-gynecologist and timely completion of the recommended monitoring examinations are essential for the early detection of changes in maternal and fetal health and for the prompt implementation of appropriate preventive and therapeutic measures.

6. Conclusion

This study enabled a comprehensive assessment of the impact of psychoemotional stress and lifestyle-related factors on the risk of spontaneous abortion during early pregnancy. The findings demonstrated that the majority of pregnant women experienced a certain degree of psychoemotional distress. Specifically, according to the Perceived Stress Scale (PSS-10), moderate stress was identified in 80.0% of participants, while 20.0% had high levels of stress, confirming that psychoemotional stress is a common and clinically significant factor during the early stages of pregnancy. The analysis also demonstrated that lifestyle-related risk factors have a significant impact on reproductive health. A partially unhealthy lifestyle was identified in 60.0% of participants. The most frequently observed factors were impaired sleep quality (80.0%), insufficient social support (40.0%), and subjective psychological distress (20.0%). These findings indicate an interrelationship between psychoemotional stress and unhealthy lifestyle factors and suggest that their combined effects may adversely influence the course of pregnancy.

The integrated risk model developed on the basis of the study findings demonstrated that 75–80% of participants belonged to at least the moderate-risk group. This indicates that the risk of spontaneous abortion is often not attributable to a single factor but rather develops as a result of the interaction of multiple biological, psychological, and social determinants. In particular, the simultaneous presence of high stress levels, sleep disturbances, and insufficient social support was associated with a substantial increase in the risk of spontaneous abortion. The findings have important implications for clinical practice and the healthcare system. Regular assessment of the psychoemotional state of pregnant women, implementation of psychological support programs aimed at stress reduction, promotion of a healthy lifestyle, and strengthening of family and social support should be considered important components of spontaneous abortion prevention. At the same time, a comprehensive preventive approach tailored to individual risk factors may contribute to a favorable course of pregnancy and improvement of reproductive health outcomes.

In conclusion, psychoemotional stress and lifestyle-related factors appear to be important modifiable determinants in the development of spontaneous abortion during early pregnancy. Their timely identification, assessment, and appropriate modification are of substantial scientific and practical importance for protecting reproductive health, reducing pregnancy-related complications, and promoting the birth of healthy offspring.

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