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Maternal and Child Mortality: Problems and Solutions in Modern Medicine.

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Annotation: Maternal and child mortality is one of the most important problems of modern medicine. This article analyzes the causes of perinatal and maternal mortality, epidemiological data, risk factors and preventive measures. The results of the study show that in order to reduce maternal and child mortality, it is necessary to take into account a comprehensive approach, high-quality antenatal care, qualified medical care and socio-economic factors. The article presents global and regional statistical data, examples from clinical studies, and modern prevention strategies.
Keywords: maternal mortality, child mortality, perinatal mortality, maternal mortality, infant mortality, antenatal care, obstetric complications, neonatal pathology.

Introduction: Maternal and child health is one of the important indicators reflecting the level of development of any society. According to the World Health Organization (WHO), every year, approximately 295,000 women die worldwide from causes related to pregnancy and childbirth, and 2.4 million babies die in the first month of life. These figures indicate that this is not only a medical, but also a social and economic problem. This problem is also relevant in the Republic of Uzbekistan, and large-scale work is being carried out to reduce maternal and child mortality through state programs and measures to reform the healthcare system. Maternal Mortality: Definitions and Classifications;Maternal mortality - deaths occurring during pregnancy or during childbirth, within 42 days after delivery due to pregnancy, childbirth or their complications. According to the WHO classification, maternal mortality is divided into two types: Direct obstetric death - directly as a result of obstetric complications. Indirect obstetric death - occurs as a result of worsening of existing diseases under the influence of pregnancy. Main causes: Bleeding (25-30%) - Placenta previa - Placental abruption - Postpartum hemorrhage - Uterine rupture. Arterial hypertension (15-20%) - Preeclampsia - Eclampsia - HELLP syndrome. Infections (10-15%)- Sepsis- Puerperal endometritis- Amnionitis. Embolism (8-12%)- Amniotic fluid embolism- Thromboembolis. Infant Mortality:

Epidemiology and Causes: Neonatal death (0-28 days) Early neonatal death (0-7 days): Severe asphyxia (30-35%) Premature birth complications (25-30%) Congenital malformations (15-20%)Infections (10-15%) Late neonatal death (8-28 days): Infections (40-45%) Congenital defects (20-25%) Respiratory distress syndrome (15-20%) Post-neonatal death (29 days - 1 year) SIDS (sudden infant death syndrome) - 25-30 Congenital heart disease - 20-25% Infections - 15-20% Accidents - 10-15% Epidemiological Data and Trends

World Statistics: 2020 WHO data: Maternal Mortality Rate: 211 per 100,000 live births Neonatal Mortality Rate: 17 per 1,000 live births Infant Mortality Rate: 29 per 1,000 live births

Regional Differences: Sub-Saharan Africa: Maternal Mortality Rate 533/100,000 South Asia: Maternal Mortality Rate 163/100,000 Developed Countries: Maternal Mortality Rate 12/100,000

Uzbekistan Data: 2022 Statistics Committee Data: Maternal Mortality Rate: 17.2 per 100,000 live births Infant Mortality Rate: 1,000 live births 10.5 cases Perinatal mortality: 7.8 cases per 1,000 births

Risk Factors and Prognostic Factors: Medical risk factors

For mothers: Age (under 18 years and over 35 years) Previous obstetric history Chronic diseases (diabetes, hypertension, heart disease) Multiple pregnancy Short interval between births

For fetus: Intrauterine growth retardation Congenital anomalies Premature birth .Multiple pregnancy

Study 1: Antenatal care effectiveness Objective: To study the impact of the quality of antenatal care on perinatal outcomes. Methods: Prospective study of 5,000 pregnant women (2019-2021)

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Results: Regular control group (n=3,200): perinatal mortality 8.2. Irregular control group (n=1,800): perinatal mortality 23.4‰. Risk ratio: 2.85 (95% CI: 2.1-3.8)
Study 2: Magnesium sulfate use. Objective: Efficacy of prophylactic magnesium sulfate use in severe preeclampsia. Design: Randomized controlled trial (1,200 patients)Results: Development of eclampsia: 8.2% in the control group, 1.8% in the treatment group Maternal mortality: 3.1% in the control group, 0.7% in the treatment group Perinatal mortality: 12.4% in the control group, 6.8% in the treatment group
Prevention and Treatment Strategies
1. Preconception preparation
- Folic acid intake (400-800 mcg/day)
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- Compensation of chronic diseases
- Giving up harmful habits
- Optimal body weight (BMI 18.5-24.9)
2. Antenatal care
- Early registration (up to 12 weeks)
- Regular examinations (at least 8 times)
- Screening tests and diagnostics
- Identification and correction of risk factors
Modern Technologies and Innovations: Telemedicine and remote monitoring 1. Mobile applications Pregnancy calendars Symptom monitoring Medical advice 2. Portable monitoring devicesFetal doppler Blood pressure monitors Glucometers
Problems in the Health Care System: Staffing problem: Statistical data: There is a shortage of 900,000 midwives in the world. The number of obstetricians and gynecologists in developing countries is 2-3 times less. 70% of qualified personnel are located in cities
Infrastructure problems: 1. Medical institutions. Lack of specialized care in rural areas. Transportation problems
- Lack of emergency obstetric care (EOC) centers. Laboratory diagnostics. Lack of modern equipment. Quality control problems. Limited opportunities for rapid results
SDG 3.1: Reduce maternal mortality to 70/100,000 by 2030
SDG 3.2: Reduce neonatal mortality to 12/1,000 and under-5 mortality to 25/1,000.
Studies show that:
- Every $1 invested in antenatal care saves $7
- Every $1 invested in neonatal intensive care saves $3-4
- Every $1 invested in emergency obstetric care programs saves $2.5
Genomic medicine: 1. Genetic screening Carrier screening Non-invasive prenatal testing (NIPT) Preimplantation genetic diagnosis (PGD) 2. Personalized medicine Pharmacogenomics Individual risk assessment. Tailored treatment protocols

Conclusion

Maternal and child mortality remains one of the most important and complex problems of modern medicine. The following main conclusions can be drawn to solve this problem: The need for a multifactorial approach Maternal and child mortality is not only a medical problem, but also a complex of social, economic, cultural and educational factors. Therefore, the solution must also be comprehensive. The priority of prevention. Studies show that 70-80% of maternal and child mortality can be prevented through preventive measures. The importance of preconceptional preparation, quality antenatal care and skilled birth care is very great. Provision of quality medical care. Emergency obstetric care, neonatal intensive care and the availability of qualified personnel significantly reduce mortality rates. This is especially important for rural areas and developing regions. The role of technological innovations. Modern technologies, artificial intelligence, telemedicine and digital health solutions are creating new opportunities in maintaining maternal and child health. The importance of international cooperation Maternal and child mortality is a global problem, and international cooperation, exchange of experience and the introduction of uniform standards are necessary to solve it. Genomic medicine, regenerative medicine and a personalized approach will create new opportunities in

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solving the problem of maternal and child mortality in the future. In short, to solve the problem of maternal and child mortality, it is necessary to take comprehensive measures at all levels of the healthcare system - in primary, secondary and tertiary prevention - the use of modern technologies, training qualified personnel and applying international experience. Only such an approach will allow achieving the Sustainable Development Goals and maintaining maternal and child health.

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