Modern trends in preterm birth - Georgian reality

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Abstract

Background: The role of a properly organized health care system is one of the leading ones in obtaining positive demographic indicators for any state. Preterm birth and the resulting prematurity are the leading cause of death in children under 5 years of age worldwide. Premature delivery is defined as preterm delivery from 22 to 37 weeks of gestation. The frequency of spontaneous preterm birth accounts for 65-70% of all preterm births, while the iatrogenic preterm birth rate amounts to 30-35%. These terms have their gradations and divisions. In the context of determining and managing the risk of premature birth, the goal of modern obstetrics is the prolongation of pregnancy in order to reduce the complications associated with prematurity.
Aim: This article aims to summarize the management models of preterm delivery, which is directed to increase the positive demographic indicators in our country.
Methods: The data were collected from NCBI, PubMed, and ScienceDirect databases by using the keywords: preterm labor, prematurity, health care.
Conclusions: Education of patient/provider, healthy lifestyle, planning pregnancy, prevention of diseases, timely detection of risk groups and proper management, also creating of the antenatal care programs and their promotion must be considered as the effective management models of preterm delivery, which are directed to increase the positive demographic indicators as in our country, also worldwide. **(TCM-GMJ June 2025; 10 (1): P11-P14)**

Keywords: preterm labor, prematurity, health care.

Introduction

Preterm birth (PTB), defined as birth before 37 completed weeks of gestation (up to 36 weeks and 6 days), is one of the most significant causes of perinatal morbidity and mortality (1). Premature birth contributes to the growing number of intergenerational non-communicable diseases. According to WHO data, there are 15 million premature births every year. Spontaneous premature birth accounts for 65-70% of all premature deliveries (2), iatrogenic preterm birth for 30-35% (3). One of ten newborns die from premature birth. Approximately 900,000 newborns die from prematurity every year. Preterm birth and the resulting prematurity are the leading cause of death in children under 5 years of age worldwide. Complications of premature birth are cerebral palsy, lung disease, blindness and deafness. Premature births are divided into: Late preterm**,** born between 34 and 36 weeks of pregnancy; Moderately preterm, born between 32 and 33 weeks and 6 days of pregnancy; Very preterm - between 28 and 31 and 6 days of pregnancy; Extremely preterm – between 22 and 27 weeks and 6 days of pregnancy (4). In 13 countries, the average annual rate of preterm birth reduction decreased by 0.5% or more between 2010 and 2020. Unfortunately, the yearly rate of premature births is increasing in most countries. Georgia belongs to the same number of them. Preterm birth was significantly more prevalent in twin pregnancies than in singleton pregnancies in all categories - 54.7% vs 6.1%, respectively, including extremely preterm - 3.6% vs 0.4%, very preterm - 18.2% vs 1.4% and late preterm - 33.0% vs 4.3% (5).

An estimated 13·4 million newborn babies were born preterm (<37 weeks) in 2020 compared with 13·8 million in 2010 worldwide. The global annual rate of reduction was estimated at 0·14% from 2010 to 2020.

In 2020, the region with the highest preterm birth rate was Southern Asia, with a prevalence of 13.2% (the highest being in Bangladesh at 16.2%, followed by Malawi at 14.5%), compared to fewer than 8% of preterm births in the regions of Eastern Asia, Southeastern Asia, and Oceania (excluding Australia and New Zealand). 20% of all preterm births worldwide, followed by Pakistan, Nigeria, China, Ethiopia, Bangladesh, and the Democratic Republic of the Congo. The high numbers of preterm births in these countries and areas are, in part, a reflection of their large population sizes, high numbers of total

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births, and weaker health systems that are unable to deliver high-quality family planning, antenatal care, and childbirth services to all individuals who need them. With a preterm birth prevalence of 10% or higher persisting in some high-income countries and areas, including Greece (11.6%) and the USA (10.0%), targeted efforts are needed to identify the most affected groups and determine and implement the most effective strategies to reduce preterm birth in those populations (6).

Against the backdrop of a steadily declining birth rate in Georgia, the issue of premature birth has become increasingly urgent. The number of births decreased from 48,296 in 2019 to 40,214 in 2023. Unfortunately, there has been a rising trend in premature births in Georgia in recent years, increasing from 7% to 10.39%. Premature birth is the leading cause of death (51%) and morbidity in the country (7).

The role of a properly organized health care system is one of the leading ones in obtaining positive demographic indicators for any state.

Solving demographic problems is one of the leading strategies of the Ministry of Health of Georgia.

Social problems, unemployment, and military conflicts have led to a decrease in the population of Georgia, which now stands at 3,694,608. The population has declined from 3,721,900 in 2015. Unfortunately, Georgia has experienced negative population growth in recent years. According to data from the National Statistics Office of Georgia, in 2022, the number of deaths (49,118) surpassed the number of births (42,319) in the country.

To prevent such negative trends, there must be effective measures to overcome the problems, but first of all, it is necessary to identify the problems associated with such negative population growth.

Against this background, it is very important to maintain not only a high birth rate but also to create a strategy to reduce the level of premature births as much as possible.

Risk factors and causative factors of preterm birth

There are several risk factors for preterm labor and premature birth. Certain medical conditions, including some that occur only during pregnancy, also place a woman at higher risk for preterm labor and delivery. Some of these conditions include: Urinary tract infections, sexually transmitted infections, certain vaginal infections, such as bacterial vaginosis and trichomoniasis, high blood pressure, bleeding from the vagina, certain developmental anomalies in the fetus, pregnancy resulting from in vitro fertilization, having underweight or obesity before pregnancy, short time period between pregnancies (less than 6 months between a birth and the beginning of the next pregnancy), placenta previa, a condition in which the placenta grows in the lowest part of the uterus and covers all or part of the opening to the cervix, being at risk for rupture of the uterus (when the wall of the uterus rips open). Rupture of the uterus is more likely if you have had a prior cesarean delivery or have had a uterine fibroid removed, diabetes (high blood sugar) and gestational diabetes (which occurs only during pregnancy), blood clotting problems.

Other factors that may increase risk for preterm labor and premature birth include: Ethnicity - preterm labor and birth occur more often among certain racial and ethnic groups. For example, infants of African American mothers are more likely to be born preterm than infants of white mothers. American Indian/Alaska Native mothers are also more likely to give birth preterm than are white mothers; Age of the mother - women younger than age 18 are more likely to have a preterm delivery; Women older than age 35 are also at risk of having preterm infants because they are more likely to have other conditions (such as high blood pressure and diabetes) that can cause complications requiring preterm delivery Certain lifestyle and environmental factors, including: late or no health care during pregnancy; smoking; drinking alcohol; using illegal drugs; domestic violence, including physical, sexual, or emotional abuse; lack of social support; stress; long working hours with long periods of standing; exposure to certain environmental pollutants (8).

The obstetric precursors leading to preterm birth are: (1) spontaneous labour with intact membranes, (2) preterm premature rupture of the membranes (PPROM), and (3) labour induction or caesarean delivery for maternal or fetal indications. The frequency of preterm births is about 12–13% in the USA and 5–9% in many other developed countries; however, the rate of preterm birth has increased in many locations, predominantly because of increasing indicated preterm births and preterm delivery of artificially conceived multiple pregnancies. Common reasons for indicated preterm births include pre-eclampsia or eclampsia and intrauterine growth restriction. Births that follow spontaneous preterm labour and PPROM—together called spontaneous preterm births—are regarded as a syndrome resulting from multiple causes, including infection or inflammation, vascular disease, and uterine overdistension (9).

Premature birth is a leading cause of neonatal morbidity and mortality. It is also important because it creates a ready reservoir of noncommunicable diseases between generations.

Unfortunately, there is a worldwide trend towards an increase in premature births; only a small number of countries have reported a decrease in births at gestational ages up to 37 weeks. High-income countries and countries with well-organized health systems tend to have high survival rates for preterm infants. Insufficient use of appropriate technologies in middle-income countries increases the burden of disability among preterm neonatal survivors In countries with low and economic indicators, there is a high mortality rate of premature infants, which is primarily due to the lack of adequate thermal protection, breastfeeding support, basic care for newborns with infections and disorders of the respiratory, cardiovascular and central nervous systems.

Complications of preterm birth

Not all premature babies have health complications. However, being born too early can cause short-term and long-term medical problems. Generally, the earlier a baby

is born, the higher the risk of complications.

n the first weeks, the complications of premature birth may include:

- Breathing problems.
- Heart problems.
- Brain problems.
- Temperature control problems.
- Digestive problems.
- Blood problems.
- Metabolism problems.

Immune system problems. Long-term complications

Over the long term, premature birth may lead to health problems such as:

- Cerebral palsy.
- Trouble learning.
- Vision problems.
- Hearing problems.
- Dental problems.
- Behavior and mental health problems.

Ongoing health issues (10).

Four studies also explored cause-specific mortality and reported associations with multiple causes, including respiratory, cardiovascular, endocrine, and neurological (11).

Unfortunately, the causes of premature birth are not completely clear; in many specific cases, additional research is needed to determine them and the mechanisms that lead to the implementation of premature birth. However, it is very important that the cause of premature birth remains unknown, and it is possible that some genetic predisposition may play a role here.

When determining the risk of premature birth, one cannot take into account such a phenomenon as cigarette smoking as one of the provoking factors of this phenomenon.

Multiple pregnancies cannot be ignored as the main supplier of premature newborns since the number of multiple pregnancies with the development of Artificial Reproductive Technologies (ART) has increased significantly in recent years. According to various authors, from 57 to 68% of premature births are possible in multiple pregnancies (8,12).

Prevention of preterm birth

One of the serious segments that allows us to think about reducing the number of premature births is induced premature births. Timely detection of risk groups of preterm delivery and immediate starting the treatment for the prolongation of pregnancy must be favorable the decreasing the mortality and morbidity rates and the increasing population number.

Clinical interventions, each based on a substantial body of evidence, is likely to reduce rates of preterm birth and prevent death and disability in large numbers of children. The process begins with an acceptance that early birth is not an inevitable and natural feature of human reproduction. Preventative strategies are now available and need to be applied. The best outcomes may come from developing integrated strategies designed specifically for each health-care environment (13).

In one systematic review comparing the different trends for the pregnancy maintenance was found out that vaginal progesterone should be considered the preventative treatment of choice for women with singleton pregnancy identified to be at risk of spontaneous preterm birth because of a history of spontaneous preterm birth or short cervical length (14).

According to Seid A. et al., women with a family history of preterm birth face an increased risk of giving preterm births. Thus, screening pregnant women for a family history of preterm birth is essential, with those having a positive family history requiring closer follow-up (15).

The introduction of preventive measures related to the determination of the risk of developing preeclampsia during pregnancy and adequate prophylaxis of this disease by prescribing drugs of the aspirin group is one of the main trends that allow reducing the number of induced premature births (16).

Mandatory screening in risk groups of Placenta Grow factor (PGF) conducted in the first trimester of pregnancy may become one of the effective mechanisms for reducing the risk of developing preeclampsia in pregnancy (17).

According to several studies, all tocolytic drug classes (betamimetics, calcium channel blockers, magnesium sulphate, oxytocin receptor antagonists, nitric oxide donors) and their combinations were probably or possibly effective in delaying preterm birth for 48 hours and 7 days. Tocolytic drugs were associated with a range of adverse effects (from minor to potentially severe) compared with placebo or no tocolytic treatment, although betamimetics and combination tocolytics were more likely to result in cessation of treatment (18,19).

In edition, as it was shown in one study, every pregnant woman should be covered in an antenatal care program. To reduce premature birth rates, it is important to promote a healthy lifestyle in pregnant women and to study the reasons for the high cesarean section rates (20).

Besides, according to the analysis by Morisaki N. et al., the provision of adequate obstetric care, including optimal timing for delivery in high-risk pregnancies, especially to the socially disadvantaged, could improve pregnancy outcomes (21).

Taking into consideration all the above, very important is the WHO strategy, which regularly updates clinical guidelines for the management of pregnancy and mothers with preterm labour or at risk of preterm birth, and guidelines on the care of preterm and low birth weight babies. WHO also undertakes research to improve care for women and preterm newborns in low- and middle-income countries (22).

Great potential for reducing the risk of preterm birth lies in expanding the program of antenatal monitoring of pregnant women; eight free visits that currently provide the opportunity to monitor pregnancy may also have a

positive effect on reducing the number of preterm births while increasing their effectiveness (23).

Methods: The data were collected from NCBI, PubMed, and ScienceDirect databases by using the keywords: preterm labor, prematurity, health care.

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