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SPECIAL ARTICLE

Obstetrics

Federation of Gynecology and Obstetrics good practice recommendations on preconception care: A strategy to prevent preterm birth

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Abstract

Preterm birth (PTB) remains one of the leading causes of neonatal mortality and long-term morbidity worldwide, with minimal progress being made in reducing its incidence, particularly in low-resource settings. Preconception care is recognized as an effective strategy for PTB prevention; however, the fact that more than half of pregnancies globally are unplanned significantly limits opportunities for successful intervention. These Federation of Gynecology and Obstetrics good practice recommendations advocate shifting from pregnancy-centered care to woman-centered care and promote the integration of a baby-centered assessment into preconception care. This approach allows for the early identification and management of modifiable risk factors for PTB across various domains, including medical, obstetric, nutritional, infectious, psychological, and socio-environmental factors. The review emphasizes the importance of evidence-based interventions during the preconception period and underscores the need for policy and advocacy initiatives to promote equitable access to preconception services.

KEYWORDS
FIGO guidelines, preconception care, preterm birth, prevention

1 | BACKGROUND

1.1 | The frustration of being late

Connecting with a baby born too soon and its family presents maternal–fetal health teams with a situation that could have been prevented. It is inevitable to feel the regret of arriving too late to an avoidable outcome.

Globally, one in 10 babies is born prematurely. Preterm birth rates have not improved over the past decade, and in some areas, they are rising. Preterm birth is the leading cause of death among children under 5 years of age, accounting for more than one in three neonatal deaths. According to the latest *Born Too Soon* report, neonatal conditions remain the leading cause of human capital loss in recent global burden of disease estimates. Sadly, figures have not changed since 1990.[1]

Despite recent technological advances, survival rate gaps exist between high- and low-income communities. Moreover, the so-called four Cs (conflict, climate change, COVID-19, and cost-of-living crises) have deepened the vulnerability of preterm babies and their families in these contexts.[1]

The World Health Organization (WHO) has advocated for preconception care to prevent preterm birth. However, developing a global policy on this topic is challenging due to the various stakeholders involved.[2] The International Federation of Gynecology and Obstetrics (FIGO), has recently released a position statement on the subject, highlighting its role in women's health care.[3]

The objective of this document is to provide a complementary perspective to the FIGO preconception checklist,[3] highlighting the benefits of preconception care to mitigate preterm birth. It aims to recognize every woman of reproductive age as an integral part of the mother–baby dyad. Based on this premise, we propose an approach that originates "from the grassroots," empowering women and children with their rights. This approach offers resources to maternal–fetal healthcare providers and policymakers for effective education, support, counseling, and interventions. The ultimate goal is to prevent preterm birth through comprehensive preconception care. By focusing on empowerment and resource allocation, we aim to enhance the quality of maternal and fetal health, ensuring that preconception care becomes a pivotal aspect of healthcare planning and delivery. This document advocates for a proactive stance, emphasizing prevention and early intervention as key strategies for improving outcomes for mothers and their future children.

2 | THE SIGNIFICANCE OF PRECONCEPTION CARE IN THE PREVENTION OF PRETERM BIRTH

The statement on preconception care for mothers and babies, recently developed by the FIGO Committee on Well Woman Healthcare and the FIGO Committee on the Impact of Pregnancy on Long-Term Health,[3] emphasizes the critical role of preconception care in prevention of pregnancy complications and adverse outcomes. It highlights that the prepregnancy period offers a unique opportunity to encourage women to adopt healthy behaviors before pregnancy, ultimately benefiting their children's health when they become pregnant.[3] Here we provide evidence highlighting the significant role preconception care might play in preventing preterm birth.

The FIGO preconception checklist for women who want to get pregnant starts with a key question: "Are you planning to become pregnant in the next six months?" However, over 50% of pregnancies in high-income countries are unplanned.[3] This percentage is even higher in low-income countries and communities affected by social or economic crises.[1]

Since most women have the potential to conceive a child at some point during their reproductive years, regardless of their specific plans or intentions, this question might undermine that possibility, leaving them and their future children unprotected or vulnerable.

Rather than solely asking whether someone is planning a pregnancy, we recommend offering clear, supportive information about how pre-pregnancy health can influence outcomes for both the parent and the child. Unintended pregnancies might carry increased health risks, including a higher likelihood of complications such as preterm birth, early infant loss, and long-term developmental challenges. In this light, a more meaningful question could invite discussion around the potential risk of preterm birth for all individuals of reproductive age, creating an opportunity to provide compassionate guidance and tailored counseling that supports informed choices and well-being:

> Even if you're not yet certain about your plans, taking steps to prepare for pregnancy in advance can make a meaningful difference. It helps reduce risks like preterm birth and supports a healthier start for both you and your future baby. Would you like to explore how simple changes now can benefit your pregnancy later?

Here, we review the evidence regarding risk factors associated with preterm birth and propose recommendations that, when employed in conjunction with the FIGO preconception care checklist, might assist in planning personalized interventions to prevent this adverse outcome.

3 | RISK FACTORS ASSOCIATED WITH PRETERM BIRTH

Both the preconception and postnatal periods present opportunities to advise on optimal women's health in preparation for a subsequent pregnancy. Moreover, clinical conditions that might lead to adverse perinatal outcomes, such as preterm birth, can be prevented

or managed. In addition to those mentioned in the document published by the FIGO Committee on Well Woman Health Care and the FIGO Committee on the Impact of Pregnancy on Long-Term Health, we strongly recommend considering risk factors that influence the duration of pregnancy.

3.1 | Maternal age

Adolescent pregnancy

Adolescents face an increased risk of preterm birth due to a higher prevalence of preeclampsia, preterm pre-labor rupture of membranes (PPROM), anemia, and sexually transmitted infections. From a psycho-social standpoint, pregnant adolescent girls in certain cultures and regions frequently experience feelings of guilt, financial difficulties, challenges in continuing their education, and social stigmatization.[4]

Preterm birth in adolescent women is associated with a low number of prenatal visits, late onset of prenatal care, and low educational level. Moreover, a Brazilian study consisting of 23 894 postpartum women and their newborn infants found that younger adolescents had the highest risk of spontaneous preterm birth compared to older adolescents.[5]

Appropriate counseling about the risks of maternal–perinatal adverse outcomes, encouragement to fulfill personal expectations and exercise reproductive rights, and help to make healthy decisions should be offered to every adolescent person, if possible, before starting sexual activity, to avoid unplanned pregnancy, sexually transmitted disease, and preterm birth.

Advanced age pregnancy

Although current terminology defines pregnant women over 35 years of age as being of "advanced maternal age," there is no absolute consensus on this definition, as the potential for conception persists until menopause. Female fertility is more closely related to biological rather than chronological age.[6] Advanced maternal age is associated with an increased risk of adverse pregnancy outcomes, particularly in women over 40 years of age. Several studies report higher rates of chromosomal abnormalities, spontaneous abortions, and preterm births in this group.[7] The risk of preterm birth follows a U-shaped curve, with the lowest risk observed between 30 and 34 years of age and higher risks seen in both younger and older mothers.[8]

Factors contributing to preterm birth in women of advanced maternal age can be categorized into two main groups: the higher prevalence of comorbidities and pregnancy-specific complications such as gestational diabetes, preeclampsia, and placental abnormalities. Further, women who conceive at older ages are more likely to undergo pregnancies through assisted reproductive techniques, which are associated with an increased risk of preterm birth.[7–10] Women aged 50 years or older face a significantly higher risk, with studies indicating at least a threefold increase compared to younger age groups.[11]

Preconception counseling and personalized care are recommended for women planning to become pregnant after the age of 35 years to optimize their health and mitigate preterm birth risks.

3.2 | Obstetrical and gynecological conditions

The assessment of health status before pregnancy is essential for women of all reproductive ages, regardless of their parity. To assess the risk of preterm delivery in multiparous patients, it is essential to evaluate the following risk factors.

History of spontaneous preterm birth

A previous pregnancy resulting in spontaneous preterm birth or mid-trimester loss is the primary risk factor for a subsequent preterm birth. The overall risk of recurrence of preterm birth in singleton pregnancies is estimated to be around 20%.[12] However, this risk varies depending on the gestational age at which the previous preterm birth occurred and the number of preterm and term deliveries the patient has experienced in the past. Specifically, the earlier the gestational age or frequency of preterm delivery, the higher the risk of recurrence.[13] Additionally, a history of spontaneous PPROM significantly increases the risk of PPROM (odds ratio [OR] 20.6; 95% confidence interval [CI], 4.7–90.2) and preterm delivery in subsequent pregnancies (OR 3.6; 95% CI, 2.1–6.4).[12]

History of preeclampsia

A history of early preeclampsia that has resulted in preterm delivery has a risk of recurrence of 15%,[14] which in turn poses a risk of indicated or iatrogenic preterm delivery in subsequent pregnancies. This is especially true in many low- and middle-income countries, where preeclampsia is prevalent. A study published in Brazil that included 20 hospitals and 33 740 women showed that the main cause of iatrogenic preterm birth was preeclampsia.[15] Early identification of an increased risk of preeclampsia during a preconception assessment enables the early initiation of preventive measures such as aspirin during a subsequent pregnancy.

Previous cesarean section at full cervical dilatation

Some evidence suggests that emergency cesarean section (CS) performed during labor is associated with an increased risk of spontaneous second-trimester miscarriage or spontaneous preterm birth (sPTB) in a subsequent pregnancy (relative risk [RR] 2.71; 95% CI:

1.87–3.87).[16,17] This risk appears to rise with the degree of cervical dilation at the time of CS, reaching its peak at full dilation. The mechanisms underlying this association remain unclear; however, incisional trauma to the lower uterine segment might also compromise the tissue fibers of a fully effaced and dilated cervix, resulting in cervical insufficiency in future pregnancies.

Although prospective studies are required to confirm the causal relationship between CS and sPTB, preconceptional assessment should include detailed information on the nature and timing of previous cesarean deliveries to enable adequate risk stratification and targeted prenatal surveillance.

Short pregnancy interval

Short interpregnancy intervals (IPIs), particularly when shorter than 6 months, have been reported to be associated with increased risk of preterm birth. A systematic review and meta-analysis involving more than 8.6 million pregnancies demonstrated that women with IPIs of less than 5 months had a higher risk of preterm birth, before 32 weeks (OR: 1.82; 95% CI: 1.55–2.14) and before 37 weeks of gestation (OR: 1.64; 95% CI: 1.42–1.90), compared to those with IPIs of 24 to 29 months.[18] Similarly, a multicenter study conducted in Latin America, based on a cohort of 894 476 women, found that IPIs shorter than 12 months were associated with an increased risk of preterm birth (adjusted OR: 1.16; 95% CI: 1.11–1.21), neonatal mortality, and preeclampsia.[19] A recent meta-analysis has also confirmed this observation.[20]

In light of the evidence, the WHO recommends a minimum interval of 18 to 24 months between pregnancies. However, more prospective data is needed to provide individualized recommendations for otherwise healthy women regarding the timing between pregnancies.

Need for assisted reproductive techniques

Evidence from numerous studies has demonstrated that pregnancies conceived via assisted reproductive technologies (ART), including in vitro fertilization (IVF) and intracytoplasmic sperm injection, are associated with a significantly increased risk of preterm birth (PTB), even in singleton gestations. A meta-analysis involving over 16 million pregnancies demonstrated a 1.72-fold increased risk of PTB before 37 weeks and a 2.19-fold increased risk of very preterm birth (<32 weeks) among ART conceptions compared to spontaneous pregnancies. Elevated rates were observed for both iatrogenic and spontaneous PTB, with a notably higher incidence following fresh embryo transfer versus frozen.[21]

Further support comes from retrospective and population-based cohort studies in Italy and China, which consistently show increased PTB rates in ART pregnancies, independent of multifetal gestation. Procedure-specific factors, such as embryo reduction, have been identified as additional contributors to PTB risk.[22,23]

Further, the use of single embryo transfer (SET) has emerged as an effective strategy for mitigating the risk of preterm birth associated with ART. A comprehensive meta-analysis of 85 studies revealed that SET, when compared to double embryo transfer (DET), is associated with a 75% reduction in the risk of PTB (OR: 0.25; 95% CI: 0.21–0.30). This substantial decrease is attributed mainly to the lower incidence of multiple pregnancies, underscoring the preventive value of SET in ART protocols.[24]

In light of these findings, FIGO recommends minimizing ART-related PTB risk by limiting ART use to cases where less invasive methods have failed, promoting single embryo transfer, and minimizing embryo manipulation during culture and transfer. FIGO also emphasizes the importance of comprehensive preconception assessment and individualized risk stratification, noting that even singleton IVF pregnancies might carry an inherent risk of PTB due to factors related to embryo handling or underlying infertility.[25]

Collectively, these findings emphasize the critical need for tailored prenatal care and preventative strategies aimed at mitigating both spontaneous and iatrogenic PTB in ART-conceived pregnancies.

Congenital uterine abnormalities

Women with congenital uterine anomalies or Müllerian malformations face a significantly higher risk of preterm birth, with reported rates reaching 26.8%.[26] This is more than double the rate observed in the general population and can vary based on the type of anomaly. For example, the risk might be as high as 60% in cases of unicornuate uteri and 34.5% for didelphys uteri.[27,28]

Preconception counseling is crucial for evaluating individual risk factors and guiding management strategies. Advanced imaging techniques, such as three-dimensional ultrasound and magnetic resonance imaging, enable early diagnosis and surgical correction in selected cases, such as hysteroscopic metroplasty for septate uteri. When surgical intervention is not feasible, as in cases of unicornuate or bicornuate uteri, counseling plays a vital role in anticipatory planning. This might include close monitoring, cervical length assessments, and consideration of interventions such as progesterone therapy or cervical cerclage.[26]

Cervical surgery

A history of cervical surgery is a recognized risk factor for PTB, with the degree of risk influenced by the extent of cervical tissue excision and the invasiveness of the procedure. Data from a systematic review and meta-analysis indicate that the RR of delivery before 37 weeks is significantly increased following large loop excision of the transformation zone (RR 1.61; 95% CI: 1.35–1.92) and

even more after cold knife conization (RR 2.59; 95% CI: 1.80–3.72). However, when women with comparable grades of dysplasia who did not undergo excisional procedures were used as controls, the increased risk was not statistically significant, suggesting that part of the underlying cervical dysplasia might contribute independently to adverse pregnancy outcomes.[29]

Further evidence from a large population-based study in Sweden supports this interpretation, demonstrating that the risk of PTB was particularly elevated in women diagnosed with cervical intraepithelial neoplasia (CIN) during pregnancy, especially in those with a prior history of excisional treatment. Cone length emerged as an independent predictor of PTB, and the highest risk was observed in women with both a history of cervical surgery and concurrent CIN, suggesting a potential additive effect.[30] In addition to structural cervical compromise, recent findings have identified a biological mechanism involving impaired local immune defense. Specifically, prior excisional treatment was associated with a significantly increased risk of intraamniotic infection (IAI) in pregnancies complicated by PPROM.[31] More extensive procedures, such as laparoscopic radical trachelectomy are associated with markedly elevated PTB rates, reaching 60% in some cohorts, with most deliveries occurring between 32 and 36 weeks, despite a relatively high live birth rate of 71.4%.[32]

In the context of preconception counseling, women with a history of cervical surgery should be carefully assessed for obstetric risk. A detailed surgical history should be obtained, including type of procedure, cone length, and indication. Patients should be counseled on their potentially increased risk of PTB and related complications, including PPROM and IAI. In cases of significant prior excision or additional risk factors (e.g., prior PTB, concurrent CIN), referral to a maternal–fetal medicine specialist might be warranted. Cervical length surveillance via transvaginal ultrasound in early and mid-pregnancy should be planned, and the potential use of prophylactic interventions, such as vaginal progesterone or cervical cerclage, can be discussed when indicated. This proactive approach allows for individualized risk mitigation strategies and supports informed reproductive planning.

3.3 | Pre-existing medical conditions

Most pre-existing medical conditions pose a risk of spontaneous or indicated preterm birth in women who have them. The range of autoimmune diseases, such as lupus or rheumatoid arthritis, cardiovascular conditions like chronic hypertension or congenital heart disease, kidney and liver disease, or cancer, are pathologies that are commonly associated with an increased risk of complications that might lead to iatrogenic preterm birth or its spontaneous onset. Although it is true that the risk linked to many of these conditions cannot be modified, assessing maternal health status in the pre-conception period enables informed decision-making regarding the risks of a potential pregnancy, as well as appropriate management and control of the disease prior to pregnancy, including the planning of effective therapeutic measures that are compatible with gestation and lactation.

Endocrine-metabolic dysfunction

Maternal diabetes is associated with adverse maternal and neonatal outcomes. Although preterm birth appears to be more frequent in patients with pregestational diabetes mellitus than in women with gestational diabetes,[33] a recent meta-analysis that included 108 studies showed that gestational diabetes mellitus significantly increases the risk of preterm birth in both singleton and twin pregnancies.[34]

According to the results of a systematic review, preconception care in women with diabetes mellitus might decrease the risk of preterm delivery by 15%, highlighting its significance in preventing preterm birth.[35]

Recent research has also identified a significant link between thyroid dysfunction and the risk of preterm birth. A systematic review and meta-analysis found that both overt hypothyroidism and hyperthyroidism significantly increase this risk.[36] Another meta-analysis indicated that subclinical hypothyroidism, isolated hypothyroxinemia, and the presence of anti-peroxidase antibodies are also associated with an elevated risk of preterm birth.[37]

Treatment of subclinical hypothyroidism has shown promising results in specific patients, such as thyroid antibody-positive women[38,39] and euthyroid women with positive anti-peroxidase antibodies.[40] However, further research is needed to support the universal implementation of screening and intervention strategies and confirm levothyroxine's efficacy in preventing preterm birth across various thyroid conditions.[41]

3.4 | Mental health issues

Psychiatric disorders

Women with psychiatric disorders are at increased risk of preterm and early term birth, which can negatively affect offspring health. A Swedish nationwide cohort study involving over 1.5 million births reported a significantly higher incidence of preterm births among children of parents, especially mothers, with psychiatric diagnoses such as schizophrenia, mood disorders, anxiety disorders (e.g., obsessive-compulsive disorder and generalized anxiety), and stress-related conditions.[42]

The Norwegian Mother and Child Cohort Study (MoBa), which included over 81 000 pregnancies, found that high maternal trait anxiety (≥ + 2 SD above the mean) was independently associated with increased risks of late preterm (adjusted OR 1.7) and early term birth (adjusted OR 1.4). These associations remained significant after controlling for obstetric, demographic, and behavioral confounders and were observed in both spontaneous and provider-initiated deliveries. Potential mechanisms include maternal hypothalamic–pituitary–adrenal axis dysregulation, subclinical inflammation, and altered placental function. Trait anxiety also correlated with higher rates of elective obstetric interventions, potentially affecting gestational length.[43]

Given these findings, systematic screening for psychiatric and neurodevelopmental disorders in individuals of reproductive age, especially maternal anxiety, is recommended. Early intervention could improve maternal mental health and reduce adverse perinatal outcomes, including preterm birth.

Eating disorders

Eating disorders are significantly associated with an increased risk of preterm birth, with the global risk being 1.31 times higher compared to controls. According to a retrospective cohort study, Anorexia nervosa has the most significant association with preterm birth, followed by Eating Disorders Not Otherwise Specified and bulimia nervosa.[42,44]

3.5 | Nutrition and nutrient deficiencies

Underweight

There is a nonlinear relationship between maternal body mass index (BMI) and PTB risk, with the lowest risk observed in women with a BMI between 22.5 and 25.9 kg/m^2.[45] Underweight women (<18.5 kg/m^2) have a spontaneous PTB rate of 10.1%,[46] a risk that increases with the severity of underweight, with an adjusted RR (aRR) ranging from 1.22 to 1.61.[47] A systematic review of 78 studies (1 025 794 women) reported a higher PTB risk in underweight women (aRR 1.29; 95% CI: 1.15–1.46), affecting both spontaneous (aRR 1.32; 95% CI: 1.10–1.57) and induced PTB (aRR 1.21; 95% CI: 1.07–1.36).[48] These effects persist regardless of gestational weight gain, likely mediated by nutritional deficiencies, inflammation, and placental dysfunction.[49]

Therefore, implementing strategies to optimize pre-pregnancy nutritional status is recommended, including individualized nutritional assessment, specialized dietary counseling, and supplementation with essential micronutrients (e.g., iron, folic acid, and zinc), while promoting appropriate weight gain before conception as an effective measure to reduce the risk of preterm birth.

Overweight and obesity

Obesity also increases PTB risk, particularly for extremely preterm births (<28 weeks). A Swedish cohort (over 1.5 million births) showed that this risk is independent of comorbidities.[50] An English study of nearly 480 000 births revealed a J-shaped association, with the highest odds in class IIIb obesity (aOR 2.80; 95% CI: 1.31–5.98).[51] While comorbidities mediate risk for medically indicated PTB, extreme obesity remains a risk factor for spontaneous PTB. Healthy lifestyle habits offer partial protection, and a "health-conscious" diet modestly reduces spontaneous PTB risk, independent of BMI,[52] suggesting the influence of modifiable nutritional factors.

Collectively, these findings support the implementation of preconceptional public health strategies aimed at reducing maternal obesity to mitigate preterm birth risk. Such interventions should ideally be tailored to obesity severity and accompanied by lifestyle counseling to optimize maternal health before and during pregnancy.[53]

Iron deficiency

Iron deficiency anemia is linked to an elevated PTB risk, especially in the first trimester. A meta-analysis found a RR of 1.56 (95% CI: 1.25–1.95), increasing to 1.65 (95% CI: 1.31–2.08) in early pregnancy.[54] A case–control study further identified anemia as an independent PTB risk factor (aOR 2.69; 95% CI: 1.46–4.95). These findings underscore the importance of early detection and treatment of anemia during pregnancy as a critical strategy to reduce the risk of preterm birth.[55,56]

Omega-3 fatty acids supplementation

The evidence regarding omega-3 fatty acid supplementation remains inconclusive. A systematic review of 26 trials (over 20 000 women) and a large randomized trial found no reduction in PTB or early PTB.[57,58] However, docosahexaenoic acid supplementation might reduce early PTB risk,[59] warranting further investigation through well-designed clinical trials.

3.6 | Lifestyle variables

Tobacco, alcohol, and substance use

Tobacco, alcohol, and psychoactive substance use during pregnancy are significant risk factors for PTB. Maternal smoking, particularly heavy smoking (≥10 cigarettes/day), is strongly associated with increased risk of very early PTB (<32 weeks), with an adjusted OR (aOR) of 1.39 (95% CI: 1.20–1.60).[60] Smoking negatively affects placental function and fetal oxygenation and is linked to placental abnormalities and infections.[61] The EUROPOP study found that smoking increased PTB risk across most obstetric complications, except hypertension, especially in multiparous women.[60]

Alcohol consumption, particularly heavy or binge drinking, is associated with increased risk of prematurity and low birth weight, although evidence for a consistent effect on overall PTB rates is mixed.[62] Psychoactive substances such as cocaine, opiates, and cannabis elevate PTB risk by impairing placental blood flow and fetal development.[62,63] Cocaine and marijuana, especially when combined with tobacco, are major contributors to PTB and fetal growth restriction.[64] Additionally, substance abuse-related mental disorders are linked to a 1.3-fold increased PTB risk.[42]

These findings emphasize the importance of comprehensive prenatal care, including early screening and interventions to address substance use, as well as strategies to mitigate socioeconomic disparities.

Physical activity

A cohort study on 87 232 singleton pregnancies included in the Danish National Birth Cohort between 1996 and 2002 showed a reduced risk of preterm birth among the almost 40% of women who were engaged in any exercise during pregnancy in comparison with those who were not (hazard ratio = 0.82, 95% CI 0.76, 0.88). Still, no dose–response or type of exercise relation was seen. No difference was seen when the degree of preterm birth was considered.[65]

3.7 | Infections

Sexually transmitted diseases

HIV–AIDS

HIV-positive pregnant women demonstrate a 3–4-fold increased risk of preterm birth compared to HIV-negative counterparts.[66,67] The role of combination antiretroviral therapy (ART), particularly protease inhibitor-based regimens (e.g., ritonavir-boosted), in this association remains controversial, with several studies suggesting increased risk of preterm delivery.[67,68] Timing of ART initiation is a potential confounder due to selection bias.[66,69] Ongoing investigations are evaluating vaginal progesterone supplementation as a preventive intervention in women on protease inhibitor-based ART.[66,70]

Syphilis

Despite widespread screening availability, *Treponema pallidum* infection persists globally and has resurged in prevalence. Congenital syphilis is associated with preterm birth and other adverse outcomes.[71] Early detection via routine and preconception visits remains a critical prevention strategy.

Hepatitis B virus infection

Chronic hepatitis B virus infection is associated with a 16% increased risk of preterm birth, rising to 21% among HBsAg+/HBeAg+ women,[72,73] with findings corroborated by more recent data.[74] Preventive strategies include vaccination and preconception screening.

Human papilloma virus

Evidence on the link between human papilloma virus (HPV) and preterm birth is mixed. Persistent HPV infection, especially types 16 and 18, has been associated with increased risk of preterm birth, preterm prelabor rupture of membranes (pPROM), and neonatal mortality.[75–77] The risk is higher in women with treated high-grade CIN.[78] Detection of HPV in both the cervix and the placenta correlates with adverse outcomes, including miscarriage.[79] These observations underscore the need for further studies into HPV pathophysiology and vaccine impact during pregnancy.[75]

Trichomonas vaginalis

Meta-analyses confirm associations with low birth weight, preterm birth, and prelabor rupture of membranes (PROM).[80,81] Coinfection with bacterial vaginosis is common (40%–60%) and might increase susceptibility.[82] Considering that *Trichomonas vaginalis* infection can be easily diagnosed and treated, it should be regarded in everyone of reproductive age.

Ureaplasma colonization

A meta-analysis involving 11 990 pregnant women found that *Ureaplasma* colonization increased the risk of preterm birth (OR 2.76, 95% CI 1.63–4.68), chorioamnionitis (OR 2.71, 95% CI 2.02–3.64), and PROM (OR 2.19, 95% CI 1.34–3.58).[83] However, due to low-quality evidence, well-designed studies are needed to confirm these findings.[83,84]

Other infections

Toxoplasmosis

A multicenter cohort study showed that congenital *Toxoplasma gondii* infection was associated with an increased risk of preterm birth when seroconversion occurred before 20 weeks of gestation (OR 4.71; 95% CI: 2.03, 10.9).[85]

Cytomegalovirus

The overall birth prevalence of cytomegalovirus (CMV) congenital infection is approximately 0.67%, with a higher incidence among preterm neonates and those born to seropositive mothers.[86] Possible maternal primary infections (i.e., a seropositive mother with CMV IgM) result in congenital infections approximately 20% of the time. Still, they likely represent a mixture of primary and recurrent infections.[87]

Vectorial diseases

Observational studies have shown that perinatal malaria infection increases the risk of a preterm delivery 2.5 times.[88,89] Searching for malaria in preconception care is essential because many women remain asymptomatic or have submicroscopic parasitemia, and the time parasite burden and the timing of infection might modify perinatal outcomes.[90] In endemic zones, *Trypanosoma cruzi* perinatal infection (Chagas disease), through placental disease that occasionally occurs, might increase the risk of preterm birth.[91,92] Preconception care might help detect seronegative women who could be at risk of acute infection during pregnancy. Regarding viral infections, such as Dengue or Zika, there is no difference in preterm birth prevalence for women with and without dengue (DENV) or Zika virus infection.[92,93] However, DENV infection in pregnant women might be associated with maternal mortality, stillbirth, and neonatal mortality.[92]

Periodontal and dental health

Gingivitis, periodontal disease, and dental damage are associated with chorioamnionitis and preterm birth.[94,95] Preconception care can preserve women's oral health through education and professional assistance.

3.8 | Socioeconomic issues

Maternal occupation

A systematic review and meta-analysis found moderate evidence that high physical workload, long working hours, shift work, and whole-body vibration during pregnancy increase the risk of preterm birth. Moreover, physical overload is associated with rising rates of medically indicated and spontaneous very preterm birth. In addition to physical demands, psychological mechanisms such as fatigue, stress, sleep deprivation, and circadian rhythm disruption are involved in this association.[96]

Although further research is needed to investigate the effect of occupational risks on preterm birth, women of reproductive age should be informed about the potential risk of preterm birth associated with working risks, health providers should conduct screenings, and policymakers should implement protective measures.

Domestic violence

A systematic review involving more than 70000 women showed that those who suffer intimate partner violence are 2.32 times more likely to give birth preterm.[97] Other forms of sexual violence have been associated with significantly more hospitalizations during pregnancy, primarily due to hyperemesis gravidarum and threatening preterm birth.[98]

Preconception care should be considered an opportunity to advocate for women's and people-to-be-borns' rights. Education and social awareness should be promoted, and gender violence should be addressed among all women of reproductive age, whether they are planning to be pregnant or not.

Homeless status

A cross-sectional Author: study, which included 18970 pregnant women, showed in a multivariate analysis that homeless status is an independent risk factor for extreme preterm delivery (<28-week gestation: 34.3 vs. 10.8 per 1000 deliveries; adjusted OR [AOR], 2.76 [95% CI, 2.55–2.99]).[99]

3.9 | Exposure to toxic environmental chemicals

Although the relationship between environmental chemical exposures and PTB has been widely studied, results remain inconclusive. Maternal and fetal overexposure to heavy metals during pregnancy has been associated with PTB and reduced birth size; however, recent data suggest a potential link between heavy metals and altered birth anthropometrics.[100]

Regarding endocrine-disrupting chemicals, research in different communities showed a positive association between high bisphenol A urinary levels and preterm birth.[101,102] Published evidence reveals a significant association between phthalate exposure and preterm birth, but it is still not clear which specific phthalates are more harmful.[103,104]

Organophosphate pesticides have been especially implicated, potentially increasing PTB risk through fetal neurotoxicity.[105] While their association with PTB is supported, variables such as timing of exposure and fetal sex require further study.[106–108] Additionally, organochlorine pesticides are linked to PTB, although larger population studies are necessary to influence policy, particularly in countries where these compounds remain in use.[109–111]

Other industrial chemicals in electronics, personal care products, toys, and clothing have also been associated with PTB. The evidence linking lead exposure and polybrominated diphenyl ethers (flame retardants) to PTB is inconsistent, mainly due to small sample sizes.[112,113]

Although the findings of studies differ, they collectively show enough evidence of a potential association between a toxic environment and the risk of preterm birth. Healthcare providers should inquire about exposure in individual patients of reproductive age, while policymakers should be encouraged to limit it globally and monitor population levels.

4 | PRECONCEPTION INTERVENTIONS FOR THE PREVENTION OF PRETERM BIRTH: DO THEY WORK?

No matter how early women begin their prenatal visits, they arrive late to prevent most of the adverse maternal and perinatal outcomes. That is why many national and international organizations suggest preconception healthcare promotion at every encounter a person of reproductive age has with the healthcare system.[114]

Although the generally recommended mechanisms are based on three axes (screening, promotion and intervention or referral), these components are rarely translated into practical tools for action and decision-making in the clinical setting. However, there are many conditions for which scientific evidence has demonstrated that clinical interventions effectively improve pregnancy outcomes, including preterm birth (Table 1).[54,56,114]

5 | RECOMMENDATIONS FOR PRECONCEPTION RISK ASSESSMENT AND INTERVENTIONS TO REDUCE PRETERM BIRTH

As we have already seen, more than 50% of pregnancies are unplanned, so we believe it necessary to search for risk factors that might

TABLE 1 Selected risk factors associated with preterm birth for which evidence-based preconception care recommendations have been developed.

Risk factor	Evidence-based intervention
Neural tube defects	Folic acid supplementation
Rubella sero negativity	Immunization
Preconception diabetes	Proper management
Hypothyroidism	Diagnosis and/or proper treatment
HIV infection/AIDS	Diagnosis and timely treatment
Phenylketonuria	Low phenylalanine diet
Oral anticoagulants	Change medication
Antiepileptic drugs	Change medication and/or adjust treatment
Isotretinoin's	Ruled contraception during treatment
Smoking	Cessation
Alcohol misuse	Cessation
Obesity	Weight loss
Nutritional factors	Healthy diet
Sexually transmitted diseases	Prevention, screening and treatment
Hepatitis B	Immunization
Iron deficiency	Screening and Iron Supplementation

lead to adverse perinatal outcomes in every woman of reproductive age. Thus, health providers would be able to intervene before an eventual pregnancy takes place. In recent decades, research has shown that providers are more likely to engage in evidence-based practices following participation in quality improvement projects.[115–117] Therefore, innovative approaches for bundles of interventions might help decrease preterm birth through better preconception care.

Considering unplanned pregnancy as a global issue and that many women who intend to plan pregnancy have an increased risk for preterm birth, we propose a set of evidence-based recommendations to apply when specific risk assessment should be made, to offer appropriate counseling and apply needed interventions to reduce the probability of preterm birth.

5.1 | Evidence-based recommendations and interventions supporting

Maternal age

- Conduct a comprehensive evaluation of adolescents, including sexual activity, behavioral habits, individual expectations, and their psychosocial and family environment.
- Empower adolescents to pursue personal goals and exercise their reproductive rights with autonomy and informed decision-making.
- Bring every adolescent person counseling and help to make healthy decisions about unplanned pregnancy and sexually transmitted diseases.
- Provide counseling about the risks of preterm birth and the consequences of being born too soon to families and children, to every woman of reproductive age.
- Provide counseling and encourage self-awareness about the significantly heightened risk of preterm birth in women under 19 and over 35 years old, whether they intend to plan a pregnancy or not.

Obstetrical and gynecological conditions

- Counsel all women with a history of preterm birth about their significantly increased risk of experiencing preterm birth again and assess their cervical length.
- Counsel all women with a history of preeclampsia about their significantly increased risk of recurrence, leading to a significant probability of preterm birth.
- In patients with a history of previous CS, assess the timing (first or second stage) and nature (elective or emergency) to ensure appropriate surveillance in subsequent pregnancies accordingly.
- Offer counseling at a suitable interval of 18 to 24 months between pregnancies.
- Bring counseling about the increased maternal–fetal risk of preterm birth in women who apply for assisted reproductive techniques.
- Ultrasound assessment of uterine anatomy should be recommended for women planning to conceive.
- Evaluation of the history of cervical procedures to ensure counseling about the risks of preterm birth and to ensure proper follow-up during pregnancy.

Pre-existing conditions

- Confirm proper management of existing conditions before making attempts for pregnancy.
- Assess carbohydrate intolerance and insulin resistance in every woman with a family history of diabetes.
- Detect subclinical hypothyroidism, isolated hypothyroxinemia, and thyroid peroxidase antibody positivity in every reproductive-age woman and provide counseling about the need for an appropriate approach and treatment before pregnancy.

Mental health issues

- Ensure systematic screening for mental health and neurodevelopmental disorders in individuals of reproductive age, followed by

access to appropriate therapeutic interventions and psychosocial support.
- Assess the presence of eating disorders in all reproductive-age individuals and promote an interdisciplinary approach, including nutritional, psychological, and social care, alongside timely treatment before planning pregnancy.

Nutrition and nutrient deficiencies

- Counsel all women with a BMI below 19 and over 30 about their significantly heightened risk of preterm birth and determine an interdisciplinary approach (nutritional, psychological, and social) and appropriate treatment before attempting pregnancy.
- Encourage every reproductive-age woman to maintain a normal weight and improve nutritional habits.
- Detect and treat iron deficiency and anemia in every reproductive-age woman.

Lifestyle variables

- Inquire about alcohol, tobacco, and other substance abuse, and assess an interdisciplinary approach (medical, psychological, and social), as well as appropriate treatment before attempting pregnancy.
- Inquire about physical (e.g., high workload, long working hours, shift work, and whole-body vibration) and psychological demands (fatigue, stress, sleep deprivation, and circadian rhythm disruption) at work for all women of reproductive age, assess an interdisciplinary approach focusing on psychological and social aspects, and provide appropriate counseling to improve working conditions before attempting pregnancy.

Infections

- Inquire about HPV vaccination and test for HPV in every reproductive-age woman and provide counseling about the need for an appropriate approach and treatment before pregnancy.
- Ensure appropriate screening and treatment of sexually transmitted diseases in all women of reproductive age and their partners to prevent preterm birth through congenital infection.
- Depending on the local prevalence, ensure appropriate screening for seropositivity for CMV and *Toxoplasma gondii* in all women of reproductive age to prevent preterm birth and perinatal morbidity through congenital infection.
- Ensure appropriate detection and treatment of vector-borne diseases in all women of reproductive age, according to local prevalence.
- Encourage every woman of reproductive age to preserve oral health through education and professional assistance.

Socioeconomic issues

- Ask every woman of reproductive age about partners or any form of domestic or sexual violence that might be affecting her life, assess an interdisciplinary approach focusing on psychological and social aspects, and provide appropriate counseling to improve conditions before attempting pregnancy.
- Ask every woman of reproductive age about her life conditions to detect social issues such as being unhoused, assess an interdisciplinary approach (medical, nutritional, psychological, social), and provide appropriate counseling to improve conditions before attempting pregnancy.

6 | THE ROLE OF HEALTH POLICIES AND ADVOCACY IN PRECONCEPTION CARE

Policy and advocacy efforts are crucial for reducing preterm birth rates worldwide. To effectively address this issue, we need comprehensive strategies that include improved public health education and tackling social determinants of health.

Prioritizing preterm labor and preconception care in agendas, developing supportive policies for women, and implementing strong regulations on substances are essential steps in preventing preterm labor and improving outcomes for both mothers and infants.

Ongoing research, funding, and collaboration among governments, healthcare professionals, and advocacy organizations are vital for reducing preterm birth rates significantly.

7 | CONCLUSION

Preterm birth is one of the main issues of Maternal–Perinatal Public Health, being responsible for most neonatal and infant deaths, as well as the loss of human capital in terms of the global burden of disease. Considering that an unplanned pregnancy is a high-risk event for mother and child, health providers should have functional tools for risk assessment, counseling, and intervention before it happens.

Integrating a baby-centered assessment into preconception care represents a proactive strategy to optimize maternal and perinatal outcomes. Emerging evidence suggests that targeting fetal health considerations before conception can reduce the incidence of preterm births and improve pregnancy trajectories overall.

AUTHOR CONTRIBUTIONS

The FIGO Committee for Preterm Birth prioritized the concept and idea for the paper. LIO wrote the first draft, CMVG and NC wrote the following drafts and corrections, and all authors revised subsequent versions of the manuscript. All authors commented on the manuscript and approved the final version. All committee members reviewed the manuscript before submission.

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The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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