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SPECIAL ARTICLE

Obstetrics

FIGO Preconception Checklist: Preconception care for mother and baby

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Abstract

The preconception period is a unique and opportunistic time in a woman's life when she is motivated to adopt healthy behaviors that will benefit her and her child, making this time period a critical "window of opportunity" to improve short- and long-term health. Improving preconception health can ultimately improve both fetal and maternal outcomes. Promoting health before conception has several beneficial effects, including an increase in seeking antenatal care and a reduction in neonatal mortality. Preconception health is a broad concept that encompasses the management of chronic diseases, including optimal nutrition, adequate consumption of folic acid, control of body weight, adoption of healthy lifestyles, and receipt of appropriate vaccinations. Use of the FIGO Preconception Checklist, which includes the key elements of optimal preconception care, will empower women and their healthcare providers to better prepare women and their families for pregnancy.

KEYWORDS
lifecourse, nutrition, pregnancy, pregnancy planning, prepregnancy counseling, vaccines

The members of the FIGO Committee on Well Woman Health Care and the FIGO Committee on the Impact of Pregnancy on Long-Term Health, 2021–2023, are listed in Appendix.

1 | BACKGROUND

Maternal and fetal mortality and morbidity remain a significant global health issue and are still unacceptably high.[1-3] Every day in 2020, almost 800 women died from preventable causes related to pregnancy and childbirth, with a global maternal mortality rate of 223 per 100000 live births. Nearly 95% of all maternal deaths occurred in low- and lower-middle- income countries, and most of these deaths could have been prevented.[1]

Reducing maternal mortality is the first target of the Sustainable Development Goal on health and well-being,[4] aimed at reducing the global average maternal mortality rate to below 70 per 100000 live births by 2030.[1,4] The second target is that of ending preventable deaths of newborns and children under 5 years of age, with all countries aiming to decrease neonatal mortality rates to at least as low as 12 per 1000 live births.[4]

In this context, preconception care plays a pivotal role in prevention. Indeed, in 2013 the WHO developed a global consensus on preconception care to reduce maternal and childhood mortality and morbidity, recognizing its contribution to improving maternal–fetal outcomes, in both high- and low-income countries.[5]

Preconception care is defined as: *The provision of biomedical, behavioral, and social health interventions to women and couples before conception occurs. It aims to improve their health status and reduce behaviors and individual and environmental factors that contribute to poor maternal and child health outcomes. Its ultimate aim is to improve maternal and child health, in both the short and long term.*[6] It involves, as a first step, a comprehensive assessment of those medical, social, and lifestyle factors that may affect a woman's health during pregnancy, as well as that of her child.[6]

It has been estimated that, in the 75 high-burden Countdown Countries, which together account for more than 95% of maternal, neonatal, and child deaths, increasing the coverage and quality of several interventions, including preconception care, could avert 71% of neonatal deaths (1.9 million; range 1.6–2.1 million), 33% of stillbirths (0.82 million; range 0.60–0.93 million), and 54% of maternal deaths (0.16 million; range 0.14–0.17 million) per year by 2025.[7]

Indeed, preconception care is part and parcel of the "Well Woman Health Care" vision, aimed at preventing illness and promoting wellness for girls and women across the globe.

2 | IMPACT OF PRECONCEPTION CARE ON MATERNAL–FETAL HEALTH AND NONCOMMUNICABLE DISEASES: SHORT- AND LONG-TERM EFFECTS

The association between preconception care, defined as the receipt of specific healthcare services in the 12 months before conception, and the risk of severe maternal morbidity including maternal death, was examined among 1 514 759 women in the USA. After adjusting for multiple potential confounders, any preconception care was associated with a modestly decreased risk of severe maternal morbidity (adjusted odds ratio [aOR] 0.97; 95% CI, 0.95–1.00). However, in a subgroup analysis of women with chronic diseases, such as hypertension, diabetes, or chronic kidney disease, any preconception care was associated with a significant decrease in the odds of severe maternal morbidity (aOR, 0.84; 95% CI, 0.77–0.91).[3] Preconception disorders, such as cardiovascular or mental diseases, diabetes, obesity, anemia, and HIV infection, when aggravated by pregnancy, can also become indirect causes of maternal mortality.[8] Moreover, these disorders can affect embryonic development with long-term consequences for the next generation, perpetrating the intergenerational cycle of noncommunicable diseases (NCDs).[9] Therefore, all these disorders should be assessed, managed, and followed up as part of preconception care.[10] For example, in women with pregestational diabetes mellitus, preconception care can reduce the risk of perinatal mortality by 54% (relative risk [RR] 0.46; 95% CI, 0.30–0.73).[11]

Contraceptive care, as well as gynecologic examinations, were also associated with a decrease in severe maternal morbidity (aOR, 0.84; 95% CI, 0.75–0.95 and aOR, 0.79; 95% CI, 0.71–0.88, respectively).[3]

The preconception period is a unique and opportunistic time in a woman's life when she is motivated to adopt healthy behaviors that may potentially benefit her child, making this time period a critical "window of opportunity" to improve pregnancy outcomes. Improving preconception health can ultimately improve both fetal and maternal outcomes.[12] Promoting health before conception has been reported to have several beneficial effects, including a 39% increase in seeking antenatal care and a 17% reduction in neonatal mortality (RR 0.83; 95% CI, 0.72–0.95).[13]

Preconception health is a broad concept that encompasses the management of chronic diseases, including correct nutrition, adequate consumption of folic acid, control of body weight, healthy lifestyles, and vaccinations.[14]

However, given that approximately 50% of pregnancies around the globe are unplanned, true preconception health care requires routine access to "Well Woman Health Care", which includes the professional asking—whatever the reason for the visit—one key question: "Are you interested in conceiving this year?". If the answer is no, the woman should be offered contraception advice.

If the answer is yes, then all key factors included in the FIGO Preconception Checklist should be addressed, including nutrition and weight management, which are all part of the "Well Woman Health Care" strategy.[15] The Preconception Checklist is available in downloadable, printable format in the Supporting Information to this article (Figure FIGO Preconception Checklist).

Many women do not see a healthcare professional before pregnancy, therefore the postnatal period also offers an opportunity to advise on optimal health in preparation for a next pregnancy, should it occur, and for women's long-term health.

3 | PRECONCEPTION CHECKLIST: KEY FACTORS TO BE ADDRESSED

3.1 | Pre-existing chronic medical conditions

Preconception care in women with chronic medical conditions has been associated with an increased likelihood of adopting healthy behavior, such as medication adherence, folic acid intake, and smoking cessation; quiescent disease during pregnancy; and better pregnancy outcomes including reduced congenital anomalies, obstetric complications, and rates of preterm birth and low birthweight.[10]

Therefore, preconception care is essential for potentially high-risk women during pregnancy owing to pre-existing medical conditions such as metabolic, cardiovascular, neurological, autoimmune, and/or endocrine diseases. In such cases, preconception care should focus on attaining disease quiescence during the periconception period, adjusting medications to those appropriate for pregnancy before conception, as well as verifying compliance with them. Moreover, general healthy behaviors should be promoted, including those aimed at limiting exposure to pollutants and toxic chemicals.[10,15]

3.2 | Nutrition

Maternal nutrition at conception affects placental development and function, as well as fetal genomic imprinting/programming and, consequently, the child's long-term health.[16,17]

However, a thorough review of the dietary intakes of nutrients in adolescent girls and women of reproductive age in low- and middle-income countries reported that dietary deficiencies such as low iron, vitamin A, iodine, and zinc and/or calcium, remain prevalent despite the reduction in underweight mothers.[18] In high-income countries, a typical diet that includes a high intake of red meat, refined grains/sugars, and high-fat dairy products is also lacking in several important micronutrients, such as magnesium, iodine, calcium, and vitamin D.[19]

To address these issues, FIGO developed a simple Nutrition Checklist that includes questions on specific dietary requirements, body mass index (BMI), diet quality, and micronutrients. Answering these questions raises awareness, identifies potential risks, and collects information that can inform health-promoting conversations between women and their healthcare professionals. The FIGO Nutrition Checklist is free to download at: https://www.figo.org/news/figo-nutrition-checklist. A digital version (https://survey.figo.org/c/kuxayx3e) is also available, which gives individualized feedback based on answers. This checklist has been validated for use across many healthcare settings. This allows wider access through mobile phones or other electronic devices, as mobile health technologies offer information that is well accepted by women and particularly beneficial for those who have low socioeconomic status, a young age, and/or a high BMI.[20]

Obesity

Obesity is the most common medical condition affecting women of reproductive age. Around half of all women in this age group are either overweight or obese.[21] Excessive obesity increases the risk of NCDs, including type 2 diabetes and cardiovascular disease, which contribute to over 70% of global deaths annually.[22]

Moreover, obese women are at risk of vitamin D deficiency due to the vitamin sequestration in adipose tissue.[15] Obesity is an independent risk factor in pregnancy, with a higher chance of having pregnancy-associated hypertension, insulin-dependent gestational diabetes, and infants with macrosomia. Excessive gestational weight gain and postpartum weight retention may play a significant role in long-term obesity. Having one child doubles the 5- and 10-year obesity incidence for women, with many women who gain excessive weight during pregnancy remaining obese permanently.[23] Therefore, excessive gestational weight gain and/or postpartum weight retention should be considered as they significantly contribute to short- and long-term adverse health outcomes for mother, baby, and future pregnancies.[24] Women with a BMI of more than 30 should be referred to a dietician.

Underweight

Low maternal weight and BMI at conception or delivery, as well as poor weight gain during pregnancy, are associated with low birthweight, prematurity, and maternal delivery complications.[25–28]

Micronutrient deficiencies, such as low folate, iron, and/or vitamin B12, may lead to anemia and its associated adverse pregnancy outcomes.[27] It is recommended that all women are screened for anemia in the preconception period.[15] Women with severe underweight should be referred to a dietician.

3.3 | Supplementation

Folic acid

Early use of folic acid prevents neural tube defects (NTDs). Adequate levels of folate in pregnancy, measured as a red blood cell folate concentration above 906 nmol/L, can be difficult to achieve through diet alone, therefore women of reproductive age should be prescribed folic acid both during the preconception period and throughout pregnancy. NTDs occur due to the neural tube failing to close at approximately 3–4 weeks of gestation and may lead to infant mortality or long-term disability.[29] Although the proportion of NTDs that can be prevented by sufficient folate intake has not yet been established, the general consensus is that it is probably about 50%–60%.[30] Randomized controlled trials have reported significant reductions in the prevalence rates of NTDs with adequate folic acid supplementation.[31] Indeed, in low-resource countries, the introduction of periconceptional folic acid supplementation has been

demonstrated to reduce the incidence of NTDs (RR 0.53; 95% CI, 0.41–0.77; two studies, $n = 248\,056$), whilst iron–folic acid supplementation reduced the rates of anemia (RR 0.66; 95% CI, 0.53–0.81; six studies; $n = 3430$), particularly when supplemented weekly and in a school setting.[32]

Moreover, a study of over 1.5 million women demonstrated that folic acid supplementation, taken 3 months before pregnancy, was associated with a significantly lower risk of low birthweight, miscarriage, stillbirth, and neonatal mortality, compared with no use.[33]

WHO recommends routine daily folic acid dosing for low-risk women at a dose of 0.4 mg per day, starting 3 months before conception.[34] Those at increased risk of NTDs, including women with a BMI of more than 30, a history of an NTD in a previous child, epilepsy or anticonvulsant use, and/or pre-existing type 2 diabetes, require a higher folic acid dose of 4–5 mg per day.[35]

Other micronutrients

A significant number of women of reproductive age, especially the youngest, do not meet even the minimum recommended levels of certain nutrients in their diet (known as the reference nutrient intake), in particular mineral intake. For instance, 77% of women aged 18–25 years were found to have insufficient daily dietary intakes of iodine and 96% of women of reproductive age had daily intakes of iron and folate below the recommended levels for pregnancy.[19]

Preconception supplementation of certain micronutrients is associated with a reduction in several adverse obstetric outcomes, for example calcium and vitamin D supplementation reduce the risk of pre-eclampsia[36]; myoinositol, probiotics, and micronutrient supplementation decrease the risk of preterm births (aRR 0.43; 95% CI, 0.22–0.82).[37] Moreover, preconceptional micronutrient supplementation may influence intellectual development in offspring. In fact, preconception supplementation with multiple micronutrients has been found to improve certain domains of intellectual functioning in offspring at 6–7 years of age, compared with folic acid alone.[38] Therefore, it is crucial to provide information about micronutrient supplementation during preconception counseling.

3.4 | Lifestyle variables

Tobacco smoking cessation

Tobacco use during pregnancy is associated with adverse pregnancy outcomes, including miscarriage, ectopic pregnancy, preterm delivery, fetal growth restriction, small-for-gestational-age, low birthweight, placental abruption, stillbirth, and neonatal death.[39–42] Indeed, smoking during pregnancy may cause impaired placental development, leading to a hypoxic environment with reduced provision of oxygen and micronutrients to the fetus.[41]

Stopping smoking is associated with improved pregnancy and child health outcomes, including reductions in the incidence of low birthweight, preterm birth, intensive care unit admissions, and perinatal mortality.[43]

Therefore, as cigarette smoking is one of the most important modifiable risk factors associated with adverse perinatal outcomes, smoking cessation advice should be given to women before pregnancy.

Alcohol consumption

Alcohol use during pregnancy is a leading preventable cause of birth defects and developmental disabilities, with fetal alcohol syndrome (FAS) being one of the most severe outcomes. Other adverse health effects associated with alcohol use in pregnancy include miscarriage, preterm labor, intrauterine growth restriction, and stillbirth, which all add morbidity to any potential underlying disability.[44,45] Moreover, consuming alcohol during pregnancy may lead to neuropsychological adverse outcomes in the newborn.[44,45] Regardless, alcohol use in pregnancy remains common, with a global prevalence of approximately 10%, with rates of use varying depending on the country where the woman resides.[46] In fact, the global prevalence of FAS in children and youths in the general population has been estimated to be 7.7 per 1000 population.[47]

Women should be advised to avoid drinking alcohol if they are planning a pregnancy. Currently, literature reports no recommended safe level of alcohol consumption during pregnancy. Therefore, preconception counseling should include addressing this issue prior to pregnancy.

Substance use

Women are at the greatest risk of developing a substance use disorder in their reproductive years, with the highest prevalence rates observed in adolescence and early adulthood.[48] The use of illicit drugs in pregnancy is associated with adverse maternal, fetal, and child outcomes, including abortion, neonatal abstinence syndrome, placental abruption, intrauterine growth restriction, preterm birth, hemorrhage, as well as fetal and infant mortality. Therefore, women should be advised to discontinue the use of such substances and informed about both short- and long-term risks for themselves and their babies.[49]

Exposure to toxic environmental chemicals

Links between prenatal exposure to environmental chemicals and adverse health outcomes throughout the life course, including negative impacts on fertility, pregnancy, neurodevelopment, and cancer, have been documented.[50] Some of these chemicals are still widely used, such as solvents, pesticides, phthalates, lead, methyl mercury,

polycyclic aromatic hydrocarbons, bisphenol A, and per- and polyfluorinated substances. They can be found in households and workplaces, in food, water, air, and consumer products.

FIGO considers preventing exposure to environmental chemicals a priority. This involves giving women timely information on how to avoid or reduce such exposure.[50] Furthermore, the health impacts of toxic environmental chemicals can be exacerbated by climate change.[51,52] Therefore, some advice on protection against the negative consequences of climate change should also be provided during counseling.[53]

Physical activity

Establishing a pattern of regular physical activity prior to pregnancy is an important component of healthy pregnancy planning as it has a positive effect on the well-being of the mother and can contribute to the prevention of adverse maternal–fetal outcomes.[54] However, a pooled analysis of 358 population-based surveys with 1.9 million participants aged over 18 showed a global age-standardized prevalence of insufficient physical activity of about 32% in females. The highest prevalence (about 43%) of insufficient physical activity was observed in women from Latin America, the Caribbean, South Asia, and high-income Western countries.[55]

Prepregnancy risk factors for physical inactivity include a higher or lower than normal prepregnancy BMI, a lower maternal education level, and a history of previous live births.[56] Therefore, more thorough counseling should be offered to patients with these risk factors.

Indeed, the presence/absence of knowledge on healthy behaviors have been shown to be the most commonly assessed enabler/barrier to women's lifestyle behavior change during the preconception period.[57]

The FIGO Pregnancy and Noncommunicable Diseases Committee and the FIGO Committee for Reproductive Medicine, Endocrinology, and Infertility, as well as the American Society for Reproductive Medicine and the American College of Obstetricians and Gynecologists (ACOG), recommend moderate physical activity of at least 30 min a day, 5 days a week, for a minimum of 150 min of moderate exercise per week. These levels of exercise are recommended prepregnancy, during pregnancy, and postpartum,[15,58] as several studies report that pregnant women generally do not engage in much physical activity.[54] Association with dietary modifications is related to a greater weight loss than exercise alone.[15,58]

Particular attention must be paid to some categories, such as professional female athletes. To date, there is a paucity of evidence as to the effects of their physical activity during pregnancy. A recent systematic review suggests that there are no known significant negative consequences of physical activity for pregnant athletes. This would imply that pregnant women who engage in higher impact activities, including elite and competitive athletes, can approach sports with confidence.[59] On the other hand, ACOG suggests caution, stating that women performing high levels of physical activity may be at risk of hyperthermia, dehydration, and excessive weight loss.[58] These risks need to be discussed with female athletes seeking to become pregnant.

3.5 | Vaccines

A pregnant woman and her fetus/newborn are vulnerable to severe infectious diseases. Therefore, determining the immunization status of every woman in her reproductive years is of pivotal importance, whatever the reason for her consulting a healthcare professional. This would make it possible for women to be protected when and if the time comes for a pregnancy.

Vaccination to prevent maternal and perinatal adverse outcomes should be offered against hepatitis B virus, human papilloma virus, influenza, measles–mumps–rubella (MMR), meningococcal (ACWY and B), varicella, tetanus, diphtheria, and pertussis.[60,61]

As there is a theoretical risk to the fetus when the mother is given a live virus vaccine, women should be counseled to avoid becoming pregnant for 28 days after having MMR and/or varicella vaccines. Moreover, women who may get pregnant during the influenza season should be given inactivated or recombinant influenza vaccines.

3.6 | Pregnancy intervals

Short interpregnancy intervals (<6 months) are associated with preterm birth, very preterm birth, low birthweight, small-for-gestational-age, offspring death, neonatal intensive care unit admission, and congenital abnormalities.[62] Interpregnancy intervals between 6 and 12 months are also associated with increased rates of preterm birth.[63] Moreover, the length of the interpregnancy interval is a significant contributor to neonatal morbidity, whatever the gestational age at birth. Indeed, both short (<12 months) and long (>24 months) interpregnancy intervals are independently associated with a higher rate and risk of neonatal morbidity, despite preterm influences, as compared with intervals of between 12 and 24 months.[64]

These data suggest that a time lapse of between 12 and 24 months between pregnancies is most likely the optimal interval to minimize perinatal adverse outcomes[63] as well as long-term risks for maternal health, including all-cause mortality.[65] Furthermore, a woman's individual characteristics and outcome of any previous birth should also be taken into consideration when counseling on the most adequate interpregnancy interval and appropriate contraception,[66] aiming at decreasing the risks for both mothers and babies.

4 | FIGO POSITION ON PRECONCEPTION CARE

Preconception care is pivotal in improving women's health before conception to prevent short- and long-term adverse outcomes for both mothers and babies.

Indeed, preconception care addresses risk factors and health issues that contribute to maternal and perinatal mortality and morbidity, including pre-existing chronic medical conditions, harmful environmental exposures, infectious diseases, incorrect nutrition, unhealthy lifestyles, and inadequate interpregnancy intervals.

Therefore, it is of utmost importance for public health services to effectively and appropriately address all preconception health needs. To this aim, preconception care should be provided to all women of childbearing age by healthcare professionals during routine visits, whatever their pregnancy intentions.

FIGO's Preconception Checklist (Figure FIGO Preconception Checklist) aims to promote adequate and homogeneous preconception care in all countries worldwide.

4.1 | FIGO commitments

FIGO commits itself to advocating for the importance of preconception care and promoting initiatives for its appropriate implementation across all member societies.

FIGO will do so by:

- Disseminating and developing resources for healthcare professionals on preconception care, such as the FIGO Preconception Checklist.
- Influencing all healthcare systems, policymakers, and providers to ensure that they are made aware of the impact that preconception care has on the short- and long-term health of their populations.
- Advocating for supportive capacity-building for gynecologists, obstetricians, frontline healthcare providers, and childbirth educators.
- Providing resources to support data collection and monitoring mechanisms at institutional and country levels to assess and monitor existing preconception care practices.

AUTHOR CONTRIBUTIONS

All authors contributed to the design, planning and manuscript writing, and agree to be accountable for all aspects of the manuscript.

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CONFLICT OF INTEREST STATEMENT

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DATA AVAILABILITY STATEMENT

Data available upon request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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APPENDIX

Members of the FIGO Committee on Well Woman Health Care, 2021–2023: Hema Divakar (Chair), Chiara Benedetto (Vice Chair), Griselda Quijada, Chin-Long Chang, Tesfaye Hurissa, Paola Iturralde, Gelila Goba, Méabh Ní Bhuinneáin, Gulshan Ara, Christine Solbach, Suvarna Khadilkar, Nyawira Ngayu, Christian Jackisch, Ahmed Fawzy Galal, Elizabeth Pumpure, Diana Ramos.

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