

Review Article

The impact of preconception counselling on pregnancy outcomes and maternal health

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ABSTRACT

Reproductive health is a global concern, characterized by high rates of maternal and infant mortality. Preconception counseling is a comprehensive approach aimed at improving pregnancy outcomes and maternal health. It involves addressing pre-existing medical conditions, promoting lifestyle modifications, and providing education and support to women before conception or during the interconception period. Tailoring counseling to individual needs and risk factors is crucial for optimal outcomes. Although further research is needed to assess the sustained effects of behavioral changes and overall impact, preconception counseling holds significant potential in promoting healthier pregnancies and improving the well-being of women, infants, and families. By prioritizing research in this field, we can better understand and utilize the benefits of preconception counseling, ultimately contributing to the global enhancement of reproductive health. While the impact of preconception counseling on long-term outcomes requires further research, its potential in promoting healthier pregnancies and improving the well-being of women, infants, and families is evident. It has the capacity to address not only the physical aspects of reproductive health but also the emotional, social, and environmental factors that contribute to overall well-being.

Keywords: Preconception counseling, Pregnancy outcomes, Maternal health, Reproductive health

INTRODUCTION

Reproductive health is critical aspect of overall well-being, both for women and infants. Unfortunately, global statistics on maternal and infant mortality remain concerning. In 2017 WHO reported that approximately

295,000 women lost their lives during and after pregnancy and childbirth, while 5.1 million infants were either stillborn or passed away within their first month of life.¹ These numbers highlight urgent need for comprehensive interventions that can improve the health outcomes of women, infants, and families.

In the United States, around 6 million pregnancies occur annually, leading to over 4 million live births. Women between the ages of 15 and 44, who fall within the reproductive age group, commonly experience chronic diseases and engage in adverse health behaviors that can impact pregnancy outcomes.² To address these issues and promote better reproductive health, the provision of effective preconception care interventions becomes crucial as it presents an opportunity to enhance the well-being of women, infants, and families.^{3,4}

Preconception care involves providing counseling to women of reproductive age prior to their first pregnancy or in between pregnancies (also known as interconception care). Its primary goal is to identify and manage conditions and behaviors that could pose risks to both mothers and infants. A crucial aspect of interconception care is to identify and reduce risks indicated by previous adverse pregnancy outcomes. The key elements of preconception care include conducting risk assessments to identify conditions that can be improved through intervention, providing education and health promotion, and implementing medical and psychosocial interventions.^{2,5}

The potential of preconception care to positively impact reproductive health outcomes is significant. By promoting well-timed and well-planned pregnancies and averting adverse birth outcomes, preconception care contributes to the overall well-being of women, infants, and families. It not only improves the health outcomes for women but also has a positive impact on infant mortality rates and long-term child development.⁶

Ideally, preconception care should be seamlessly integrated into primary and preventive healthcare services for women of reproductive age, ensuring its accessibility and effectiveness. Research suggests that preconception care interventions can lead to improved reproductive health outcomes, including reductions in preterm birth rates, low birth weight, and congenital anomalies.⁷ By addressing specific risk factors and providing appropriate interventions, preconception care has the potential to significantly enhance the health of women and their future children.

However, the diverse nature of women of reproductive age, the range of health and psychosocial factors influencing reproductive health outcomes, and the varying healthcare settings necessitate the customization of preconception care interventions. A one-size-fits-all approach is unlikely to be universally effective. Instead, tailored delivery of preconception care interventions based on individual circumstances and specific care settings becomes imperative.²

In this review, we will discuss the current understanding of the impact of preconception counselling on pregnancy outcomes and maternal health.

LITERATURE SEARCH

For this study, a comprehensive literature search was performed on May 30, 2023, in the Medline and Cochrane databases. The search utilized medical topic headings (MeSH) and a combination of relevant terms available in the databases. The focus was on articles published between 2000 and 2023 to gather the most up-to-date information. To ensure a thorough review, a manual search was also conducted using Google Scholar, starting from previously identified papers. The review encompassed papers discussing the preconception care, reproductive health and the effect of preconception interventions on pregnancy and maternal health. To maintain inclusivity, no restrictions were imposed on publication type, participant age, language, or date.

DISCUSSION

The center for disease control (CDC)-convened group of scientists in 2004 provided a definition for preconception counseling (PCC) as interventions that focus on identifying and modifying biomedical, behavioral, and social risks that can impact a woman's health or pregnancy outcomes. The goal of PCC is to prevent and manage these risks, with a particular emphasis on factors that require attention prior to conception or during the early stages of pregnancy. It encompasses more than a single healthcare visit but is not as extensive as comprehensive well-woman care. It involves providing counseling and support both before a woman's first pregnancy and during the interconception period between pregnancies.⁶

The available literature provides a broad spectrum of interventions that can potentially be incorporated into PCC. These interventions vary in their foundation, with some being supported by scientific evidence and existing clinical practice guidelines, while others are based on common sense and current standard practices. It is evident from the aforementioned definition that PCC goes beyond clinical care and encompasses all factors that can influence pregnancy outcomes. This includes considerations such as family history, pre-existing medical conditions, exposure to teratogens (including prescription medications and environmental factors), as well as risky behaviors like smoking and alcohol consumption.⁸

WHO outlined the various components of PCC, which encompassed 13 distinct conditions. These components were defined as follows: nutritional conditions, tobacco use, genetic conditions, environmental health, infertility/subfertility, interpersonal violence, too early/unwanted and rapid successive pregnancies, sexually transmitted infections, HIV, mental health, psychoactive substance use, vaccine-preventable diseases, and female genital mutilation.⁹ Concentrating on these points of care during preconception counselling can help to improve pregnancy outcomes and maternal health.

One crucial aspect in preconception counseling and its impact on maternal health is the identification and management of pre-existing medical conditions. Women of reproductive age often experience chronic health conditions that can significantly influence their own health and the outcomes of their pregnancies. Preconception counseling plays a vital role in recognizing and addressing these conditions before conception or during the early stages of pregnancy, aiming to optimize both maternal health and pregnancy outcomes. By identifying and managing pre-existing medical conditions, healthcare providers can improve the overall well-being of women, reduce the risk of complications during pregnancy, and enhance the outcomes for both the mother and the baby.^{10,11}

For instance, for women with diabetes, careful management of blood glucose levels is essential to minimize risk of complications in pregnancy. Uncontrolled diabetes can lead to macrosomia, where baby is larger than average, increasing risk of birth injuries and cesarean deliveries. Poorly controlled diabetes is also associated with increased risk of preeclampsia, condition characterized by high blood pressure and organ damage during pregnancy. Additionally, uncontrolled diabetes can lead to preterm birth, which carries its own set of risks for baby's health.^{12,13}

Similarly, hypertension, or high blood pressure, requires appropriate control before conception to ensure a healthy pregnancy. Uncontrolled hypertension during pregnancy can lead to preeclampsia, a serious condition that can result in organ damage and even maternal and fetal mortality. Preeclampsia is associated with complications such as preterm birth and fetal growth restriction, which can negatively impact the baby's health and development.^{14,15}

Preconception counseling provides an opportunity to assess and optimize the management of these conditions. Healthcare providers can work with women to develop a personalized care plan that includes medication adjustments, lifestyle modifications, and regular monitoring to ensure the best possible outcomes for both the mother and the baby. By addressing these pre-existing medical conditions before conception, the risks of complications during pregnancy can be reduced, leading to improved maternal health and healthier pregnancy outcomes.

Furthermore, PCC provides an opportunity to address the impact of pre-existing medical conditions on fertility. Conditions such as polycystic ovary syndrome (PCOS) or endometriosis can affect a woman's ability to conceive. By addressing these conditions before attempting conception, healthcare providers can offer appropriate interventions and assist in optimizing fertility.^{16,17}

In addition to addressing pre-existing medical conditions, preconception counseling also plays a crucial role in

promoting lifestyle modifications and healthy behaviors. It provides an opportunity to counsel women on smoking cessation, alcohol consumption, achieving a healthy weight, and engaging in regular physical activity. These lifestyle modifications not only improve overall maternal health but also reduce the risk of adverse pregnancy outcomes such as gestational diabetes, preeclampsia, and preterm birth.¹⁰

Preconception counseling plays a vital role in optimizing pregnancy outcomes. It involves a comprehensive approach aimed at addressing various factors that can influence the health of the developing fetus. By implementing targeted interventions and providing education and support, preconception counseling has the potential to significantly impact pregnancy outcomes.

An example of the intervention that significantly influences pregnancy outcomes is folic acid supplementation. Adequate folate intake before conception and during early pregnancy has been associated with a reduced risk of neural tube defects (NTDs) in newborns. Studies have demonstrated that preconceptional folic acid supplementation can significantly decrease the incidence of NTDs, such as spina bifida and anencephaly.^{18,19} Therefore, preconception counseling should emphasize the importance of folic acid supplementation to reduce the risk of NTDs.

Addressing lifestyle factors can be beneficial for the fetus as well. Modifiable behaviors such as smoking, alcohol consumption, and unhealthy dietary habits can have a significant impact on pregnancy outcomes. Preconception counseling provides an opportunity to educate and support women in making positive lifestyle changes before pregnancy. For example, smoking during pregnancy is associated with adverse outcomes such as preterm birth, low birth weight, and developmental issues. Preconception counseling can help women quit smoking, leading to improved pregnancy outcomes.²⁰

Optimizing maternal nutrition through preconception counseling is also essential for promoting positive pregnancy outcomes. Adequate nutrition, including a balanced diet and appropriate intake of essential nutrients, is crucial for fetal development and maternal health. Preconception counseling provides guidance on achieving optimal nutrition, which can help prevent complications such as intrauterine growth restriction, gestational diabetes, and preterm birth. Educating women about healthy eating habits and the importance of specific nutrients, such as iron, calcium, and omega-3 fatty acids, contributes to healthier pregnancies.^{21,22}

Despite numerous trials, in some systematic reviews authors state that limited evidence exists from trials regarding the effects of general advice and education provided during the pre-pregnancy period on maternal and infant outcomes. While specific interventions

targeting certain risk factors, such as promoting pregnancy planning and reducing alcohol consumption, may lead to behavioral changes, it remains uncertain whether these changes actually result in improved health outcomes for mothers and their babies. It is possible that such interventions may be more beneficial for women at higher risk. Furthermore, the long-term sustainability of behavioral changes following these interventions, particularly among women who subsequently become pregnant, is unclear. Based on the current evidence, it is not recommended to widely implement pre-pregnancy counseling for women of childbearing age, both in the general population and between pregnancies.^{5,23}

CONCLUSION

Preconception counseling plays a vital role in improving pregnancy outcomes and maternal health by addressing pre-existing medical conditions, promoting lifestyle modifications, and providing education and support. Although specific interventions like folic acid supplementation and smoking cessation have demonstrated positive impacts, more evidence is needed to support the effectiveness of general advice and education interventions. Tailoring preconception counseling to individual needs and risk factors may yield better results, making it a valuable area of focus in reproductive health care.

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