

How Does Current Evidence Inform Policy and Practice for Prepregnancy Health?



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Compared with health in pregnancy and childbirth, which rightly demands close attention, health before pregnancy has been relatively overlooked. However, over the past decade, the persistent challenges confronting maternal and child health, coupled with interest from policy-makers, have drawn more attention to prepregnancy health. In this month's issue of *Obstetrics & Gynecology* (see page 1278), Wang and co-authors present robust associations between six modifiable prepregnancy lifestyle characteristics (not smoking, little or no alcohol, healthy body mass index (BMI, calculated as weight in kilograms divided by height in meters squared), regular physical activity, healthy eating, and use of multivitamins) and common adverse pregnancy outcomes in a large cohort study, with repeat validated measures and close follow-up.¹ They found that a healthy lifestyle was broadly protective against adverse outcomes, especially miscarriage, gestational diabetes, gestational hypertension, and low birth weight. Assuming a causal relation between lifestyle factors and outcomes, they estimate that up to one in five adverse events could be prevented if a healthy lifestyle were adopted across the population.

As with this observational study, much of the published evidence explores the link between prepregnancy risk factors and short-term pregnancy outcomes affecting the mother or newborn. Studies of the long-term effects of prepregnancy factors or interventions on chronic disorders (eg, diabetes, obesity, cardiovascular disease) are less common, but two recent meta-analyses of randomized trials of women diagnosed with gestational diabetes found that intervention implemented within 3 years of delivery (interpregnancy period), but not intervention implemented during pregnancy, markedly reduced the long-term risk of maternal type 2 diabetes.² This is an important finding given the increasing prevalence of type 2 diabetes and the very high risk for women previously diagnosed with gestational diabetes.³

Because trials to determine the effectiveness of prepregnancy interventions on child health outcomes require randomization of large numbers of individuals or communities and follow-up over several years, evidence of long-term benefit is sparse, but major studies are underway. For example, the NiPPeR trial (Nutritional Intervention Preconception and during Pregnancy to maintain healthy glucosE levels and offspring health) of a micronutrient, myoinositol, and probiotic supplements taken prepregnancy and during pregnancy showed a reduction in the incidence of major postpartum hemorrhage and preterm delivery, particularly associated with preterm prelabor rupture of membranes.⁴ HeLTI (the Healthy Life Trajectories Initiative) is an international study recruiting approximately 22,000 women, with half expected to conceive, with a plan for follow-up of all children to age 5 years. The aim is to evaluate the effect of an integrated four-phase intervention starting before fertilization and



continuing through pregnancy, infancy, and early childhood on reducing childhood obesity and optimizing early child development, nutrition, and other healthy behaviors.⁵

Extensive evidence has also been synthesized in umbrella reviews of systematic reviews or meta-analyses. For example, Daly et al⁶ synthesized data from 53 systematic reviews of observational or intervention studies to examine 205 unique prepregnancy exposure–outcome associations. Aside from the undisputed benefit of folic acid supplementation in preventing neural tube defects, they concluded with moderate certainty that maternal physical activity, BMI, and interpregnancy weight gain and advanced paternal age are important prepregnancy factors to consider.

These reviews describe a remarkable diversity of interventions extending across numerous domains (eg, health behaviors, mental and physical health conditions, environmental exposures, wider determinants of health, and genetic risk). Interventions range from a single focus, such as vitamin supplementation, to multicomponent interventions as in HeLTI.⁵ They may seek to change individual behavior (eg, stopping smoking) or the structural and social barriers to health, such as poor access to or poor experience of health care. Interventions can be delivered at a specific timepoint in the life course or be designed to start in school and continue across the reproductive life course.⁷

The public health rationale for intervening across the reproductive life course stems from the fact that many risk factors for pregnancy are societal (eg, poverty, racism) rather than behavioral, many pregnancies are unintended, and preparing for pregnancy is not usually discussed during health care visits. This has led to calls for a dual strategy that increases prepregnancy health awareness and intervention opportunities at both the individual and population levels.⁸ Such an approach has been contested from a perspective that sees the underlying science being used to overburden women, in particular, with responsibility for the health of their offspring.⁹ Increasing evidence, however, shows that aspects of the father's lifestyle prepregnancy are also critical to improving outcomes,¹⁰ so preparation for pregnancy and parenthood should be seen as a shared responsibility. Interestingly, there appears to be no published research on the issues that matter most to people when considering a future pregnancy. How closely does the health community's legitimate concern with promoting health before pregnancy reflect the concerns of individuals? Do social, family, or economic

issues, for example, outweigh consideration of health for many prospective parents? These are important questions to address if we want our research to support people optimally in preparing for pregnancy and parenthood.

How can the current evidence base inform future policy and practice? Like the bookends of pregnancy (that might be termed the “zero” and “fourth” trimesters, respectively), the prepregnancy period and the postnatal or interpregnancy period need to become a more integral part of effective and comprehensive pregnancy care. Appropriate ways forward will depend on regional or local contexts, but the overall goal is that preparing for healthy pregnancy and parenthood becomes a routine part of life, with health care and environmental conditions conducive to well-being before pregnancy, and that inequalities in maternal and child health and transmission of chronic disease risk across generations are significantly reduced.

In conclusion, the article by Wang and co-authors provides a useful addition to the growing body of evidence pointing to the importance of the prepregnancy period as a determining factor for healthy pregnancies in the short term and for the health trajectory of both mother and child in the long term. The challenge now is to operationalize the evidence we already have in context-sensitive ways to improve the health and life chances of future generations.

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