

PEDIATRIC EDITORIAL

Are we attacking the wrong targets in the fight against obesity?: the importance of intervention in women of childbearing age

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The dramatic rise in the worldwide prevalence of obesity that began in 1980 has slowed, but the initial optimism that public health measures adopted by governments and health organizations would reverse this epidemic has faded. In many countries, the prevalence of obesity continues to rise, albeit slowly, and most discouragingly, the rates of childhood obesity have not fallen. Measures such as taxing 'junk food', requiring calorie labeling in fast food restaurants, and banning sugary beverages and other foods in schools have been instituted by governments and/or private institutions despite the lack of evidence of long-term effectiveness against obesity. Even where there is evidence of effectiveness, the contribution of these factors to obesity is modest.

With the evidence that what we are doing currently is not very effective, an objective look at other factors that might be contributing to the rise in obesity is warranted. Two papers in this issue of IJO point out the strong risks of obesity associated with several factors that impact upon women of childbearing age.^{1,2} The evidence is now overwhelming that the risk is increased for large for gestational age (LGA) infants to be born to women who are overweight or obese when they become pregnant, who gain excess weight during pregnancy, who smoke during pregnancy, who develop gestational diabetes or who are older at first pregnancy.^{1–7} Being LGA portends a much higher risk of obesity later in childhood and adulthood, with odds ratios as high as 15 compared with normal weight newborns.¹ Black children born LGA were 2.5-fold more likely to be obese at ages 2–5 than average weight babies, and had a 30% prevalence of obesity.³ There is also a clear association between maternal prepregnancy body mass index (BMI) and gestational weight gain with cardiometabolic risk factors in adult offspring.⁵

Cnattingius *et al.*¹ evaluated the impact of high birth weight across generations for the risk of obesity. Women who themselves had a high birth weight are at higher risk of being overweight or obese when they become pregnant. Mothers who had the highest birth weight for gestational age had an odds ratio of over 2 of being obese at the time of pregnancy. If mothers who were LGA at birth were overweight at pregnancy (BMI 25 to >29), the odds ratio for having an LGA baby was 5.6. If LGA mothers were very obese (BMI >35), the odds ratio for having an LGA baby was 14.1.

Koeppe *et al.*² followed over 30 000 mothers and children in Norway in the Norwegian Mother and Child Cohort Study. They also found that both maternal obesity and weight gain during pregnancy contributed to increased birth weight of offspring and increased overweight and obesity at age 3.

Intervention is important and effective. The consequences of weight loss in obese women before pregnancy on weights of offspring at birth and through young adulthood are shown by the study of Kral *et al.*⁴ These authors identified women who had pregnancies before and after they had undergone bariatric surgery. All of the women were very obese at the time of the first pregnancy and had lost an average of over 15 BMI units by

the time of the second pregnancy. The offspring were followed for 2 to 18 years. Of the offspring born when the mothers were obese, 36% were normal weight and 40% were obese. However, the offspring born after major weight reduction were 57% normal weight and only 19% obese.

Thangaratnam *et al.*⁸ demonstrated that intervention during pregnancy leads to improved outcomes. Unfortunately, knowledge of what should be done has not necessarily translated into action. McDonald *et al.*⁹ found that despite recent publication of gestational weight gain guidelines, only 12% of women reported being counseled correctly.

The percentage of the variance of obesity in children that is attributable to sugary beverages or fast foods is small. The factors surrounding body weight, weight gain, smoking and glucose tolerance before and during pregnancy appear to be much more important in defining who will become obese in childhood and/or adulthood. Our public health efforts have focused on the entire population and attempted to change behavior regarding eating and exercise. There is no question that if successful, improving eating habits and increasing exercise would be beneficial to the health of the population. However, these very expensive interventions have not yielded clinically significant improvements in the prevalence of obesity.

Perhaps it is time to focus our public health efforts and public funding on women before and during their child bearing years as research clearly shows that intervening during this time is effective in reducing obesity in offspring. Our goals should be to help women from becoming overweight or obese before pregnancy, from gaining excess weight during pregnancy, and in vigorously preventing and controlling gestational diabetes. Women who themselves were LGA are at increased risk and should be identified before pregnancy for special attention. The question is how to accomplish these goals, as current efforts using diet and exercise for the whole population have not been very effective. Increased research funds targeted for these actions in these groups of women will be needed. Limited public health funds might be better spent by focusing on education of young women before childbearing age in schools, clinics and churches in both the public and private sectors. Education and weight reduction in women who are at risk of pregnancy or who intend to become pregnant, and support for already pregnant women to help them limit weight gain and keep blood glucose normal need to be evaluated. Studies such as the LIMIT trial in Australia¹⁰ are trying to address these questions and may point the way to more effective interventions. The role of the obesity community may be to convince politicians and public health officials to pay attention to these alternate causes of obesity if we are to be more successful in limiting obesity.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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