

Diet and physical activity in pregnancy – where next?

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Word count: 750 words

Competing interests: We have read and understood the BMJ Group policy on declaration of interests and declare the following interests: MK has advised Amgen Ltd on clinical research in pregnant women with hypercholesterolaemia. CF none.

Both maternal obesity and excessive weight gain in pregnancy are known to be associated with pregnancy complications for both mother and infant¹⁻³. Maternal obesity is also associated with longer-term effects on childhood obesity² and hence potential increases in non-communicable diseases. The prevalence of overweight and obesity is recognised to be increasing in the maternity population in high resource countries¹. With the global nutrition transition⁴, its impact will be more frequently observed in low and middle income settings⁵. Information on trends in physical activity in pregnancy is less clear, although the data in the general population are well established - on a worldwide basis physical activity is not increasing⁶. It is likely this stasis is also occurring in the maternity population, indeed it may be exacerbated by concerns over the safety of physical activity during pregnancy⁷.

A number of randomised controlled trials of diet and physical activity-based interventions in pregnancy have therefore been conducted over recent years. Rogozinska and colleagues⁸ have conducted an individual participant data meta-analysis of these randomised trials, including data on over 12,000 women, and found a statistically significant mean decrease of 0.7kg in gestational weight gain amongst the group of women who had received any diet and/or physical activity intervention during pregnancy. The authors found no differences in maternal or infant composite outcomes between the groups. Many pregnancy complications are individually rare, or the impacts of intervention on an individual basis are small. The challenge of interpreting research, therefore, is how to assess apparent positive effects of intervention, which are not statistically significant potentially due to inadequate sample size. Healthcare practitioners' beliefs about consequences have been shown to be a barrier to implementation of weight management guidelines⁹, and difficulties interpreting the evidence may play a part in this.

In the context of a recommended weight gain of 11.5-16kg amongst women of normal weight¹⁰ the significance to the individual of a 0.7kg reduction may be unclear. However, guidelines have been developed for optimal pregnancy weight gain amongst different BMI

groups to improve maternal and child outcomes¹⁰, and gestational weight gain above these recommended levels has been shown to be associated with an increased odds of macrosomia and caesarean delivery¹¹. On a population basis, therefore, even a small reduction in gestational weight gain may have an important impact. Rogozinska and colleagues also identified a statistically significant decrease in the caesarean section rate, with an estimated 9% decrease in odds. Notable, however, was the high caesarean birth rate – 34.8% in the intervention group and 37.7% in the control group. This highlights the importance of ongoing research into the underlying causes of increasing medical intervention in pregnancy¹², but also raises our awareness of the possible impact of diet and physical activity on reducing rates.

Rogozinska and colleagues' work provides little evidence of benefit of physical activity and diet interventions on pregnancy outcomes for either mother or infant⁸. However, as noted previously, concerns are frequently expressed about the harms of diet, and particularly physical activity, interventions in pregnancy. This study provides very reassuring information for women and health care practitioners concerning safety. There was no evidence of an increase in adverse pregnancy outcomes among women participating in dietary interventions, physical activity interventions, or interventions including both diet and physical activity. The direction of the estimates of effect of both composite outcomes and the majority of the individual components of the composite outcomes favoured the intervention groups. We can therefore be confident in our advice to women that physical activity in pregnancy can be maintained.

The researchers note that at trial entry, 46% of women undertook no exercise or were sedentary, and perhaps this is where public health initiatives need to focus in the future. The physical activity interventions included in this meta-analysis were heterogeneous, with differing frequency, intensity, time and type of physical activity. The challenge remains for researchers to evaluate the specifics of patterns of physical activity in pregnancy in both low

and higher risk populations, and how these change with gestation. Is there a potential role for strength and balance training on improving pregnancy outcomes? Are differing patterns of physical activity associated with pregnancy outcomes? Can the window of opportunity of pregnancy be used as a springboard to change physical activity patterns among women and their families in the longer term? In the context of evidence of the impact of physical activity on preserving cognitive capacity, and figures suggesting that physical activity contributes almost 4% to the population risk of dementia⁶, this is an opportunity we cannot afford to ignore.

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Contributorship

MK drafted the article which was edited by CF. MK will act as guarantor.

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