

Editorial: Parental dietary, lifestyle and sociodemographic factors and pregnancy, birth or childhood health outcomes

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Manuscript contribution to the field

This research topic aims to collate studies examining the role of maternal and paternal dietary, lifestyle and sociodemographic factors on subsequent maternal and child outcomes. A total of nine articles were included, encompassing the preconception, pregnancy and postpartum stages. Majority (six out of nine articles) examined maternal micronutrient serum concentrations and dietary patterns on maternal health and child growth outcomes. Of note, one article adopted a couple-based, multi-behavioural approach and explored both preconception and pregnancy parental lifestyle factors on child growth outcomes. In brief, higher serum levels of iron, magnesium, zinc but lower copper and ferritin concentrations during pregnancy and maintaining a healthy BMI, a healthy diet and other lifestyle behaviours during preconception and pregnancy were important in preventing adverse maternal health outcomes and child growth outcomes. Future studies can consider examining the complete spectrum and trajectories of lifestyle behaviours from preconception, pregnancy to postpartum. Social and structural determinants like social and community support can also be examined to aid in designing effective lifestyle intervention programmes.

(164 words)

Main editorial

Evidence from historical cohorts suggested that the children and grandchildren of women exposed to dietary alterations (e.g., famine) during pregnancy may experience increased risks of later health complications than their “control” counterparts [1]. These findings drew attention to the importance of maternal pregnancy exposures and their implications on maternal and child health. Subsequently, mounting evidence revealed that maternal dietary, lifestyle (e.g., physical activity, smoking, sedentary behaviours), and

sociodemographic factors during the preconception, pregnancy and postpartum stages were associated with subsequent maternal and child outcomes (e.g., gestational diabetes, birth weight) among healthy, Caucasian women with access to health care [2, 3]. However, there is insufficient evidence in non-Caucasian women and those of lower socioeconomic status [2] as well as paternal factors, despite their likely influence on both the mother and child. The current literature highlighted the importance of adopting healthy diets and optimising various lifestyle behaviours to prevent adverse maternal and child health outcomes [4]. Yet, few studies have examined the entirety of lifestyle behaviours. Addressing these research gaps will enable robust conclusions to be drawn and advance research in this field.

In this Special Issue, we collated nine articles featuring the latest research on maternal or paternal dietary, lifestyle and sociodemographic factors with subsequent maternal and child outcomes [5, 6]. Notably, there is a good representation of study populations, with six studies from Asia- China ([Chen et al \[7\]](#), [Qin et al \[8\]](#), [Tao et al \[9\]](#), [Xie et al \[10\]](#), [Zhao et al \[11\]](#), [Li et al \[12\]](#)), one study from Africa- Ethiopia ([Ahmed et al \[13\]](#)) and two studies from European countries- one involved a consortium of studies conducted in France, Ireland, and the Netherlands ([Lecorguillé et al \[14\]](#)) and one in Norway ([Amberntsson et al \[15\]](#)). Among these studies, one investigated preconception exposure ([Li et al \[12\]](#)), two investigated both preconception and pregnancy exposures ([Lecorguillé et al \[14\]](#), [Xie et al \[10\]](#)), four investigated maternal pregnancy exposures ([Amberntsson et al \[15\]](#), [Chen et al \[7\]](#), [Qin et al \[8\]](#), [Tao et al \[9\]](#)) and two investigated postpartum exposures ([Zhao et al \[11\]](#), [Ahmed et al \[13\]](#)).

Across preconception ([Li et al \[12\]](#)) and both preconception and pregnancy ([Lecorguillé et al \[14\]](#), [Xie et al \[10\]](#)) periods, maternal supplemental folate was associated with risk of gestational diabetes mellitus [12] and a combination of lifestyle factors (BMI, smoking, diet quality and sedentary behaviour) was associated with higher risk of offspring

overweight/obesity [14]. Additionally, maternal pre-pregnancy BMI and gestational weight gain were associated with sex-specific membership in BMI-z trajectories from birth to five years of age [10]. A potential future work for this would be to find out whether these trajectories would be associated with subsequent pubertal or disease-risk outcomes in children. Collectively, these three studies have certainly added to the limited literature on exposures during the preconception period, especially among non-Caucasian women [10, 12]. Notably, Lecorguillé et al [14] considered the synergistic effect of both maternal and paternal lifestyle factors that are valuable to support the initiation of family-based and multi-behavioural prevention strategies for childhood obesity.

Spanning the pregnancy period, Amberntsson et al [15], Chen et al [7] and Tao et al [9] demonstrated the associations between vitamin D intakes [15], serum levels of iron, magnesium, zinc, copper [7] and ferritin [9] with maternal postpartum anaemia and offspring birthweight outcomes. While these studies have identified several micronutrients associated with maternal and child health, results should be interpreted with caution as it is important to consider that nutrient bioavailability varies when interacting with other dietary constituents consumed in the diet [16]. This limits our ability to directly translate the findings to dietary recommendations. As opposed to examining individual nutrients, the study by Qin et al [8] managed to circumvent these limitations by studying links between maternal dietary patterns and foetal intrauterine development. In particular, mothers who adhered to the “Snack and less eggs” low-protein pattern had increased risk of smaller head circumference for gestational age, which might implicate long-term health outcomes. This work by Qin et al [8] has the potential to inform the development of Chinese dietary guidelines for pregnant women to prevent adverse offspring health outcomes.

Spanning the postpartum period, Zhao et al [11] noted that Chinese women with a caesarean section birth tended to adhere less to the “Traditional” dietary pattern (characterised

by high carbohydrates foods, fish and eggs) than those with vaginal delivery [11] among women with monthly household income of more than ¥9,000. The study also reported other significant interactions by maternal education. Similarly, Ahmed et al [13] reported notable differences in maternal education and income between employed and unemployed mothers in Ethiopia, which were correlated with stunting among 6–59 months old children [13]. While both of these studies are cross-sectional and causality cannot be inferred, they generated hypotheses for future studies and drew attention to the socio-demographic determinants for the health and well-being of maternal and child populations.

Finally, we would like to commend the authors for their valuable contributions towards strengthening the evidence base for maternal and child health. While single-nutrient studies have laid the foundation for dietary investigations, the approach of assessing overall diet and lifestyle is more comprehensive. Taken together, maintaining a healthy weight status, adopting a better-quality diet, reducing smoking exposure, and limiting sedentary lifestyles before and during pregnancy in both parents emerge as crucial factors in preventing adverse maternal and child health outcomes. Given the vast amount of information collected by the various cohorts featured in the nine articles, there remains many interesting hypotheses to explore that will advance research in this field. As these studies typically assessed exposures at a single time point, future studies may consider and examine changes (or trajectories) of diet, lifestyle and sociodemographic exposures from preconception, pregnancy and postpartum periods. It may also be worth delving into the social determinants of maternal and child health such as community and family support, which could help with designing and implementing effective lifestyle interventions to optimise health and well-being.

(994 words)

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