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Peri-conceptional diet patterns and risk of gestational diabetes mellitus in South Indian women

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Gestational diabetes mellitus (GDM) affects 20% of pregnancies in India[1]. In Western countries healthy diet patterns characterised by wholegrains, fruits and vegetables are associated with a lower GDM risk; and unhealthy patterns (refined grains, fried and fast food, high sugar, red and processed meat) with higher risk. Evidence from low- and middle-income countries is sparse, and diet pattern-GDM associations in India have not been explored. We aimed to identify peri-conceptional diet patterns among women in Bangalore and examine their associations with GDM risk.

BANGLES (BAngalore Nutrition Gestational diabetes LifEstyle Study) started in 2016, a prospective observational study in which pregnant women (n = 785) of varied socio-economic status were recruited at 5–16 weeks' gestation. Peri-conceptional diet was assessed retrospectively at recruitment, using a validated 224-item Food Frequency Questionnaire (FFQ). The 224 FFQ foods were reduced to 68 food-groups as input variables for principal component analysis to identify diet patterns. GDM was defined by a 75-gram Oral Glucose Tolerance Test (OGTT) at 24–28 weeks' gestation, applying WHO 2013 criteria. Diet pattern-GDM associations were analysed using multivariate logistic regression adjusting for 'a priori' confounders.

GDM prevalence was 22%. Three standardised distinct peri-conceptional diet patterns were identified: a) High-diversity, urban (HDU), characterised by consumption of a diversity of expensive, home-cooked, processed, healthy and unhealthy foods including wholegrains, fruits, vegetables, dairy, nuts, seeds, egg, poultry, meat, fast-food and sweets was associated with older, affluent, more educated and urban women; b) Rice-fried snacks-chicken-sweets (RFCS) pattern, characterised by low diet-diversity, was associated with younger, thinner, less educated women from lower-income, rural, joint families; c) Healthy, traditional vegetarian (HTV) pattern, characterised by home-cooked, vegetarian and non-processed foods was associated with women being thinner, less educated, affluent from rural and joint families. The HDU pattern was associated with a lower GDM risk (aOR: 0.80 per SD, 95% CI: 0.64, 0.99, p = 0.04) after adjusting for confounders, not significant after correction for multiple testing. Women's BMI was the strongest risk factor for GDM and possibly partly mediated diet-GDM associations.

The findings support global recommendations to encourage women to attain a healthy pre-pregnancy BMI. The HDU pattern-lower GDM association, although not significant, was consistent with national and global diet recommendations to increase diet diversity[2,3&4]. However, the HDU and RFCS patterns consisting of healthy and unhealthy foods may indicate low awareness and the need to invest in public education about healthy/unhealthy foods. Higher socio-economic status was positively associated with diet diversity (HDU & HTV). This highlights the need for national policies to make wholegrains, fruits, vegetables, dairy and poultry foods more affordable[3]. In the future, the construction of a healthy diet index may be useful.

References

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