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Abstract

Dietary Intake of Pregnant Women and Its Association with Cardio-Metabolic Risk in Their Children †

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Abstract: Maternal nutritional status during pregnancy affects the growth of the foetus and may impair the development of different organs, some of which may affect cardio-metabolic health in early childhood. This study determined the dietary intake of pregnant women and its possible associations with early child cardio-metabolic risk. Methods: Dietary data were collected from 152 of a larger sample of 500 pregnant women and their children at birth and at the age of 5–6 years within the Tygerberg Academic Hospital catchment area, Bellville, South Africa. Maternal weight, height, BMI and mid-upper arm circumference were collected at recruitment. Birth weight, length, head circumference and placental weight were collected at birth. At the age of 5–6 years, anthropometric measurements (weight, height, skinfold thickness and waist circumference), clinical measurements (blood pressure, mean arterial pressure and heart rate) and ultrasound measurements (pancreas, aorta, carotid arteries and visceral fat) were collected. For the purpose of this abstract, we will report only on the ultrasound measurements for vascular and pancreas parameters. Dietary data were collected using a quantified food frequency questionnaire. Results: Iron intake did not differ significantly between the trimesters, nor between mothers who smoked (14.5 mg), consumed alcohol (16.5 mg) or both (15.0 mg). The average total energy intake of mothers was 10,850 kJ (SD = 3001 kJ), which was slightly above NIH recommendations. Most of the energy came in the form of saturated fat, oils and added sugar. Both protein and carbohydrate intake exceeded recommendations, with average intakes of 82 g and 275 g, respectively. Folate intake was below recommendations at 287 mcg. A significant association was found between maternal carbohydrate intake and the size of the pancreas body (0.164; $p < 0.05$) as well as between protein intake and aorta intima media thickness (r = 0.201; $p < 0.05$), while a negative association was found between polyunsaturated fat intake and left carotid intima media thickness (−0.179; $p < 0.05$). Conclusions: Dietary intake in this group did not indicate nutritional deficiencies. However, the low folate intake may be of concern. The association of fats with vascular wall thickness and the association of carbohydrate intake with increased pancreas size needs further investigation.

Keywords: dietary intake; pregnancy; children; ultrasound; pancreas; aorta; carotid arteries; alcohol; smoking

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