Dietary Patterns Prior to Pregnancy and Associations with Pregnancy Complications

Megan Jarman [1,†], Nonsikelelo Mathe [2,†], Fatemeh Ramazani [2], Mohammadreza Pakseresht [1,3], Paula J. Robson [3], Steven T. Johnson [2,4], Rhonda C. Bell [1,*] and the APrON and ENRICH study teams [1]

1 Li Ka Shing Centre for Health Research Innovation, Department of Agricultural, Food and Nutritional Sciences, Division of Human Nutrition, University of Alberta, Edmonton, AB T6G 2E1, Canada; jarman@ualberta.ca (M.J.); pakseres@ualberta.ca (M.P.)
2 Alliance for Health Outcomes Research in Diabetes (ACHORD), University of Alberta, Edmonton, AB T6G 2E1, Canada; mathe@ualberta.ca (N.M.); ramazani@ualberta.ca (F.R.); sjohnson@athabasca.ca (S.T.J.)
3 Cancer Research, CancerControl Alberta, Alberta Health Services, Edmonton, AB T5J 3H1, Canada; Paula.Robson@albertahealthservices.ca
4 Faculty of Health Disciplines, Athabasca University, Athabasca, AB T9S 3A3, Canada
* Correspondence: bellr@ualberta.ca
† These authors contributed equally to this work.

Abstract

Few studies have explored pre-pregnancy diet and its relationship with pregnancy outcomes. The objectives of this study were to: (1) derive pre-pregnancy dietary patterns for women enrolled in a prospective cohort in the province of Alberta, Canada; (2) describe associations between dietary patterns and socio-demographic characteristics; and (3) describe associations between dietary patterns and pregnancy complications. Upon enrolment into the Alberta Pregnancy Outcomes and Nutrition (APrON) study (median age of gestation, 17 weeks), women (n = 1545) completed a validated 142-item food frequency questionnaire recording food and beverages consumed "in the 12 months prior to pregnancy". Other assessments included pre-pregnancy body mass index (BMI), gestational weight gain, gestational hypertension, gestational diabetes, and socio-demographic characteristics. Dietary patterns were derived using principal components analysis. Scores were calculated to represent adherence with each dietary pattern retained. Four dietary patterns were retained, accounting for 22.9% of the variation in the overall diet. Dietary patterns were named the "healthy", "meat and refined carbohydrate", "beans, cheese and salad" or "tea and coffee" patterns. Higher "healthy" pattern scores prior to pregnancy were associated with lower odds of developing gestational hypertension during pregnancy (adjusted Odds Ratio (OR): 0.6, 95% Confidence Intervals (CI): 0.4, 0.9). Diet prior to pregnancy is an important target for interventions and may reduce the likelihood of developing complications such as gestational hypertension during pregnancy.

Keywords: pre-pregnancy, dietary patterns, principal components analysis, gestational complications