

Comparison of the Dietary Intakes of New Parents, Second-Time Parents, and Nonparents: A Longitudinal Cohort Study

Gabriella Nasuti, MSc; Chris Blanchard, PhD; Patti-Jean Naylor, PhD; Ryna Levy-Milne, PhD, RD*; Darren E. R. Warburton, PhD; Cecilia Benoit, PhD; Danielle Symons Downs, PhD; Ryan E. Rhodes, PhD

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*Certified in Canada.

ABSTRACT

The objective of this study was to examine the dietary intake profiles of first-time parents, second-time parents, and couples without children; once during pregnancy, then at 6- and 12-months postpartum. This was an observational, longitudinal, cohort study. Participants were a community-based sample of 153 couples aged 25 to 40 years. Data were collected between 2007 and 2011. Dietary intake was recorded using 3-day dietary recall. Hierarchical linear modeling was used to compare the dietary intakes of groups (ie, parent, sex, and couple days) over time. Percentage of participants per group meeting recommended daily dietary guidelines was also analyzed, as were variables that influenced meeting overall recommended guidelines using a multivariate analysis of variance. First-time mothers had higher overall energy, fat, sugar, fruit, and milk intake compared with women without children, and longitudinally first-time mothers decreased their fruit intake. Second-time mothers had higher overall energy, fat, sugar, and fruit intake compared with nonparent women, and longitudinally second-time mothers increased their meat intake. First-time fathers had overall higher bread intake compared with second-time fathers and men without children, and first-time fathers consumed less sugar than second-time fathers. Longitudinally, first-time fathers increased their fiber intake. At any stage of data collection, from pregnancy to 12-months postpartum, only 2% to 16% of all mothers met recommended overall daily dietary guidelines. The only variable investigated that influenced meeting overall daily dietary guidelines at baseline was parent status.

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THERE ARE NUMEROUS BENEFITS TO A HEALTHY dietary intake, including reduced risk of cardiovascular disease and premature all-cause mortality.^{1,2} It is especially important for pre- and postnatal women (and their infants) to have healthful diets. Studies have shown that human beings have sensitive windows for healthy dietary intake in terms of later outcomes. For example, inadequate maternal intake during critical periods in fetal development may contribute to cardiovascular disease in the child's later years.^{3,4} Perinatal diet influences proper neurodevelopment and bone mineralization into mid-childhood.⁵ There is also evidence supporting the concept of nutritional programming such that early dietary intake may influence adaptive changes in gene expression in adulthood.^{3,5} Regarding behavior-related benefits, there is also a modest correlation between parents' dietary intake and that of their preschool children⁶ and dietary intake seems to track from childhood well into the adult years.⁷

The transition to parenthood can have a large influence on health and health-promoting behaviors⁸⁻¹³; for example, decreased physical activity and increased body mass,^{11,14-18} as well as decreased sexual functioning of fathers. Dietary

intake may also be affected by becoming a parent; however, the direction of results appears less clear. A cross-sectional study (using telephone interviews) where researchers investigated the dietary intake of low-income women during early pregnancy with their first child reported that women scored low on the Dietary Quality Index score for pregnancy (compared with norms), which resulted from a high percent fat intake of total energy, greater than recommended energy intake, and inadequate calcium and iron intake.¹⁹ These women all consumed at least the recommended servings of grain, vegetables, and meat; however, most did not meet the recommended daily guidelines of fruit and milk servings.¹⁹ By contrast, a cross-sectional survey of middle-income (and mostly educated) women who were 3 to 6 months postpartum found that a large percentage of women had adequate intakes of meat (79%), milk (66%), and fruit (51%), but not vegetables (24%) and bread (14%) (compared with norms).²⁰ Further, a review of parents' health behaviors reported that they referred to a raised consciousness of their health habits as a result of having a child.²¹

Dietary intake behaviors have also been compared between parents and nonparents. Mothers with children aged 5

years reported greater intake of sugar-sweetened beverages, total energy, and percent of saturated fat compared with age-matched women without children; however, there was no difference in dietary intake between fathers and men without children.¹⁵ The presence of children younger than age 17 years in the home was associated with higher total fat and saturated fat intake among parents, which was not affected by age or sex of the adults.²² Parents have also been reported to skip meals less frequently than couples without children.²³ The only prospective cohort study tracked women from pregnancy to 2 years postpartum. Women were asked to compare quantity of food intake between 0 and 6 months postpartum and 7 to 12 months postpartum by answering the question, "How has the amount of food you eat now (at 12 months postpartum) changed compared with the first 6 months since you had your baby?" Most women reported either decreasing or not changing their food intake.²⁴ However, a significantly larger proportion of women were consuming 3 or more fruits and vegetables each day and eating breakfast daily at 24 months postpartum, compared with before their pregnancy.²⁵ The lack of cohort comparisons over time, limited research on fathers, and mixed findings from existing studies point to a need for research on dietary intake during the transition to parenthood and early years of parenthood.

The purpose of this study was to examine the dietary intake profiles of three cohorts of couples from pregnancy to 12 months postpartum. The cohorts were first-time parents during the first year of parenthood, second-time parents during the first year of parenting with a second child, and couples without children. The study objectives were to compare the dietary intake profiles of first-time parents, second-time parents, and couples without children at baseline (pregnancy for parents) and over time (6 months postpartum and 12 months postpartum), as well as to examine the extent to which dietary intake varied by sex and parent status; and to evaluate the proportion of participants (by parent group and sex) meeting recommended daily Canadian dietary guidelines across time, and variables that influenced meeting overall recommended guidelines for parent–sex groups.

METHODS

Procedure

Recruitment and data collection took place between January 2007 and January 2011 in two western Canadian cities. Participants were recruited at baby fairs; via posters or pamphlets in baby stores, prenatal classes, parenting service and health care centers, community centers, libraries, and coffee shops; via advertisements in newspapers and online; and via word of mouth (snowball). The study protocol was approved by the University's Human Research and Ethics Review Board and all participants provided written informed consent.

Interested couples contacted the researchers and underwent telephone screening to determine eligibility. Couples were eligible if they were between ages 25 and 40 years and belonged to one of the following three groups: couples expecting their first child, couples expecting their second child, and couples (married/common-law) without children. Couples became ineligible and were not included in the final sample if they experienced health complications due to

pregnancy or birth (eg, gestational diabetes, pre-eclampsia, and bed rest). Dietary intake was measured once during pregnancy, at 6 months postpartum, and at 12 months postpartum. Couples without children were assessed at 6-month intervals. A package with measurement tools (a 3-day dietary recall and a demographics questionnaire) was mailed to participants' homes and returned to the investigators. Participants received a T-shirt after completion of baseline measurements, as well as a \$25 per person honorarium that increased by \$5 for each subsequent wave of measures completed.

Measurements

Three-Day Dietary Recall. Dietary intake was recorded for 3 consecutive days: 2 weekdays, and 1 weekend day in the 3-day dietary recall. The validity^{26,27} and reliability²⁸ of the 3-day dietary recall has been previously established in adult populations. The 3-day dietary recall included detailed instructions and examples of how to record dietary intake of food and beverage (ie, type, name brand, ingredients of recipes or components of "combination foods," and amounts in volume, weight, or size). Data from the 3-day dietary recall was entered into The Food Processor (The Food Processor version 10.2.0, 2008, ESHA Research). The Food Processor estimates dietary nutrient content and uses the Canadian Nutrient File²⁹ to estimate servings from the food groups according to Canada's Food Guide to Healthy Eating.³⁰ Nutritional variables assessed were: overall energy, fiber, sugar, fat, bread servings, fruit servings, vegetable servings, milk servings, and meat servings.

Demographics Questionnaire. The questionnaire included a total of nine questions on demographics (eg, age, race, and parent status) and healthy lifestyle practices (eg, smoking). The questionnaire was developed by the primary investigators and has been used in previous studies.

Statistical Analysis

Data from The Food Processor were analyzed in SPSS (version 19.0, 2010, IBM-SPSS Inc); a *P* value of 0.05 was used to determine statistical significance. Descriptive findings were generated for the demographic and clinical variables by couple status followed by the calculation of attrition rates. Given the nested structure of the data (ie, individual repeated assessments [Level 1] nested within the couple [Level 2]), hierarchical linear modeling was used.^{31,32} This analysis could readily incorporate all participants who provided at least one data point (eg, a baseline assessment) under the missing at random assumption.³¹ For a given nutrition variable, a Level 1 no intercept model was specified such that a main effect was entered if the participant was a man (0=woman and 1=man), woman (0=man and 1=woman), a linear trend toward men (0=baseline, 1=6 months, and 2=12 months), and a linear trend toward women with all coefficients set to random. In this model, the main effects for the mens' and womens' intercepts represented their respective baseline levels for a given dietary variable, whereas the linear trends represented the change in a given dietary variable over each 6-month interval. At Level 2, the parent status variables were entered into the regression to predict all Level 1 coefficients controlling for age, education, and employment. Specifically,

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