Preventive Medicine Reports 2 (2015) 429–435

Contents lists available at ScienceDirect

Preventive Medicine Reports

journal homepage: http://ees.elsevier.com/pmedr

Changes in mode of transportation to work or school from pre-pregnancy to early pregnancy in the Norwegian Fit for Delivery study

Marianne Skreden [a,*], Nina C. Øverby [a], Linda R. Sagedal [b], Ingvild Vistad [b], Monica K. Torstveit [a], Hilde Lohne-Seiler [a], Elling Bere [a]

[a] Department of Public Health, Sports and Nutrition, University of Agder, Norway
[b] Department of Obstetrics and Gynaecology, Sørlandet Hospital, Kristiansand, Norway

ARTICLE INFO

Available online 12 May 2015

Keywords:
Active transportation
Biking
Commuting
IPAQ
MET-score
Physical activity
Pregnancy
Private transportation
Public transportation
Walking

ABSTRACT

Objective. To describe changes in mode of transportation to work or school from pre-pregnancy to early pregnancy, to describe levels of physical activity related to mode of transportation to work or school, and to examine associations between changes in mode of transportation to work or school and educational level, body mass index (BMI) and age.

Methods. Between September 2009 and February 2013, 575 healthy pregnant nulliparous women were included into the Norwegian Fit for Delivery (NFFD) trial. At inclusion they reported their current and their pre-pregnancy mode of transportation to work or school. Data were analysed by multilevel mixed models with dichotomized modes of transportation as dependent variables.

Results. There was a significant change towards less active transportation to work or school and a decrease in level of physical activity from pre-pregnancy to early pregnancy. Pre-pregnancy, 58% used private transportation to work or school, compared to 64% in early pregnancy ($p = 0.001$). The percentage of women who biked (11% v. 5%, $p < 0.001$) decreased significantly from pre-pregnancy to early pregnancy.

Conclusions. In this sample of Norwegian women there was a significant change towards less active transportation to work or school and lower levels of physical activity from pre-pregnancy to early pregnancy.

© 2015 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Introduction

Active transportation is a feasible way to incorporate physical activity into daily life and has substantial public health (Laverty et al., 2013) and environmental benefits (Woodcock et al., 2009). Research has shown that people who use active modes of transportation (walking, biking and public transportation) to work increase their daily level of physical activity compared to those who use private transportation (Yang et al., 2012). Mode of transportation is influenced by underlying factors such as gender (Laverty et al., 2013; Millett et al., 2013; Panter et al., 2011; Pucher et al., 2010a), ethnicity (Laverty et al., 2013; Thern et al., 2015), age (Laverty et al., 2013; Millett et al., 2013; Saris et al., 2013), and level of education (Goodman et al., 2012; Laverty et al., 2013; Panter et al., 2011). Other important aspects are; distance from home to work (Goodman et al., 2012; Panter et al., 2011), convenience of public transportation (Wen et al., 2010), access to workplace car parking (Goodman et al., 2012; Wen et al., 2010) and travel safety (Bopp et al., 2014; Saris et al., 2013).

Women are more likely than men to walk (Laverty et al., 2013; Panter et al., 2011; Yang et al., 2012) or use public transportation (Laverty et al., 2013; Vagane L, 2009), but less likely to use private transportation or bike to work (Garrard et al., 2006; Laverty et al., 2013; Panter et al., 2011; Rissel et al., 2012; Yang et al., 2012). The gender difference in biking is however, not found in countries with an established culture for biking (Pucher et al., 2010a; Scheepers et al., 2013). Furthermore, female bikers are more concerned about safety (Garrard et al., 2006; Saris et al., 2013), and more sensitive to environmental and workplace support (Bopp et al., 2014) than men.

Low to moderate intensity levels of physical activity during pregnancy have several beneficial maternal health effects (Nascimento et al., 2012). Women who plan to get pregnant and pregnant women without any obstetric or medical complications are advised to undertake at least 30 min of moderate intensity physical activity a day on most, if not all, days of the week (ACOG Committee Opinion Number 267, 2002; Norwegian Directorate of Health, 2014). The majority of pregnant women do not meet these recommendations (Gaston and Cramp, 2011; Gjestland et al., 2013; Hegaard et al., 2011), and although there are few contraindications to moderate physical activity in pregnancy, reduction in the amount and level of physical activity is the norm

* Corresponding author at: PO Box 422, 4604 Kristiansand, Norway.
E-mail address: Marianne.skreden@uia.no (M. Skreden).

http://dx.doi.org/10.1016/j.pmedr.2015.05.002
2211-3355/© 2015 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

from pre-pregnancy to pregnancy (Gaston and Cramp, 2011; Hegaard et al., 2011; Juhl et al., 2012; Liu et al., 2011; Owe et al., 2009; Pereira et al., 2007).

In many countries the employment rate among women is high making active transportation to work or school one way to integrate physical activity into pregnant women's day-to-day routine (WHO, 2002), thus making adherence easier (Das and Horton, 2012).

We aimed to describe pre-pregnant and early pregnant mode of transportation to work or school and changes in modes of transportation to work or school from pre-pregnancy to early pregnancy in a cohort of Norwegian nulliparous women, to examine associations between modes of transportation to work or school and level of physical activity, and to examine potential associations between change in modes of transportation to work or school and maternal education, BMI and age.

Methods

Population and study design

The present article is based on data from the NFFD randomised controlled trial (Sagedal et al., 2013). Nulliparous women were consecutively recruited from eight antenatal clinics around Kristiansand in Southern Norway from September 2009 to February 2013. Further inclusion criteria have previously been published (Sagedal et al., 2013). For the present study women who did not work or study pre-pregnancy or at inclusion were excluded.

Assessment of mode of transportation to work

At inclusion, in median gestational week 15.0 (range; 7.0–20.0 weeks), the women answered the questions; "How do you usually get to work/school now?" and in retrospect; "How did you usually get to work/school before pregnancy?" Respondents were asked to indicate which of the five listed transportation modes represented their main mode of travelling to work/school: "walk", "bike", "public transportation", "car" or "motorcycle/scooter/moped". It was only possible to select one main mode. Thus, information on multi-mode transportation was not captured. The two items; "car" and "motorcycle/scooter/moped" were pooled into one item labelled "private transportation". Modes of transportation were dichotomized into "walking" (=1) and "not walking" (=0), "biking" (=1) and "not biking (=0), public transportation" (=1) and "not public transportation" (=0), "private transportation" (=1) and "not private transportation" (=0).

Based on data from a previous study (Overby et al., 2015) where pregnant women reported pre-pregnant and current mode of transportation to work or school 14 days apart, the test–retest agreement was 95% (88 out of 93) (kappa measure of agreement 0.80) and 89% (85 out of 95) (kappa measure of agreement 0.73) for pre-pregnant and current mode of transportation to work or school, respectively.

Other study variables

Pre-pregnant physical activity levels were assessed with the International Physical Activity Questionnaire short version (IPAQ-S) (2005). IPAQ-S assesses physical activity level in all arenas (leisure-time, occupation, house-hold and transport) the last seven days. MET (Metabolic Equivalent Task) score (MET-minutes $\times$ week^{-1}) was calculated as outlined in the IPAQ manual (2005) for the last seven days. A questionnaire regarding lifestyle and background factors such as educational level and maternal age was filled in at inclusion. The response options on level of education were: < 7 years of primary education; 7–10 years of primary education; 11–12 year education; trade school or 1–2 years of high school; completed high school; <4 years at college/university and ≥4 years at college/university. Education was dichotomized into low education (not having attended college or university) and high education (having attended college or university). Height was measured to the nearest centimetre (cm), using a Seca Leicester portable stadiometer with an accuracy of 0.1 cm. Weight prior to pregnancy was self-reported and used for calculation of pre-pregnancy BMI (weight/height^2). According to the World Health Organization's definition of normal weight and overweight/obese (World Health Organization, 2000), we dichotomized: BMI < 25 kg/m^2 and BMI ≥ 25 kg/m^2. Maternal age was dichotomized <25 years versus ≥25 years.

Statistical methods

Maternal characteristics are presented as the mean ± standard deviation (SD) for continuous variables and numbers and percentages for categorical variables. MET-scores are presented as mean and 95% confidence intervals (CIs). Chi-square statistics or Fisher's exact test were used when appropriate for comparison of categorical data. One-way ANOVA and Tukey post hoc analysis or unpaired two-sided Student *t*-test were used to compare multiple or two groups, respectively. For repeated measures we used repeated measures ANOVA and Bonferroni post-hoc analysis. Mode of transportation and the changes in mode of transportation from pre-pregnancy to early pregnancy were analysed using a multilevel linear mixed model with dichotomized transportation variables as the dependent variables (Hellevik, 2009). According to the present literature, there might be a difference in pregnant women's modes of transportation depending on educational level, BMI and age (Evenson and Wen, 2011; Liu et al., 2011; Owe et al., 2009). Thus, the model included maternal educational level, BMI and age, as well as the following interaction terms: time × maternal education, time × BMI and time × age to investigate potential differences in changes in the means of transportation from pre-pregnancy to median gestational week 15 between low and high maternal educational level, BMI and age. A significant effect was defined by a p value of the product term of less than 0.10. The analyses were performed with SPSS 22.0 (SPSS, Inc., Chicago, IL). Statistical analyses were conducted as two-tailed tests with a 0.05 level of significance.

Results

The inclusion of 575 pregnant women was per protocol (Sagedal et al., 2013) (Fig. 1). There was no difference in pre-pregnant BMI or gestational age between included and excluded women, but the excluded women had a lower educational level ($p < 0.001$) and were younger ($p = 0.020$) than the included women.

Baseline characteristics

Baseline characteristics are described in Table 1. Mean maternal age at inclusion was 28.2 (SD 4.3) years, mean pre-pregnant BMI was 23.8 (SD 3.7) kg/m^2, and mean pre-pregnant MET-score was 2334 (SD 2011) MET-minutes × week^{-1}.

Mode of transportation

Changes in the modes of transportation from pre-pregnancy to early pregnancy are presented in Fig. 2. The greatest change was seen among the women who reported to bike pre-pregnancy: only 46% continued to bike in early-pregnancy. A similar trend was seen among women who walked pre-pregnancy: 63% continued to walk. Among women who used public transport pre-pregnancy 81% continued with public-transportation, and almost all (97%) of those travelling with private transportation pre-pregnancy continued the same transportation in early pregnancy (Fig. 2). Three women reported driving motorcycle/scooter/moped both pre-pregnancy and in early pregnancy.

Private transportation was used by 58% pre-pregnancy, compared to 64% in early pregnancy ($p = 0.001$). The percentage of women who

Download English Version:

https://daneshyari.com/en/article/4202450

Download Persian Version:

https://daneshyari.com/article/4202450

Daneshyari.com