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Actively preparing for pregnancy is associated with healthier lifestyle of women during the preconception period

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ABSTRACT

Objective: To assess whether actively preparing for pregnancy by women is associated with lifestyle changes during the preconception period.
Design: retrospective cross-sectional study.
Setting: primary care community midwifery practice in the Netherlands.
Participants: convenience sample of 283 women who received antenatal care.
Measurements and findings: the association between pregnancy preparation (defined as searching for information and/or consulting a healthcare provider) and preconception lifestyle changes (healthier diet, folic acid, alcohol and tobacco cessation) was measured and adjusted for age, body mass index and educational level. Almost 60% (n=160) of women acquired preconception information themselves and 25% (n=68) consulted a healthcare provider regarding their pregnancy wish. The former group was significantly more likely to quit drinking (adjusted OR 5.46 (95% CI 1.76–16.96)), improve their diet (adjusted OR 7.84 (95% CI 3.03–20.30)) and use folic acid (adjusted OR 3.90 (95% CI 2.00–7.62)) compared with women who did not prepare for pregnancy. Effect sizes were even larger for women who (also) consulted a healthcare provider with regard to folic acid use, healthier diet and smoking cessation.
Key conclusions: gathering preconception information, either by women themselves or by means of a PCC consult, is associated with women positively changing lifestyles during the preconception period.
Implications for practice: we recommend to not solely focus interventions on increasing the uptake of PCC consults, yet providing a suitable offer of preconception health information, which enables women to properly inform themselves.

Introduction

Preconception care (PCC) is defined as “a set of interventions that aim to identify and modify medical, behavioral and social risks to a woman's health or pregnancy outcome through prevention and management” (Johnson et al., 2006). PCC provides a window of opportunity to timely alter or eliminate these risks by focusing on the period prior to conception (Johnson et al., 2006; Lu, 2007). Over the past decades the prevalence of adverse pregnancy outcomes, such as preterm birth, congenital birth defects, maternal complications and mortality rates, has decreased only moderately (Atrash et al., 2006). Antenatal care is often initiated too late, as the booking visit generally takes place near the end of the first trimester (Temel et al., 2013; Feijen-de Jong et al., 2015). Preventive actions are needed to address risk factors during the first gestational weeks, which are critical for fetal growth and development (Atrash et al., 2006; Johnson et al., 2006; Moos, 2006).

Several studies have shown that almost all women who are planning a pregnancy have at least one risk factor that could adversely affect pregnancy outcomes (Jack et al., 1998; van der Pal-de Bruin et al., 2008). These risk factors include lifestyle that can be altered, such as smoking, alcohol consumption, nutritional intake and folic acid

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supplementation (Atrash et al., 2006). However, few women planning a pregnancy appear to comply with preconception health recommendations and health behaviors are generally not changed before conception (de Weerd et al., 2003; Inskip et al., 2009; Chuang et al., 2011; Lum et al., 2011). Although PCC has demonstrated to improve health behaviors and decrease risk factors, not many couples are aware of the possibility of PCC and uptake rates remain low between 27% and 39% (Frey and Files, 2006; Elsinga et al., 2008; Mazza and Chapman, 2010; Hammiche et al., 2011; Williams et al., 2012; Oza-Frank et al., 2014; Stephenson et al., 2014).

Recent studies show that despite several policy initiatives to improve the delivery of PCC among providers, there is still no comprehensive PCC program or routine offer to all couples with a potential desire to conceive in the Netherlands (M'hamdi et al., 2016; Poels et al., 2017; van Voorst et al., 2016). Previous research also showed that women perceive several barriers for the use of PCC, among which lack of awareness, perceived sufficient knowledge and the wish for secrecy (Hosli et al., 2008; Mazza and Chapman, 2010; van der Zee et al., 2013; Poels et al., 2016). Yet, little is known about (other) ways in which women acquire their knowledge regarding preconception health and risk factors. Thus, it is important to gain insight in women's information seeking behavior and experiences while preparing for pregnancy, in order to improve PCC use. In a survey conducted by Frey and Files, women were asked about their preferences regarding preconception health, with only a minority stating that they would seek information from sources different than healthcare providers (Frey and Files, 2006). By contrast, a study from the UK found that although less than 30% of women visited a healthcare provider for advice, they commonly searched for preconception information elsewhere (Stephenson et al., 2014). Yet, it remains unclear whether women succeed to reduce preconception risk factors based on information they acquired themselves. The aim of this study was to assess whether actively preparing for pregnancy through information seeking or PCC consultation is associated with lifestyle changes during the preconception period.

Methods

Study sample

For this retrospective study we sent out a questionnaire to women who gave birth between January and September 2013. Participants were recruited from the only community midwifery practice in the Dutch municipality Zeist. Women were excluded in case of miscarriage or stillbirth. In February 2014, 455 women received an e-mail invitation from the community midwifery practice. Respondents were offered the possibility to fill out the questionnaire online, to receive a hard copy on their home address or to make an appointment to conduct the questionnaire with a researcher by telephone. Reminders were sent by e-mail after two and four weeks. After six weeks non-responders were approached by telephone.

Data collection and definitions

The questionnaire was developed specifically for this study. The literature was searched for relevant questionnaires to compose the framework (Statistics Canada, 2006; Public Health Agency of Canada, 2009; Landkroon et al., 2010; Scheerhagen et al., 2015). The final version was developed in collaboration with a team of experts. Eleven pregnant women who came in for a regular check-up at the midwifery center tested the feasibility of the questionnaire. Based on their suggestions some minor changes were made.

The final questionnaire consisted of 66 questions, divided over five sections: experiences with preconception care, needs for preconception care, lifestyle and risk factors, obstetrical history, and demographic characteristics. Participants were asked to answer questions in retrospect regarding their most recent pregnancy. All answers were self-reported; no data was extracted from medical files or registers. Preconception care was defined as: "*all kinds of care and information you receive, before you conceive, to prepare your pregnancy as good as possible*". In this study, the preconception period was defined by the period prior to pregnancy recognition. Pregnancy preparation was defined by two key variables: information seeking behavior and PCC use. Information seeking behavior was assessed by the question: "*Did you retrieve any information by yourself prior to the positive pregnancy test about becoming pregnant in a healthy manner?*" PCC use was assessed by the question: "*Did you consult a healthcare provider prior to the positive pregnancy test about becoming pregnant?*" A consult with a healthcare provider was considered a PCC consult when at least one of the following topics was discussed in the context of becoming pregnant: fertility, nutrition, healthy weight, folic acid, vitamins, smoking, alcohol, drugs, medication use, psychological health, stress, chronic illness, hereditary diseases, prenatal testing, housing and working conditions. To study the association between pregnancy preparation and changes in lifestyle, we assessed the presence of four preconception risk factors: smoking and drinking cessation, folic acid intake and healthier diet. In the questionnaire, educational level was defined according to the classification of Statistics Netherlands (Statistics Netherlands, 2006). For analysis, education level was categorized into low, moderate and high education (low: none, lower vocational education, lower secondary education; moderate: intermediate vocational education, high school, pre-university education; high: higher vocational education, university). Household income was a non-mandatory question, categorized according to the percentiles of disposable household income of the Netherlands (Statistics Netherlands). The questionnaire was available only in Dutch, since the vast majority of the population of Zeist masters the Dutch language. An explanation on confidentiality, anonymity and the purpose of the study was given prior to the questionnaire. Informed consent was obtained from all individual participants included in the study. The study and questionnaire have been approved by the Medical Ethics Committee of the UMC Utrecht (protocol no. 13-475).

Statistical analyses

Baseline data for all respondents were presented as medians and interquartile range (IQR) for continuous variables or as numbers and percentages for categorical variables. Univariate logistic regression analysis was used to identify demographic characteristics and preconception risk factors that are associated with pregnancy preparation. Pregnancy preparation was categorized into: no preparation, only searching for information and having a PCC consult. The latter group included women who also searched for information. Subsequently, statistical significant variables were used in a backward multivariate logistic regression analysis to develop a model of predictors for pregnancy preparation.

To study the association between pregnancy preparation and preconception lifestyle changes, four parameters were analyzed which are amenable to change and have the potential to improve pregnancy outcomes: smoking and drinking cessation, folate intake and healthier diet. Logistic regression analyses with lifestyle change as outcome variable were performed to calculate crude odds ratios (OR) and accompanying 95% confidence intervals (CI). Adjusted odds ratios were calculated, taking into account the potential confounders age, BMI and educational level. Ethnicity and household income were not entered in the adjusted analysis, because of collinearity with educational level.

All data were analyzed using SPSS version 22.0 (IBM Corporation, 2013). *P*-values < 0.05 were considered statistically significant unless otherwise indicated.