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Original Article

Substance use and self-medication during pregnancy and associations with socio-demographic data: A cross-sectional survey

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ABSTRACT

Objective: To identify women vulnerable to substance use and self-medication during pregnancy based on associations with socio-demographic data.
Methods: Data were collected in person, with self-developed questionnaires, from pregnant women (n = 422) in Chengdu, China, from July to November 2012. Multivariate logistic regression analysis was used to reveal associations with socio-demographic parameters.
Results: Higher educational background, being employed, and higher educational background of the mother were associated with a 37% [odds ratio (OR):0.63, 95%CI:0.45–0.89], 65% (OR:0.35, 95%CI:0.13–0.94), and 29% (OR: 0.71, 95%CI:0.53–0.96) less likelihood of alcohol use, respectively. Adverse pregnancy outcome was associated with a 2.13-fold (OR: 2.13, 95%CI: 1.07–4.25) greater likelihood of alcohol use. Young age and higher educational background were associated with an 11% (OR: 0.89, 95%CI: 0.81–0.98) and 31% (OR:0.69, 95% CI:0.49–0.98) less likelihood of cigarette smoking, respectively.
Conclusion: Socio-demographic parameters were associated with substance use during pregnancy and warrants targeted health education provided by nurses to pregnant women.

1. Introduction

Many studies have demonstrated that substance use and self-medication during pregnancy affect the health of the fetus [1,2]. For example, maternal smoking during pregnancy impairs fetal growth [3], and shortens gestation, causing premature birth [4]. Alcohol has been clearly established as a teratogen as early as the 19th century. Maternal alcohol consumption during pregnancy has even been associated with a significantly increased risk of acute myeloid leukemia in infants [5]. Exposure to caffeine during pregnancy has been associated with an increased risk of spontaneous abortion [6],

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low birth weight [7], and also still-birth [8]. Caffeine exposure may furthermore preferentially adversely affect fetal skeletal growth [9]. Finally, drug exposure during pregnancy can cause low birth weight, longer birth hospitalization, premature birth, feeding problems, and respiratory problems in fetuses and newborns [10].

Previous studies have shown high prevalence rates of cigarette smoking, alcohol use, caffeine intake, and self-medication during pregnancy in other countries as well as China. For example, 36% of infants born in the UK were exposed to maternal smoking prenatally [11], and 21% of pregnant Puerto Rican women smoked during pregnancy [12]. A cross-sectional survey in Shanghai, China revealed that the prevalence of maternal smoking was 2.4% [13]. Self-reported alcohol use during pregnancy was reported to be 16% in Brazil [14], while in Jiang Xi province, China, approximately 46.8% of pregnant women reported alcohol use during pregnancy [15]. Regular coffee intake during pregnancy was reported by about 23.4% of Portuguese women [16], and self-medication occurred in 11.3% of pregnant women in Brazil [14].

Based on the prevalence and adverse effect of maternal cigarette smoking, alcohol use, caffeine consumption, and self-medication, our goals were first, to determine the prevalence of substance use and self-medication during pregnancy in our targeted city, and second, to determine the impact factors associated with substance use and self-medication in an attempt to improve prenatal nursing, especially regarding the heath education of maternal substance use and self-medication.

2. Study design and methods

2.1. Ethics statement

Written informed consent was obtained from participants before data collection. Participants received compensation following completion of the interview.

2.2. Study design

A cross-sectional survey was conducted to determine the prevalence of substance use and self-medication, and association with socio-demographic data. The study was carried out in the out-patient department of hospitals where pregnant women were waiting to see a physician for a prenatal check-up. Participants were recruited at four hospitals in Chengdu, China, from July 2012 to November 2012. Data were collected in face-to-face interviews by 8 trained interviewers, who were native Chinese registered nurses, using self-developed questionnaires. The entire interview lasted between 10 and 20 min.

2.3. Sample size

As the prevalence rates of substance use and self-medication were between 2.4% [13] to 46.8% [15], the sample size necessary to achieve significance was calculated with the following formula:

$$n = u^2\pi(1-\pi)/\delta^2$$

$$n = 1.96^2 \times 0.468 \times (1-0.468)/0.05^2 = 383$$

An extra 20% was allotted for potential dropout candidates, so that the final sample size was 460.

2.4. Questionnaire and variables

The questionnaire was divided into two sections. The first section concerned socio-demographic data, including age, employment, history of adverse pregnancy outcome, monthly income, parity, and educational background of the participant and her immediate family members (husband, mother, and mother-in-law). The second section addressed substance use (cigarette smoking, alcohol use, and caffeine intake) and self-medication during pregnancy. For cigarette smoking, alcohol use, and caffeine intake, participants were asked to report whether they smoked, used alcohol or drank coffee or tea during pregnancy. If the answer was "yes", they were asked to report the average frequency per week. For self-medication, women were asked to report whether they had ever self-medicated during pregnancy. Based on the pre-survey, the questionnaire had a Chronbach's α value of 0.893.

2.5. Data analysis

Statistical analysis was performed with SPSS version 20.0 software (released 2011, IBM Corp.; Armonk, NY, USA). Frequency, proportion, and the mean were used to describe socio-demographic data. Dichotomous variables for substance use and self-medication during pregnancy were evaluated as outcomes in separate multiple logistic regression models. Socio-demographic factors were assessed as predictors of substance use and self-medication during pregnancy. In these models, predictors that exhibited significant ($p < 0.05$) or borderline significant ($p < 0.20$) association with outcomes at the bivariate level were added to the multivariable models. The likelihood ratio test was used to determine the best fitting model. Final multivariate logistic regression models were used to calculate the adjusted odds ratio (OR) and 95% CIs.

3. Results

3.1. Socio-demographic factors of participants

A total of 422 pregnant women completed the entire interview/questionaire. The other 38 refused to participate initially or quit at some point during the interview (Fig. 1). The age range of the cohort was 20, to 42 years. Most were 26–34 years of age; the mean was 29.57 ± 3.966 years. Approximately 75% of the women and 80% of their husbands had an educational background of college or higher. The predominant educational level of the mother and mother-in-law was middle school or lower. The majority of the women were employed, with more than 50% earning a monthly income of more than 800 USD. Most were nulliparous with 20% having experienced an adverse pregnancy outcome (Table 1)