Caffeine, Alcohol and Tobacco Pattern Use and Risk Factors in Use Risk During Pregnancy in the Middle Zone of Northeastern Thailand

Thongthai Thisophin[1], Boonjaraspinyo Sirintip[2]

[1]*Doctoral Student of Community Health Development Program, Faculty of Medicine, Khon Kaen University,*
[2]*Assistant Prof, Department of Community Medicine, Faculty of Medicine, Khon Kaen University*

Abstract

Background: Prenatal substance use is a public health problem deserving the highest priority of attention because it poses devastating risks of maternal and fetal consequences. Situational analysis of current substance use in pregnancy and its risk factors is essential for effective preventive strategies for maternal and child health. This study explored the prevalence of risky substance use (caffeine, alcohol, and tobacco) along with associated factors patterning among pregnant women in the middle zone of Northeastern Thailand.

Method: This cross--sectional study was conducted in 58 district hospitals located in the middle zone of northeastern Thailand. The participants were 944 pregnant women attending antenatal clinics chosen based on consecutive sampling. Data collection used a questionnaire, and data analysis used multiple logistic regression.

Result: More than two-thirds of the pregnant women (70.1%) reported current substance use, including caffeine (61.6%), alcohol (20.7%), and tobacco (3.3%). Risk factors such as family caffeine use (AOR=2.83, 95%CI: 2.02-3.97) and couple relationship (AOR=1.58, 95%CI: 1.07-2.33) were found to be associated with caffeine in use risk, while marital status (AOR=2.53, 95%CI: 1.11-5.77), couple relationship (AOR=2.27, 95%CI: 1.05-4.91), and family alcohol use (AOR=3.54, 95%CI: 1.49-8.42) were those associated with alcohol in use risk. It was notable that while family tobacco use (AOR=3.85, 95%CI: 1.05-14.06) was associated with tobacco in use risk, age was found to be its protective factor (AOR=0.31, 95%CI: 0.10-0.95) among those in the tobacco use risk group.

Conclusion: Currently there is strong evidence about the risky substance use during pregnancy. Modification solutions for suitable consumption behavior should targeted pregnant women with family substance use, poor couple relationships, single status and more than 20 years, old.

Key words: *caffeine, alcohol, tobacco, risk factors, pregnancy, Thailand*

Introduction

Substance abuse is a worldwide problem. In 2014, an estimated over 29 million people who use drugs suffer from drug use disorders. Moreover, 43.5 per million deaths are drug-related [1]. According to the UNODC's World Drug Report, women are particularly affected by this kind of substance use [2,3]; substance use in pregnant women has been widely recognized as a challenge to public health concerns in many countries. Women with substance abuse during pregnancy are at significant risk of adverse obstetric and perinatal outcomes with their children [4,5]. Consumption of caffeine, a psychoactive substance during pregnancy is associated significantly with spontaneous abortion and fetal loss [6,7].

Corresponding author:
Sirintip Boonjaraspinyo
Department of Community Medicine, Faculty of Medicine, Khon Kaen University, 40002, Thailand,
Email: sboon@kku.ac.th
Tel: 66 (0) 43 363588; Fax: 66 (0) 43 202488

A national survey conducted in the United States among pregnant women found that 8.5% drink alcohol and 15.9% smoke cigarettes [8]. A similar pattern of this substance use has been seen in many countries [9-11]. In Thailand, there is little available evidence on the extent of substance use among pregnant women. Recently, substance use (alcohol and tobacco) during pregnancy in Northern and Southern Thailand was reported [12-14].

However, there have been no studied of substance use in Northeastern Thailand in particular patterns of legal substance use in women during pregnancy. These substance uses are easy to assess, and there are no restrictions among pregnant women. Therefore, this study presents a cross-sectional survey of the patterns of substance use and the associated risk factors among pregnant women that serves to estimate magnitudes of problems, intensity of and factors associated with risk patterns of substance use during pregnancy. Thus, this study aims to assess the patterns of substance use and the associated risk factors among pregnant women with risk patterns of substance use during pregnancy.

Materials and Method

This cross-sectional study was conducted during December 2016 to May 2017 in 58 antenatal care clinics of secondary care units in four provinces (Khon Kaen, Kalasin, Mahasarakham, Roi Et) in the middle zone of Northeastern Thailand. A consecutive sampling technique was used to select participants. The sample size was calculated using the formula for n in sampling for proportions. [15] The final sample size was 944 pregnant women.

The self administered questionnaire was composed of 2 parts, *(1) Demographic and obstetric characteristics and (2) Current substance use behavior*, developed from AUDIT (Alcohol Use Disorders Identification Test) Thai version [16]. There are 10-items for each substance use, which covers the domains of caffeine consumption, drinking alcohol and smoking tobacco. Scores can range from 0 to 40, (score 0-7 indicates low risk, 8-15 indicates hazardous use, 16-19 indicates harmful use and 20 or more indicates dependence). The cut-off point for identifying a potential substance use problem is more than 8. The content validity index of this questionnaire was 0.93. Cronbach alpha co-efficient were 0.85.

The descriptive and analytical statistics were analyzed using IBM SPSS statistics soft-ware Version 26.0. Respondent characteristics were described by frequency and percentage. Factors independently associated with substance use in risk level were assessed by multiple logistic regression. The results were considered statistically significant when $p < 0.05$.

Results

Among the 944 pregnant women who volunteered for this survey, 25.5% were adolescents. The mean age was 24.9 years (SD = 6.71). Most (91.8%) of the pregnant women had completed a lower bachelor's degree, and 66.5% were employed.

Current substance use was found in 624 pregnant women (70.1 %). The women with substance use were caffeine use 61.6%, alcohol use 20.7% and tobacco use 3.3%. Pregnant women at risk of substance abuse were 236 individuals (35.6 %): caffeine use risk 44.9 %, alcohol use risk 22.6%, and tobacco use risk 63.6%.

Risk factors significantly associated with caffeine risk use were family caffeine use (AOR=2.83, 95%CI: 2.02-3.97) and poor couple relationships (AOR=1.58, 95%CI: 1.07-2.33). Risk factors associated with alcohol risk use were being single (AOR=2.53, 95%CI: 1.11-5.77), having poor couple relationship (AOR=2.27, 95%CI: 1.05-4.91) and family alcohol use (AOR=3.54, 95%CI: 1.49-8.42). The risk factor associated with tobacco risk use was family tobacco use (AOR=3.85, 95%CI: 1.05-14.06), while age was a protective factor (AOR=0.31, 95%CI: 0.10-0.95).

Discussions

This is the first report on patterns of caffeine, alcohol and tobacco use by pregnant women, and substance risk use factors in Northeastern Thailand. Seventy percent of pregnant women reported current use of substance, with caffeine being the most commonly used, followed by alcohol and tobacco. These finding indicate high use of legal substances during pregnancy in these areas.

That three out of five pregnant women currently using caffeine was similar to previous studies by Vitti et al. [17], but less than Jarosz, Wierzejska and Siuba [18] who found 98.4% of pregnant women using caffeine. The percentage of pregnant women was higher than sixty percent in many countries because this substance use was thought to have little effect, although use can cause fetal loss.[19–20] Current alcohol use was one in five in pregnancy; this finding was higher than other studies [21,22] because Thai alcohol purchase rules and related

regulations do not cover the pregnancy group.[23] The pregnant smokers in this study were similar with report in Northern Thailand that pregnant women smoke [12, 13] but lower than USA[24], Canada[25] and India [11].

There were many risk factors associated with substance use in risk level in pregnant women. The results with confounders adjustment showed that family member use of each substance (caffeine, alcohol and smoking) was associated with pregnant use risk. This risk factor correlates with the study by Hans et al. [26] that showed that substance-abusing pregnant women often have family histories of factors of substance abuse.

Couples having poor relationships were associated with more chance of risk use in two substances (caffeine and alcohol). Moreover, pregnancy while being single was associated with increased alcohol use during pregnancy; this finding was similar to the study by Foitier, 1993[27] that women without a partner had higher substance use. Higher social support was associated with risk of drinking during pregnancy. A higher score for social drinking motivation increased the likelihood of drinking during pregnancy [28].

Interestingly, pregnant women with age over/equal to twenty years were the protective factor of pregnant smokers, corresponding to the Drake et al study [29], as smoking prevalence reduces along with the age of pregnant women, but different from Singh et al. study [11] in which pregnant women aged above 25 used tobacco during pregnancy.

Conclusion

The high legal use of substances during pregnancy in these areas could potentially be harmful to maternal and fetal health. Modification solutions for suitable consumption behaviors should be targeted at pregnant women with family substance uses. Specific solutions should be targeted to strengthening good couple relationships for caffeine use risk individuals, and to couple relationships and marital status for those with alcohol use risk. All result should be used- to find substance use preventive strategies for maternal and child health.

Ethical Clearance: Taken from the Ethics Committee for Research on Human Subjects (HE591320).

Conflicts of Interest: The authors have no conflict of interest in relation to the content of this article.

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