

Factors Associated with Spontaneous Abortion among Reproductive Aged Women

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ABSTRACT

Introduction: One of the adverse outcomes of pregnancy is spontaneous abortion (SA), which poses a significant obstacle for maternal health promotion. The present study is aimed to examine the factors associated with SA among reproductive aged women.

Method: A hospital-based case-control study was conducted at tertiary hospital Lalitpur, Nepal. The consecutive sampling technique was used to select the cases (84) and purposive sampling technique was used for controls (168) in a 1:2 ratio. Ethical approval was obtained. Data were collected through face to face interviews using a structured questionnaire. Descriptive and inferential statistics analysis (Chi-square and Fisher exact test) were used for analyzing the data. P-value was set at 0.05.

Results: We found that the type of family, preconceptionally intake of folic acid and antenatal checkup were significantly associated with spontaneous abortion. Similarly, monthly income was inversely associated with the SA (p-value < 0.05).

Conclusion: Based on the findings of our study it can be concluded that socio-demographic variables (staying in the joint or nuclear family, intake of folic acid, monthly income and antenatal checkup) and reproductive history also play significant role for spontaneous abortion.

Keywords: Factors associated; reproductive aged women; spontaneous abortion.

INTRODUCTION

Spontaneous abortion (SA) is the loss of pregnancy naturally before twenty-two weeks of gestation, which is the most frequent adverse outcome during pregnancy.

[1,2] It is the most common complication during early pregnancy which covers 15-20% of clinically recognized pregnancy. [3,4] It has been estimated that approximately 10% of abortion occur in developed countries, 35.5% in developing countries and 26.8% in Asian countries. [5]

Previous studies have reported that genetic abnormalities, maternal disorders, and cardiovascular diseases are among the known reasons for SA. [6] Similarly, lifestyle factors such as heavy work, stress, diet,

smoking, and alcohol and high coffee consumption are other probable risk factors for SA. [7] In addition, socio-economic factors also play an influential part in the health and expectancies of the pregnancy and impact on pregnancy outcomes. [8] Socioeconomic status, as indicated by low income level, education and occupation associated with poor housing, nutrition and poor health care access increase the risk of SA. [9]

Even though maternal mortality is not common with SA, morbidities such as psychological stress, hemorrhage, sepsis, secondary infertility, and recurring SA can occur. [10] It is estimated that 25% of SA would be preventable if the risk factors

could be mitigated. However, about 30-50% of abortion cases have unknown causes. [11] Thus, this study aimed to examine the association between maternal socio- demographic factors and reproductive history and SA among reproductive- aged women at tertiary level hospital.

MATERIAL AND METHODS

A hospital-based, case-control study was conducted to examine the association between sociodemographic factors and reproductive history with spontaneous abortion among married women of reproductive age attending the emergency or Obstetrics & Gynecology Department of Patan Hospital, Lalitpur, Nepal. A case-control design with a ratio of 1:2 was used in this study. A total of 252 respondents were included (84 cases and 168 controls). Cases were defined as women who had a recent spontaneous abortion before 22 weeks of pregnancy and had been hospitalized for a medical procedure or treatment. Controls were women whose pregnancy duration was more than 22 weeks of gestation, and who had visited the antenatal outpatient department (OPD). A consecutive sampling technique was used to select the cases and a purposive sampling technique was used for selecting the controls.

Data were collected after obtaining ethical approval from the Ethical Review

Board (ERB), Nepal Health Research Council (NHRC), and Institutional Review Committee (IRC), Patan Academy of Health Sciences (PAHS) (Ref no. 2254 and nrs1709011134, respectively). Informed consent was obtained from each respondent before data collection. Respondents' participation in the study was voluntary and they were allowed to discontinue the study at any time without giving any reason.

Data were collected for 12 months during 2018 through face to face interview technique by using the Nepali version of the structured interview schedule. The questionnaires on sociodemographic factors were developed based on the review of the literature and categorized as: education, occupation, family, monthly family income and reproductive history i.e. previous history of abortion, previous still birth, previous premature delivery, previous low birth baby, preconception folic acid intake and ANC checkup. The content validity and face validity of the questionnaire was ensured before doing the data collection.

The collected data were entered into SPSS version 16. Descriptive statistics and chi-square and fisher exact test were used to analyze the data in addition, odds ratio with 95% confidence intervals was calculated to estimate the risk between cases and controls.

RESULT

Table 1: Socio-demographic variables and its association with spontaneous abortion N=252

Variables	Case group (n=84)		Control group (n=168)		Odd ratio	95% CI	p- value
	Frequency	Percent	Frequency	Percent			
Educational status							
Illiterate	6	7.1	13	7.7	.91	.33-2.50	.86
Literate	78	92.9	155	92.3			
Family type							
Nuclear family	57	67.9	71	42.3	2.88	1.66-5.00	.00
Joint and extended family	27	32.1	97	57.7			
Occupation							
Service	17	20.2	42	25.0	.76	.40-1.43	.40
Non-service	67	79.8	126	75.0			
Monthly Family income							
Up to 40000 Rs	66	78.6	109	64.9	1.98	1.07-3.65	.02
More than 40000 Rs	18	21.4	59	35.1			

Mean age of respondents was 28.36±6.07 years. Both case and control

group comprised of similar number of ethnic and religious group i.e. Newari and

Hindu, respectively. Regarding the association between sociodemographic variables and spontaneous abortion, type of family and monthly income has significant association with spontaneous abortion. However, educational status and occupation had no significant association (Table 1). The association between pregnancies related

variables and spontaneous abortion, preconception folic acid intake and ANC checkup have significant association with spontaneous abortion. However, previous history of abortions, previous still birth, previous low birth weight baby and previous premature delivery had no significant association (Table 2).

Table 2: Pregnancy related variables and its association with spontaneous abortion N=252

Variables	Case group (n=84)		Control group (n=168)		Odd ratio	95% CI	P -value
	Frequency	Percent	Frequency	Percent			
Previous abortions	n=33		n=28				
Yes, one	28	84.8	27	96.4	.20	.02-1.89	.13
Yes, subsequent	5	15.2	1	3.6			
Previous still birth							
Yes	2	2.4	3	1.8	1.34	.22-8.1	.79
No	82	97.6	165	98.2			
Previous Premature delivery							
Yes	1	1.2	1	0.6	2.01	.12-32.57	.61
No	83	98.8	167	99.4			
Previous Low birth weight baby							
Yes	2	2.4	0	0	.97*	.94-1.00	.45
No	82	97.6	168	100			
Preconception folic-acid intake							
Yes	15	17.9	9	5.4	3.81	1.60-9.19	.001
No	69	82.1	159	94.6			
ANC check up							
Yes	53	63.1	168	100	.63*	.53-.74	.00
No	31	36.9	0	0			

*Odd ratio was calculated for cohort

DISCUSSION

In this study, we examined the association between sociodemographic factors and pregnancy related variables and SA. Study revealed that there was statistically significant association between the type of family, monthly income, preconceptionally folic acid intake, antenatal checkup and SA and no significant association was found with educational status, occupation, previous history of abortions, previous history of still birth, previous premature delivery, previous history of low birth weight baby and SA.

In our study, more than ¾ of the cases were from nuclear family as compared to control group. We found statistically significant association between type of family and spontaneous abortion reflecting that there is higher risk of spontaneous abortion for those pregnant women who live in nuclear family. Similar to this finding, nuclear family was significant risk factor for spontaneous abortion as compared to joint/extended family in a study conducted in West Bengal, India, among 420

reproductive aged women. [12] Likewise, contradict result was found in study done in Maharashtra India, [13] where type of family was not significant risk factors for SA. The pregnant women who stay in nuclear family or single couple may not have idea about precautionary measures regarding SA during pregnancy.

Current study finding showed that monthly income is significantly associated with spontaneous abortion. Similar to this finding, studies done in Denmark, [2] China [9] and India [13] have found that an association between socioeconomic position and SA. Income was inversely associated with the risk of SA. It can be explained that lower socio-economic status and planning of pregnancy might play a role in SA. [14] Furthermore, low income and material deprivation in general lead to poor housing, nutrition, and healthcare access, which in turn negatively affect the general health physically and mentally. [15,16]

The present study finding showed that preconception folic acid intake was significantly associated with SA. This

finding is similar to a previous population-based case control study in UK, [17] which showed that vitamin supplementation before and during pregnancy was associated with reduced risk for SA. In this study more than three fourth of the women had not taken folic acid preconceptionally. Poor nutritional status and vitamin deficiency in woman in the period before conception and in early pregnancy (up to 12 weeks' gestation), may increase the risk for adverse pregnancy outcome. [18] Contradicting finding was reported in a population-based study of China, [19] where no evidence was found between daily consumption of 400 mcg of folic acid before and during early pregnancy and spontaneous abortion. As all these data were self-reported, it is difficult to explore how far vitamins are causally related to reduce risk of spontaneous abortion. But at the very least, the findings provide opportunities for encouraging to take vitamin (folic acid) supplements before and during pregnancy.

Current study finding shows that ANC checkup was significantly associated with SA. Study conducted in Ghana, [20] had shown that early ANC visits lower the risk of spontaneous abortion by 43% compared to those who did not. Likewise, studies have reported that no or low ANC services utilization is associated with adverse health outcomes such as spontaneous abortion or stillbirth and maternal deaths. [21, 22]

However, in our study we found no association between educational status, occupation, previous history of abortions, previous preterm delivery, previous still birth and SA. These findings are contradicted with the study done in India, [12] reported that education status and occupation were significantly associated with SA. Women with low level of education had an elevated risk of spontaneous abortion when compared with women with higher education. [2] Likewise, previous history of abortion was significantly associated with SA. [17] Furthermore, the risk of spontaneous abortion increased if the previous birth

ended in a preterm delivery and stillbirth. [11] Differences in the result might be country context situation, study setting, sample size and sampling technique.

We obtained data through face to face interview thus there is a possibility of response bias. In addition, the one center study limits the generalizability of our study findings.

CONCLUSION

Based on the findings of our study it can be concluded that sociodemographic variables including reproductive history are equally important to prevent the spontaneous abortion. We found that type of family, monthly income, preconceptionally folic acid intake and antenatal checkup were statistically significant to predict spontaneous abortion. Advice to encourage for planning a pregnancy and utilization of health care facility might help women in reducing risk of spontaneous abortion.

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Conflict of Interest

The authors declare that they have no competing interests.

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Authors' Contribution

Concept, design, planning: KMP, KS. Literature review, tool development: KMP, KS, AP, BP. Data collection and analysis: KMP, AP, BP. Writing manuscript: KMP, BP. All authors approved the final manuscript.

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