

Demographic and fertility variables as determinants of spontaneous abortions in women with previous abortions

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Summary

The objective of the study was to examine the demographic and fertility factors that may predispose to spontaneous abortion in women with prior abortion. The study was conducted in King Khalid University Hospital, Riyadh, Saudi Arabia. It included a series of women who aborted their pregnancies over a period of months (January 1; 1992 – December 31, 1992). Chi-square and Fisher's exact test were used to analyze the statistical relationship between abortion and various demographic and fertility related to abortion. There was a direct statistically significant relationship between maternal age, level of education, parity and a history of previous abortion. In a multivariate logistic regression analysis, parity and history of previous abortion were found to be significant as determinants of recurrent abortion. Even though many of these risk factors are not preventable, counseling of the women about the value of education, early reproduction in the child-bearing age, and control of fertility would go a long way in reducing the incidence of fetal wastage in these women.

Keywords: *Risk factors, recurrent abortion.*

Résumé

L'objectif de l'étude a été d'examiner les facteurs démographiques et de fertilité qui pourraient predisposer à l'avortement spontané chez les femmes ayant eu un précédent avortement. L'étude a été conduite au centre hospitalier universitaire du roi Khalid en Arabie Saoudite. Elle a inclus une série de femmes qui ont avorté de leur grossesses pendant une période de 12 mois (7 Janvier 1992 – 31 Décembre, 1992). Le chi-square et le Fisher's exact tests ont été utilisés afin d'analyser la relation entre l'avortement et les facteurs démographiques direct et significative entre le niveau d'éducation maternel, la parité et un précédent avortement. Ces facteurs ont été les déterminants d'avortement répétés. Quoique plusieurs des ces facteurs de risques ne sont pas prevenable, le conseil des femmes à propos de la valeur de l'éducation, la reproduction en age precauce, et le controle de la fertilité eu beaucoup aider à reduire l'incidence de la perte des foetus chez ces femmes.

Introduction

Fetal wastage in the early period of gestation is known to be a major psychological trauma to the woman, as well as a source of anxiety to the husband. Women who abort are known to be significantly more anxious, experience more somatic symptoms and suffer more severe depression than those who carry their pregnancies through to term [1].

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Yet, spontaneous abortion is known to complicate as many as 15 to 20% of clinically recognized pregnancies [2,3]. Indeed, other studies have indicated that early pregnancy loss may be as high as 31 to 78% [2,4,5]. Where the patient has suffered an abortion in the antecedent pregnancy, here anxiety with regards to the outcome of the pregnancy knows no bounds and may be justified [1,6,7]. This is because history of a previous abortion is known to increase the chances of abortion in the current pregnancy, and where a woman has had two previous abortions, the incidence of recurrent abortion is said to be about 5 times that of the controls [8-10].

It is often difficult to determine the factors that may predispose to the pregnancy wastage, and occasionally, this may prove impossible. The objective of this study was to identify those factors that may predispose to spontaneous abortion, and determine the probability of an abortion in the pregnancy following one or more abortions in the previous pregnancies, in order to be in a position to counsel the patient.

Materials and methods

A retrospective chart review of all the women whose pregnancies terminated in spontaneous abortion in the Obstetric Unit of King Khalid University (KKUH) during the period of January 1992 to December 1992 was documented. A structured data collection form was designed to collect information on the demographic and previous obstetric history of the women. The data extracted from the charts include age, parity, level of education, occupation, nationality, gestation age when abortion occurred, history of previous abortions, number of abortions and other pregnancy complications such as pregnancy induced hypertension, diabetes and urinary tract infection.

Statistical analysis

Statistical analysis was carried out using the univariate analysis to relate each of the demographic and obstetric variables obtained with the occurrence of abortions in the current pregnancy. Chi-square and Fisher's exact tests were used to assess the statistical significance of the association between the socio-demographic characteristics of the women and the occurrence of abortion. Cornfields odd ratio was used to estimate the relative risk of abortion in the different categories of the variables [11]. The categories assumed to have the lowest risk was defined as the reference category in each situation.

The multiple logistic regression analysis was used to study the predictors of the occurrence of abortion among the variables found to be significant in the univariate analysis. This allowed the elimination of the mult-colinearity in these predictor variables.

Results

During the study period, a total of 273 women were recruited into the study. Over the same period, there were 4440 deliveries in the Unit. Majority of the women were Saudis, and 26.0% of them had no formal education.

Table 1 shows the distribution of women with and without abortion during the study period, in relation to the various socio-demographic variables. There were statistically significant associations between the occurrence of abortions and age ($P = 0.00$) and the level of education ($P = 0.03$). The risk of abortion tended to increase with age. There was almost an 11-fold increase in the risk at age 35+ years, compared with women < 20 years. This decreased with the level of education, however, with a 3-fold increased risk of abortion when the woman had no education. However, neither the nationality, nor the occupation of the women who are mostly teachers and technologists, showed any significant association with abortion.

With regards to past obstetric history (Table 2), parity showed significant association with the occurrence of abortions. The risk of abortion increased with parity level with a five-fold increase when the woman is Para 5+, compared with the nulliparous woman. There was no statistically significant association between the risk of abortion and medical complications of the pregnancy and the Rh blood group, however.

In a separate multivariate logistic regression analysis, the probability of a pregnancy ending in abortion showed parity (OR = 4.44; 95% CI = 2.18-9.02) and number of previous abortions (OR = 1.87; 95% CI = 1.14-3.06) as having independent significant effects after adjusting for all other variables. Education and age, which were significantly related to abortion in the univariate analysis, were no longer significant after adjustment, however.

Table 1: The distribution of women with and without abortion by demographic characteristics

	Women status		Odd's Ratio	CI	P Value
	Abor tion	No abor tion			
1. Age (years)					
< 20	3	17	1.0	-	
20 - 24	15	45	1.89	(0.4, 14.2)	
25 - 29	36	41	4.98	(1.2, 19.9)	0.00*
30 - 34	30	34	5.0	(1.2, 19.9)	
35+	34	18	10.70	(2.5, 39.4)	
2. Nationality					
Saudi	87	117	1.0	-	
Non-Saudi	31	38	1.10	(0.6, 2.0)	0.85
3. Education					
None	37	34	3.03	(1.3, 7.1)	
Primary	31	38	2.27	(0.9, 5.3)	0.03*
Secondary	36	44	2.28	(1.0, 5.2)	
Tertiary	14	39	1.0	-	
4. Occupation					
Housewife	96	117	1.4	(0.8, 2.7)	0.31
Worker+	22	38	1.0	-	

* Statistically significant at 5% level of significance
+ Teachers, technologists, middle grade administrators.

Table 2: The distribution of women with and without abortion by obstetric history

	Women status		Odd's Ratio	CI	P Value
	Abor tion	No abor tion			
1. Parity					
0	12	54	1.0	-	
1 - 4	71	72	4.44	(2.1, 9.6)	0.00*
5+	35	29	5.43	(2.3, 13.1)	
2. Medical complications					
No	97	138	1.0	-	0.15
Yes	21	17	1.76	(0.8, 3.7)	
3. Rh Blood Group					
Positive	113	150	1.0	-	
Negative	5	5	1.33	(0.32, 5.4)	0.45

* Statistically significant at 5% level of significance
+ Pregnancy induced hypertension, diabetes, UTI.

Discussion

Early pregnancy wastage continues to be a source of distress to any woman and when this becomes recurrent, the psychological impact may be unbearable [6,7]. Increase in the risk of abortion after a previous abortion has been shown to be positively correlated with maternal age [12], parity [13], and previous abortion [9, 12-14].

The present study has showed a direct relationship between age, education, parity, and history of previous abortion, and fetal wastage in early pregnancy. The role of maternal age as a risk factor in spontaneous abortion has been shown to relate to the increasing incidence of chromosomal malformations, especially after the age of 35 years [10, 12, 15]. Indeed, it has been shown that spontaneous abortion rate is steady at about 15% up till about the age of 35 years, after which it may increase remarkably, to reach 41% when the mother is over 40 years [12].

There was a significant association between the level of education and abortion in this study and this is in consonance with earlier findings [15]. The role of education as a risk factor in abortion may be difficult to explain, except that this would tend to correlate with socio economic standards. The adverse effects of low socio economic standards have been shown to operate in spontaneous abortions, as much as these are known to operate also in preterm deliveries, growth retardation and increased perinatal mortality [15].

While the confounding effect of parity on the risk of abortion may still be unresolved [14,16], this and other studies have shown that there is no doubt about the effect of previous abortion on the outcome of a subsequent pregnancy, [8, 14] as the chances of abortion after a previous abortion tend to increase [17]. It has been suggested that this recurrence of abortion may be immunological or endocrinological [18] and that

achievement of a successful pregnancy tends to exert a protective effect on the subsequent one. There is a need to review this in more detail, however.

The results of the present study show that several factors, some of which may not be preventable, constitute a risk to the continuation of a pregnancy. However, there is little doubt about the value of counseling women on the values of education, early reproduction, especially in the optimum period of child bearing age, control and planning of the family size, in reducing the incidence of foetal wastage in these women

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