Predictors of Unintended Pregnancy among Married Women in Hamadan, Western Iran: A Case-Control Study

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Abstract

Background: Literatures that focus on the risk factors of unintended pregnancy among married women are limited especially in developing countries. The aim of this study was to determine the predictors of unintended pregnancy in a west region of Iran.

Methods: This case-control study was conducted from September to November 2011 in Hamadan City, western Iran. A stratified cluster random sampling method was used for data collection. All participants were enrolled voluntarily into the study including 181 cases and 391 controls. Cases were married women with unintended pregnancy. Controls were married women with planned pregnancy.

Results: Of 572 participants, 31 (5.4%) women had not used any methods of contraception prior to the recent pregnancy. The proportion of using ineffective contraceptive methods such as withdrawal was higher in cases than in controls. The most effective predictor of unintended pregnancy was the number of previous alive children so that the risk of unplanned pregnancy increased 3.68 per one child ($P<0.001$).

Conclusion: This study introduced several effective predictors for unintended pregnancy among married women which may be useful for family planning programs. The high-risk population should be strongly advised to use highly effective contraceptive methods such as tubal ligation, vasectomy or OCP provided that being used correctly.

Keywords: Unplanned pregnancy, Family planning, Contraception, Induced abortion, Iran

Introduction

Unintended pregnancy is usually referred to both unwanted and mistimed pregnancy. It is estimated that each year almost 80 million women experience unintended pregnancy worldwide (1). Nearly half (49%) of pregnancies in developed countries such as the United States are unintended (2). In the Middle East and North Africa, 15% to 58% of pregnancies are unintended (3). An esti-mated 21.6 million unsafe abortions occurred in the world in 2008, most of them in developing countries (4). About 43% of unintended pregnancies end in abortion (2). Unintended pregnancy increases the risk of unsafe abortion-related morbidity and mortality (1). Deaths due to unsafe abortion include about 13% of all maternal deaths (4). It is particularly important in countries where

abortion is illegal (5) as is the case in Islamic Republic of Iran and many other countries (3, 6).

It is estimated that over 40% of pregnancies in the world are unintended (4). Unintended pregnancy can occur even in women who use contraceptive methods (3). This may occur as the result of various reasons such as non-use of contraception, ineffective contraceptive methods such as rhythm and withdrawal, or method failure such as condom. However, unplanned pregnancy may also occur when using most effective methods, such as oral contraceptive pills (OCP) or an intrauterine device (IUD) (3, 4, 7). In low-income countries, non-use of contraceptive methods is the main predisposing factor of unintended pregnancy (8). Even in developed countries such as the United States, where several safe and highly effective contraceptive methods are available; almost half of all pregnancies are unintended (9).

In Iran, the incidence rate of unplanned pregnancy among pregnant women is about 24.1% (10). A meta-analysis reported that the overall incidence of unplanned pregnancy in Iran was 29.7%, with higher rate in urban areas compared to rural areas (30.0% versus 26.8% respectively) (11). Some young men and women enter into unconventional marriages, known as temporary marriages, to give religious legitimacy to a sexual relationship. In Iran and some other Islamic countries, temporary marriages are legal and can be registered. However, these marriages are not socially accepted and often remain secret from their families and the community (3). This limits couples' access to reproductive health services and thus may increase the risk of unintended pregnancy.

The unwanted pregnancy is a common health problem in most countries worldwide with high risk of maternal morbidity and mortality. Depending on cultural and socioeconomic status of the communities, the leading causes of unwanted pregnancy may be different. There are considerable literatures regarding unintended pregnancy among the teens, however, there are a few evidences addressing unintentional pregnancy among married women especially in developing countries (3, 12-14). The literatures that focus on predictors

of unwanted pregnancy among married women are much less. This study was carried out in order to investigate the effect of various predictive factors on unintended pregnancy among married women.

Materials and Methods

This case-control study was conducted from September to November 2011 in Hamadan City, the west of Iran. The Research Committee of Hamadan University of Medical Sciences approved the whole study (No. 9007172278). All participants were enrolled voluntarily and anonymously into the study. In this study, 181 cases and 391 controls were evaluated. The cases were married women with unplanned, either unwanted or mistimed, pregnancy. The controls were married women with planned pregnancy. The overall response rate was 95%. The cases and controls were distinguished according to the women's expression. We used a stratified cluster random sampling method considering urban and rural areas as strata and health centers and obstetrics and gynecology clinics as clusters. From 39 urban and rural health centers in Hamadan City, 10 centers were randomly selected using a random numbers table. In addition, five obstetrics and gynecology clinics were randomly selected from the city center. The cases and controls were selected from pregnant women who referred to these centers and clinics for routine healthcare.

A countrywide Demographic and Health Survey (DHS) performed by Ministry of Health and Medical Education in 2000 had documented that the incidence rate of unintended pregnancy was 24.1% in Iran (10). Accordingly, assuming an odds ratio (OR) of two for unintended pregnancy in married women, we needed 208 cases-control sets (one case to one control) with a 95% significance level and 90% statistical power. Since number of unintended pregnancy was less than planned pregnancy, in order to facilitate and expedite the sampling process without losing statistical power, we reduced the number of cases to 181, increased that of controls to 391, and arrived at a total sam-

ple of 572. Data collection was done by well-trained interviewers using a questionnaire with a number of questions regarding maternal and marital age, educational level, working status, number of previous alive children, last contraceptive method used prior to the recent pregnancy, and intention for abortion.

We used logistic regression analysis to assess the effect of potential risk factors on occurrence of unintended pregnancy at the 95% significance level (*P*<0.05) using statistical software Stata11 (StataCorp, College Station, TX, USA) for data analysis.

Results

We identified 572 pregnant women aged 15-49 years. The mean age was 28.7 years in cases and 26.4 in controls. The marital age ranged from 13 to 32 years. The mean marital age was 19.4 in cases and 20.4 in controls. About 3.31% of the cases and 14.83% of the controls were working (*P*<0.001). The proportion of high-educated individuals was higher in controls than in cases. In addition, the number of previous alive children was lower in controls than in cases.

From 181 unintended pregnancy, 101 (55.8%) were mistimed and 55 (30.4%) were unwanted. Twenty five (13.8%) women did not answer to this question. Twenty-two (12.2%) of the women with unintended pregnancy had decided to induce abortion.

Of 572 participants, 31 (5.4%) women had not used any methods of contraception prior to the recent pregnancy. The frequency distribution of contraception methods used by cases and controls are shown in Fig. 1. The proportion of using ineffective contraceptive methods such as withdrawal was higher in cases than in controls (36% versus 34%).

The association between unintended pregnancy and predictors are presented in Table 1 using crude and adjusted OR estimates. Based on unadjusted OR estimates, the risk of unintended pregnancy increased significantly with age (*P*<0.001). However, an opposite result was seen when ad-

justed for other variables although the association was not statistically significant (*P*=0.226).
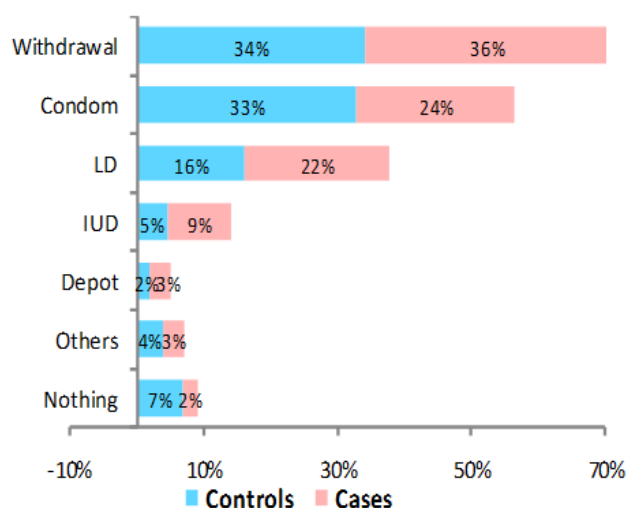
Fig. 1: Frequency distribution of contraceptive methods used by pregnant women prior to recent pregnancy; LD: low-dose oral contraceptive, IUD: intrauterine device, Depot: depot medroxy progesterone acetate, others: such as high-dose oral contraceptive (HD), three-phasic pill (TP), cyclofem and rhythm

The association between marital age and unintended pregnancy was statistically significant. The risk of unintended pregnancy was higher in women who were married in younger ages. However, the association became statistically non-significant when adjusted for other variables.

The OR estimate of unintended pregnancy was 2.71 in low-educated women (primary school level) compared to high-educated women (academic education level) (*P*=0.001). Nonetheless, the adjusted associations were not statistically significant.

In addition, the OR estimate of unintended pregnancy was 5.08 in housewives compared to working women (*P*<0.001).

The most effective predictor of unintended pregnancy was the number of previous alive children. The risk of unplanned pregnancy increased 2.97 per one increase in the number of children (*P*<0.001). When adjusted for other variables, the association became stronger (OR=3.68).

Table 1: Odds ratio (OR) estimate of various variables on unintentional pregnancy using logistic regression analysis

Variables	Pregnancy		Unadjusted OR	P value	Adjusted OR [a]	P value
	Planned	Unplanned				
Mothers' age at pregnancy (5 yr)						
Linear effect	391	181	1.45 (1.23, 1.70)	0.001	0.85 (0.66, 1.11)	0.226
Mothers' marital age (yr)						
25-32	73	18	1.00		1.00	
20-24	131	59	1.82 (1.00, 3.33)	0.049	1.24 (0.62, 2.50)	0.530
13-19	187	104	2.26 (1.28, 3.98)	0.005	0.92 (0.44, 1.91)	0.815
Mothers' educational level						
Academic	85	26	1.00		1.00	
High school (9-12 yr)	162	72	1.45 (0.86, 2.44)	0.159	0.93 (0.50, 1.76)	0.835
Secondary school (6-8 yr)	91	39	1.40 (0.79, 2.50)	0.252	0.56 (0.27, 1.15)	0.114
Primary school (1-5 yr)	53	44	2.71 (1.50, 4.92)	0.001	0.68 (0.32, 1.46)	0.327
Mothers' occupation						
Working	58	6	1.00		1.00	
Housewife	333	175	5.08 (2.15, 12.01)	0.001	4.45 (1.66, 11.93)	0.003
Number of children						
Linear effect	391	181	2.97 (2.34, 3.77)	0.001	3.68 (2.54, 5.33)	0.001

[a] Odds ratio adjusted for all other variables in the table

Discussion

The unintended pregnancy is a common health problem in most countries worldwide. It can increase the risk of unsafe abortion-related morbidity and mortality (1). Investigating the predisposing factors of unintended pregnancy may help reducing or even preventing this health problem. The results of this study indicated that unwanted pregnancy may occur as the results of various individual factors most powerful of which was the number of previous alive children. Therefore, in family planning programs, those women having more than two children should be the focus of special attention in order to prevent unplanned pregnancy.

Another important point that should be noted is that about 12.0% of the women with unintended pregnancy had decided to induce abortion. However, the incidence rate of induced abortion is much higher among sexually active teenagers and unmarried women who got pregnant subsequent to an illegitimate sexual intercourse. For example, a survey which was carried out in the United States revealed that about 43% of unintended pregnancies among the teens ended in abortion

(2). On the other hand, abortion is prohibited in many countries except for special cases (3, 6). This issue may increase the rate of unsafe abortion and thus increase maternal morbidity and mortality (4). After adjustment, the association between unintended pregnancy and the predictors such as maternal age, marital age, and education level became non-significant. This issue can be attributed to confounding effect of the other predictors introduced in the logistic regression model. In other words, maternal and marital age and education level themselves did not play an important role in the incidence of unintended pregnancy, but their association with other factors such as working status and the number of previous children resulted in the appearance of an association between these variables and unintended pregnancy. However, adjustment method eliminated this non-causal association and revealed the real association between these independent factors and unintended pregnancy. Accordingly, the number of previous alive children was a determinative predictor for unintended pregnancy.

About 3.31% of the cases and 14.83% of the controls were working. This imbalance between the two groups produced a factitious correlation be-

tween working status and unintended pregnancy. Interestingly, contrary to our expectation, unintended pregnancy was higher in housewives who have much free time than working women. However, it does not seem reasonable to believe that working status can have such strong effect on unintended pregnancy.

More than 68% of the participants had used moderately effective methods such as condoms or traditional methods such as withdrawal; while these methods are prone to failure and may increase the risk of unintended pregnancy. According to the previous evidences, about 27% of women using withdrawal may get pregnant within a year (3). A survey which was carried out in the USA revealed that 24.2% of teens with unintended pregnancy had used condoms and 5.1% used rhythm or withdrawal methods (7). On the other hand, nearly 8% of women using OCP may experience unintended pregnancies within a year, although OCP is a highly effective contraception if it is used properly (3).

One of the limitations of this study was that we assessed the predictors of unintended pregnancy only among married women. While majority of the unintended pregnancies result from illegitimate sexual intercourse, which is usually common among sexually active teenagers and unmarried women. Despite of this limitation, however, the effect of various individual factors on unintended pregnancy was investigated among married women, the most important of which was the number of previous alive children. Several reasons may explain this finding. Falling income and limited government support for large families are important factors they might encourage parents to have less children (15).

Conclusion

This study introduced several effective predictors for unintended pregnancy among married women, the most important of which was the number of previous alive children. These predictors may be useful for family planning programs. The high-risk population should be strongly advised to use highly effective contraceptive methods such as tubal ligation, vasectomy or OCP provided that being used correctly.

Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

Acknowledgments

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