

# Unwanted Pregnancy and Its Risk Factors Among Pregnant Women in Tehran, Iran

Malihe Nourollahpour Shiadeh,<sup>1</sup> Nourossadat Kariman,<sup>1\*</sup> Maryam Bakhtiari,<sup>2</sup> Samaneh Mansouri,<sup>3</sup> and Saeed Mehravar<sup>4</sup>

<sup>1</sup>Department of Midwifery and Reproductive Health, Student Research Office, Nursing and Midwifery School, Shahid Beheshti University of Medical Sciences, Tehran, IR Iran

<sup>2</sup>Department of Clinical Psychology, Faculty of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, IR Iran

<sup>3</sup>Department of Biostatistics, Shahid Beheshti University of Medical Sciences, Tehran, IR Iran

<sup>4</sup>Department of Epidemiology and Statistics, School of Public Health, Tehran University of Medical Science, Tehran, IR Iran

\*Corresponding author: Nourossadat Kariman, Department of Midwifery and Reproductive Health, Student Research Office, Nursing and Midwifery School, Shahid Beheshti University of Medical Sciences, Tehran, IR Iran. Tel: +98-2188202512, E-mail: n\_kariman@sbmu.ac.ir, n\_kariman@yahoo.com

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## Abstract

**Background:** Unwanted pregnancies remain a main public health problem worldwide. In Iran, comparative studies on the risk factors of unwanted pregnancies and their effects on maternal health are rare.

**Objectives:** This study was conducted to determine the risk factors of unwanted pregnancies and their impact on maternal behavior during pregnancy.

**Patients and Methods:** This case-control study was carried out on 240 pregnant women who referred to the healthcare centers of Shahid Beheshti University of Medical Science for receiving routine prenatal care. Of the 240 women, 120 had unwanted pregnancies (case) and 120 had wanted pregnancies (control). Data collection was performed using a researcher-made questionnaire. The data were analyzed using chi-square tests, Fisher's exact tests, t-tests, Mann Whitney U tests, odds ratios, and logistic regression analysis.

**Results:** Compared to women with wanted pregnancies, those with unwanted pregnancies were more employed (23.3% vs. 12.5%,  $P = 0.006$ ), had lower education levels ( $P = 0.016$ ), had lower incomes ( $P = 0.009$ ), had more children ( $1.30 \pm 1.08$  vs.  $0.53 \pm 0.67$ ,  $P = 0.001$ ), and had more traditional marriages (15% vs. 3.3%,  $P = 0.002$ ). Also, women with unwanted pregnancies had significantly lower tendencies to do prenatal care ( $P = 0.002$ ), had a higher tendency to abortion ( $P = 0.001$ ), had higher previous abortion attempts ( $P = 0.001$ ), and had higher levels of unhealthy behaviors ( $P = 0.017$ ) compared to those with wanted pregnancies.

**Conclusions:** Lower education and socioeconomic status, longer marriage duration, being employed, and unwilling of spouse were among the risk factors of unwanted pregnancies. These women are at high risk for unhealthy behaviors and have a higher tendency to abortion that consequently threatens their health.

**Keywords:** Unwanted Pregnancy, Pregnant Women, Risk Factors, Tehran, Iran

## 1. Background

An unwanted pregnancy is one of the main public health problems worldwide. In 2012, 40 percent of all pregnancies were unwanted. Of these, 50%, 13%, and 38% resulted in an abortion, miscarriage, and unplanned birth, respectively (1). Lack of contraceptive use and use of less effective contraceptive methods are two main sources for unwanted pregnancies (2).

Unwanted pregnancies can lead to a wide range of negative health, social, and economic consequences, as well as psychological problems for both the mothers and children (1). Women with unwanted pregnancies have unhealthy behaviors during pregnancy that may include drinking, smoking, illicit drug use, and lack of vitamin intake during

their first trimester of pregnancy (3, 4). Moreover, they do not initiate early prenatal care and do not receive adequate doctor visits and proper care during their pregnancy (5, 6). Consequently, these problems increase obstetric complications such as premature birth, low birth weight, neonatal death, and infant abuse (4, 7).

Unwanted pregnancies in women are associated with lower education levels, previous unwanted pregnancies, a greater number of children, financial problems, a lack of insurance coverage, difficulties in career paths, and consequences such as physical violence by their husband and poor emotional relationships with their spouses (4, 7, 8). Determining the risk factors of unwanted pregnancies is the first step in planning for reducing the incidence of unwanted pregnancies and their negative health and so-

cial consequences. There are several studies regarding unwanted pregnancies among teens, however, few studies have addressed unwanted pregnancies among pregnant women, especially in developing countries (9, 10).

Unwanted pregnancies play an important role in maternal deaths in Iran. It is estimated that 30.6% of all pregnancies in Iran are unwanted. Of these, 16% ended in abortion (11, 12).

In Iran, most of the previous studies were cross-sectional and described the causes of unwanted pregnancies (13, 14). However, comparative studies on the risk factors of unwanted pregnancies and their effects on maternal behavior are rare. A study of pregnant women in the southwest of Iran showed that 26% of all pregnancies were unwanted. Age, number of pregnancies, number of child-births, education level, economic status, husband's occupation, the relationship with the spouse, and contraceptive methods were significantly associated with unwanted pregnancies (13). In another study in the north of Iran, the prevalence of unwanted pregnancy was 13%, however, no significant relationship was found between unwanted pregnancies and age, occupation, education, and the number of children (14). Previous literature with a focus on risk factors of unwanted pregnancies in Tehran, the capital of Iran, are fewer in number.

## 2. Objectives

This study aimed to determine the risk factors of unwanted pregnancies and their impact on maternal behavior during pregnancy in Tehran, Iran.

## 3. Patients and Methods

### 3.1. Setting and Participants

This case-control study was carried out on 240 pregnant women who referred to the health centers of Shahid Beheshti University of Medical Science (SBMU), Tehran, Iran, for receiving routine prenatal care. The study was conducted from May to October 2014. The sample size was estimated based on a previous study in which the prevalence of unwanted pregnancies in Iran was 30% (12). Then, given the type I error probability of 0.05 and a statistical power of 0.8,  $P_1 = 0.43$ , and  $P_2 = 0.3$ , it was estimated that 114 cases and 114 controls would be needed for this study. However, we recruited 120 subjects for each group.

A multistage sampling method was used. First, all health centers affiliated with SBMU were listed and coded ( $n = 63$ ). Thereafter, 17 centers were selected using a random numbers tabulation. Then, the sample size in each

center was calculated by a quota proportionate to the population covered by each center. Finally, the needed samples in each healthcare center were selected conveniently.

During the sampling period, 365 women were assessed for eligibility. Among these, 73 did not fulfill the inclusion criteria. Another 25 were reluctant to participate in the study and 27 were excluded due to various exclusion criteria. Of the 240 women who were included in this study, 120 had unwanted pregnancies (case) and 120 had wanted pregnancies (control). Inclusion criteria for this study were: being 16–45 years of age, having an Iranian nationality, residing in Tehran, having a normal pregnancy, not having a history of known mental illness and stressful events such as death of close relative in the last 6 months, no history of drug and alcohol abuse, or usage of drugs with side effects on sexual desire such as antidepressants. The patients who did not completely answer the questionnaires were also excluded from the study. Based on physician examinations, medical records, and interviews, the age, residence region, sociodemographic and obstetric characteristics, and trimester of pregnancy in the control group were similar to the case group. Eligible subjects were selected by daily visits to the health centers.

### 3.2. Data Collection

Data collection was performed by well-trained interviewers using a researcher-made questionnaire that was designed through the help of a literature review. The questionnaire included questions on sociodemographic and obstetric variables related to the risk factors of unwanted pregnancies and their impact on maternal behavior during pregnancy. Some of the data collected from the questionnaires included age, marriage duration, marriage type (traditional or modern), occupation, education level, age of spouse, education level of spouse, and number of previous pregnancies. Also, subjects were interviewed based on questionnaires about maternal behavior such as the tendency to do regular and complete prenatal care, the tendency to undergo an abortion, attempt to abortion, unhealthy behaviors such as smoking and alcohol consumption, the time of initiation of prenatal care, and the use of folic acid during the 3 months before pregnancy. The validity and reliability of the questionnaire were assessed prior to the study. The content was confirmed by a number of midwifery and reproductive health faculty members in the nursing and midwifery school of SBMU. The reliability was assessed through internal consistency methods and Cronbach's alpha was 0.84. The study questionnaire was completed through interviews by the first and second authors in a quiet room at the selected centers.

### 3.3. Ethical Considerations

The study protocol (No. 1393-1-86-13148) was approved by the ethics committee of SBMU. All enrolled participants were informed about the study and written informed consent was obtained from all participants before the beginning of the study. The participants were also reassured of the data confidentiality. They were also informed that they could withdraw at any time, and their privacy would be respected throughout the study.

### 3.4. Data Analysis

For the analyses, the statistical package for the social sciences software version 13 (SPSS Inc., Chicago, IL, USA) was used. The type of pregnancy (unwanted and wanted) was regarded as a dependent variable and sociodemographic features were regarded as independent variables. Descriptive statistics (percentage, mean, standard deviation) were used to summarize the data. Chi-square and Fisher's exact tests were used to analyze the categorical variables such as occupation, sex of previous children, type of marriage, and pregnancy status in terms of spouse. A t-test was utilized for quantitative variables with normal distributions. Mann-Whitney U tests were performed to analyze quantitative variables with non-normal distributions such as the number of children and the number of prenatal care. Logistic regression analysis was used to identify the predictive variables for unwanted pregnancies. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated for each variable. A P value of < 0.05 was selected as being a statistically significant level in all tests.

## 4. Results

The mean ages for unwanted and wanted pregnancy groups were  $28.4 \pm 6.3$  and  $26.7 \pm 5.6$  years, respectively. There were no significant differences in age ( $P = 0.07$ ) and education level of the spouse ( $P = 0.057$ ) between wanted and unwanted pregnancy groups. Women with unwanted pregnancies were significantly more employed ( $P = 0.006$ ), had more children ( $P = 0.001$ ), had lower education levels ( $P = 0.016$ ), had more traditional marriages ( $P = 0.002$ ), had longer marriage durations ( $P = 0.009$ ), and had lower incomes ( $P = 0.009$ ). Moreover, a significant difference in contraceptive methods used was found between those with and without unwanted pregnancies ( $P = 0.002$ ); specifically, women with unwanted pregnancies mostly used withdrawal (42.5%) and condom (26.7%) methods (Table 1).

Women with unwanted pregnancies had significantly lower tendency to do prenatal care ( $P = 0.002$ ), had a higher tendency to abortion ( $P = 0.001$ ), had a higher attempt to

abortion ( $P = 0.001$ ), and higher rates of unhealthy behavior ( $P = 0.017$ ) compared to those with wanted pregnancies (Table 2).

In the logistic regression model, the marriage duration ( $P = 0.006$ ), occupation ( $P = 0.02$ ), number of children ( $P = 0.002$ ), pregnancy status in terms of spouse ( $P = 0.004$ ), and education level ( $P = 0.001$ ) were significantly associated with unwanted pregnancies. The value for  $R^2$  was 0.694 (Table 3).

## 5. Discussion

The results of our study revealed that women with unwanted pregnancies had lower socioeconomic status, used less effective contraception methods, demonstrated less prenatal care behaviors, and had more abortion attempts. They also had longer marriage durations and more children compared to those with wanted pregnancies. These findings are in line with an earlier study conducted in the west of Iran (15). However, a study in the north of Iran did not find a significant relationship between the number of children and unwanted pregnancies (14). A study of factors affecting the first birth interval reported that a majority of couples in Iran plan for childbearing 2 – 6 years after marriage (16). It seems that with increases in marriage duration and in the numbers of children, many pregnancy cases are unintended and unwanted.

Low educational level and low income were also among the risk factors of unwanted pregnancies in the current study. This finding was also congruent with some previous studies (4, 17-19). Studies in Shahrood (20) and Arak (21) have also reported that the occurrence of unwanted pregnancy is significantly associated with low education levels. However, conflicting results have been reported by other studies (14, 22).

According to our results, being employed was an important risk factor for unwanted pregnancy. Some of the previous studies from Iran (14, 19, 22) and overseas (9) have reported similar results, but others have reported that unwanted pregnancies were more prevalent among housewives (20, 21). It seems that employed women are more tired and had less time for prenatal care and other measures necessary for pregnancy. Moreover, these women may be afraid to lose their job due to pregnancy.

In the current study, women with traditional marriages were more likely to have an unwanted pregnancy than those with modern marriages. Traditional marriages (i.e. unwanted marriage or marriage prior to acquaintance) are an important social problem in developing countries (23). In Iran, despite improvements in social indicators over the last few decades, this type of marriage is still prevalent, particularly in families with low socioeconomic

**Table 1.** Sociodemographic Characteristics of Women With Unwanted and Unwanted Pregnancies<sup>a</sup>

Variable	Groups		P Value
	Unwanted Pregnancy (n = 120)	Wanted Pregnancy (n = 120)	
Age, y	28.39 ± 6.31	26.74 ± 5.56	0.07 <sup>b</sup>
Duration of marriage, y	6.89 ± 5.15	5.13 ± 3.89	0.009 <sup>b</sup>
Number of children	1.30 ± 1.08	0.53 ± 0.67	0.001 <sup>c</sup>
Occupation			0.006 <sup>d</sup>
Employed	28 (23.3)	15 (12.5)	
Housewife	92 (76.7)	105 (87.5)	
Education level			0.016 <sup>d</sup>
Primary school and lower	32 (26.67)	20 (16.67)	
Secondary school	26 (21.66)	19 (15.83)	
High school	41 (34.17)	51 (42.5)	
University	21 (17.5)	30 (25)	
Education level of spouse			0.057 <sup>d</sup>
Primary school and lower	37 (30.84)	24 (20)	
Secondary school	24 (20)	24 (20)	
High school	34 (28.33)	41 (34.17)	
University	25 (20.83)	31 (25.83)	
Gender of previous children			0.003 <sup>d</sup>
Male	43 (35.8)	36 (30)	
Female	28 (23.33)	21 (17.5)	
Both (Male and Female)	16 (13.34)	5 (4.16)	
None (lack of children)	33 (27.5)	58 (48.34)	
Contraceptive method			0.002 <sup>d</sup>
No contraception	17 (14.17)	68 (56.67)	
Oral contraception	20 (16.66)	23 (19.16)	
Condoms	32 (26.67)	19 (15.83)	
Withdrawal	51 (42.5)	10 (8.34)	
Type of marriage			0.002 <sup>d</sup>
Traditional	18 (15)	4 (3.3)	
Modern	102 (85)	116 (96.7)	
Income, \$			0.009 <sup>d</sup>
≤ 500	99 (82.5)	47 (39.17)	
> 500	21 (17.5)	73 (60.83)	

<sup>a</sup>Data are expressed as No. (%) or mean ± SD.<sup>b</sup>t-test.<sup>c</sup>Mann-Whitney U test.<sup>d</sup>Chi-square test.

status. Marriage without the woman's permission or prior acquaintance might lead to the lack of both an emotional relationship and sexual satisfaction between the couple.

The present study showed that the withdrawal method

was the dominant contraceptive method among women with unwanted pregnancies, while most of the women with wanted pregnancies did not use any contraceptive method or used oral contraception and condoms. These

**Table 2.** Comparison of Women's Behaviors for Those With Unwanted and Wanted Pregnancies<sup>a</sup>

Variable	Groups		P Value
	Unwanted Pregnancy (n = 120)	Wanted Pregnancy (n = 120)	
<b>Number of prenatal care</b>	2.88 ± 1.87	3.68 ± 2.12	0.002 <sup>b</sup>
<b>Tendency to abortion</b>			
Yes	7 (5.8)	0	0.001 <sup>c</sup>
No	113 (94.2)	120 (100)	
<b>Attempt to abortion</b>			0.001 <sup>c</sup>
Yes	46 (38.34)	0	
No	74 (61.66)	120 (100)	
<b>Unhealthy behaviors</b>			0.017 <sup>d</sup>
Yes	16 (13.34)	5 (4.17)	
No	104 (86.66)	115 (95.83)	

<sup>a</sup>Data are expressed as No. (%) or mean ± SD.<sup>b</sup>Mann-Whitney U test.<sup>c</sup>Fisher's exact test.<sup>d</sup>Chi-square test.**Table 3.** Logistic Regression Coefficients, P Values, and Odds Ratios for the Relationships Between Variables and Unwanted Pregnancies

Variable	Odds Ratio	CI (95%)	P Value
<b>Duration of marriage, y</b>	2.06	1.25 – 3.77	0.006
<b>Being employed</b>	5.21	1.5 – 9.45	0.02
<b>Number of children</b>	3.32	1.44 – 7.05	0.002
<b>Pregnancy status in terms of spouse</b>	0.965	0.743 – 1.07	0.004
<b>Education level</b>	1.37	1.14 – 1.66	0.001

findings are in agreement with some earlier studies (9, 14, 19). In contrast, Shahbazi et al. reported that condoms and oral contraception methods were dominant among women with unwanted pregnancies in Semnan (24). It seems that not using contraception or using less effective methods are the main risk factors for unwanted pregnancies (25, 26). An earlier study showed that low income, lack of knowledge, disapproval of spouses and family, and a lack of access to proper counseling and family planning programs are among the reasons for failure to use of contraceptive methods (2). Additionally, Iran's government recently decided to execute a policy to increase the population growth (27), thus, decreasing the availability of contraceptive methods. Moreover, the cost of oral contraceptives or condoms might be a factor in the occurrence of unwanted pregnancies because people who are unable to access condoms or oral contraception might use periodic abstinence or withdrawal, both of which can lead to contraceptive failure. On the other hand, condoms are considered a male method and most Iranian males have not re-

ceived accurate family planning counseling and training, therefore, they cannot use condoms appropriately (14).

The current study showed that women aged from 26 to 35 years were slightly more at risk for unwanted pregnancies, although the difference between cases and controls was not statistically significant. Results of previous studies are inconsistent in this regard (14, 19, 28, 29), and this inconsistency might be attributed to the differences in populations, cultures, and the study methodologies. For instance, some of the western studies have reported that younger age groups are a risk factor for unwanted pregnancies (4, 17, 18), a suggestion that this might be attributed to the free sexual relationships in these communities. However, in Iran, sexual relationships are strictly prohibited prior to marriage.

Results of this study showed that women with unwanted pregnancies had fewer tendencies to perform prenatal care and also exhibited unhealthier behaviors compared to those with wanted pregnancies. Similar findings have also been reported in some of the earlier studies (7,

21, 28, 30-32). However, Bahri et al. could not find any significant difference in perinatal behaviors between women with and without unwanted pregnancies (33).

In our study, both the tendency to abortion and attempt to abortion were significantly higher in women with unwanted pregnancies compared with the control group. This finding is in agreement with previous studies (34, 35). It is estimated that 19 million women in developing countries annually experience unsafe abortions, resulting in the death of at least 200 women daily (12, 36, 37). Legal abortion in Iran is only available for cases with proven fetal genetic problems, and these can only be carried out prior to the 16th week of pregnancy (12). However, despite this legal limitation, the rate of illegal abortions is estimated to be around 80,000 cases annually (11). Due to the dangers of illegal abortion, proper counseling and family planning programs would be more useful and cost effective than treating women for complications resulting from an unwanted pregnancy and subsequent illegal abortion.

There were some limitations to our study. We evaluated the risk factors of unwanted pregnancies only among married pregnant women, while the majority of unwanted pregnancies are the result of unauthorized sexual intercourse, which is usually common among sexually active unmarried women and teenagers. Second, all data were gathered through interviews based on participants' reports. However, some of the items, such as history of mental illness and drug use, were considered as certain limitations of the study due to recall bias.

In conclusion, unwanted pregnancies were more common among women with lower education levels and socioeconomic status. Moreover, longer marriage durations, being employed, and unwilling of spouse were among the risk factors of unwanted pregnancies. Women with unwanted pregnancies are at high risk for unhealthy behaviors and tendency to abortion that consequently will threaten their health. Results of this study may increase the awareness of midwives and nurses regarding potential risk factors for unwanted pregnancies and their consequences. Early detection of women at risk for an unwanted pregnancy is the primary step toward decreasing the incidence of unwanted pregnancies. Additionally, further studies are necessary to identify the predictors of unwanted pregnancies among teenagers and unmarried women in Iran. There should also be an emphasis on improving women's and men's knowledge of the risk factors, ensuring access to proper counseling and family planning programs, and promoting the use of effective contraceptive methods.

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## Footnotes

**Authors' Contribution:** Malihe Nourollahpour Shiadeh, Nourossadat Kariman, and Maryam Bakhtiari designed the study, performed research, analyzed data, and collaborated in writing the manuscript; Samaneh Mansouri and Saeed Mehravar performed the statistical analyses and interpretation of the data.

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