

Comparison of the Contraceptive Use and Its Related Factors Among Women Seeking Repeat and First-Time Induced Abortions in Iran

Roghieh Bayrami¹; Mojgan Javadnoori^{2,*}

¹Student Research Committee, Nursing and Midwifery School, Mashhad University of Medical Sciences, Mashhad, IR Iran

²Reproductive Health Promotion Research Center, Faculty of Nursing and Midwifery, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, IR Iran

*Corresponding author: Mojgan Javadnoori, Reproductive Health Promotion Research Center, Faculty of Nursing and Midwifery, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, IR Iran. Tel: +98-9163082048, E-mail: mozghanjavadnoori@yahoo.com

Received: January 11, 2014; Revised: January 6, 2015; Accepted: January 6, 2015

Background: Abortion in Iran, like other Islamic countries is severely restricted except in a few exceptions. However, some women who have an unwanted or mistimed pregnancy are seeking abortion.

Objectives: This study aimed to compare the contraceptive use and its related factors among repeat and first-time induced abortion seekers in Iran.

Patients and Methods: In this cross-sectional study, 417 married women (age range, 15-49 years) seeking abortion services at either a hospital or private office in Maku City, the northwest of Iran, were selected through convenience sampling between December 2010 and March 2011. All the subjects were asked about the contraceptive methods used during the three months before the current pregnancy and the use of any emergency contraception and forced sex. Women who mentioned reasons except than completing family size for their applying for abortion were excluded from the analysis. Characteristics of women were examined using chi-square and t test. T test and Mann-Whitney U test were used to compare contraceptive methods and the regularity of contraceptive use between repeat and first-time abortion seekers, respectively.

Results: About 33.8% of the repeat abortion-seekers and 76.8% of first-time abortion seekers were using male methods (withdrawal and condom). Utilization of an intrauterine device for birth control was higher among women seeking repeat abortion than in first-time abortion seekers ($P = 0.003$). All of 31 pill users in the repeat abortion-seeking group missed three or more pills per month for three times during the three months before contraception. The repeat abortion seekers had used condom more regularly than those in the first-time abortion seekers. Forced sex was more prevalent in the abortion seekers who had used male method.

Conclusions: Using male methods are prevalent in abortion-seeker women. An increased focus is needed on training the regular use of pills and using the emergency contraception for all of the couples who are first-time abortion-seekers. Moreover, information about the role of forced sex might be efficacious in decreasing illegally induced repeat abortion in couples who use condom or withdrawal methods.

Keywords: Unwanted Pregnancy; Induced Abortion; Contraceptive Behaviors

1. Background

Unintended pregnancy (both unplanned and unwanted) is a common public health problem worldwide. It can have serious consequences in terms of long-term health, costs and social aftermaths both for women and for their children and families (1). More than 60 million unintended pregnancies occur in developing countries, and a fifth of them terminate in induced abortion (2). Reducing the incidence of unintended pregnancies and their consequences is a national public health policy to achieve the Millennium Development Goals for reducing child mortality and improving maternal health (3). A repeat abortion is a health indicator that reflects serious consequences of unintended pregnancies (4). Many women face serious challenges in having a child or another child, and also in meeting their childbearing goals. To reduce such problems, they usually use contraceptives to avoid an unintended pregnancy. Some of them attempt abortions for the first or several times. In

recent years, some studies have been conducted to identify which women experience repeat abortions, with the aim to identify women who may need intensive interventions (5, 6). In Iran, the rate of induced abortion has increased in recent years because of the increased rates of the unwanted pregnancy (4). The prevention of unintended pregnancy is a major challenge, where induced abortion is illegal and also the policies concerning the population growth have been recently applied (7). Induced abortion is permitted in Iran only when the mother's health is in danger or if a less than 4 month-old fetus has a profound developmental delay, deformations or malformations (8). Considering this legal restrictions, couple may seek clandestine induced abortion to meet their reproductive goals. Evidence show that women may attempt to repeat abortion due to failure in family planning methods, lacking motivation to prevent pregnancy, or having difficulty using contraception (9).

Factors associated with contraceptive behaviors, such as contraceptive consumption are risk factors for repeat abortion (10). Although behavioral factors are under individual control, environmental factors can affect and reduce an individual's ability to prevent an unintended pregnancy. These include intimate partner violence (including sexual violence and forced sex), partners' conflicting preferences regarding pregnancy, an inadequate access to effective contraceptives and inaccurate knowledge about the risk of occurring pregnancy during the menstrual cycle (9). In a study of repeat abortion in the United States, Jones et al. have reported that women who experienced an induced abortion, attempt to repeat abortion in half of the cases (9). Prata et al. have reported that first-time abortion seekers, compared with repeat abortion seekers, had not used any contraceptive method (11). In a study on characteristics of women undergoing repeat induced abortion in Canada, Fisher et al. have reported that a history of physical or sexual abuse or violence were risk factors for a second, a third or subsequent abortion (12). Although two papers have been published on the statistics of abortion in Iran (13, 14), no study was conducted on repeat abortion-seekers in Iran.

2. Objectives

This study aimed to compare the contraceptive use and its related factors in first-time and repeat abortion-seekers in Iran. Findings would provide us instructions for interventions and policies that might help women avoid an unintended pregnancy and subsequent abortion.

3. Patients and Methods

This report is a part of a broader study on induced abortion-seekers in Iran. This cross-sectional study was carried out in Maku, a city in the West Azerbaijan Province in Iran, From December 2010 to March 2011. Women who had applied for an induced abortion at either the two private obstetrics and gynecology offices or the only hospital in this city were recruited through convenience sampling. These women were living in Maku or came from other near cities, such as Salmas and Khoy. The inclusion criteria were women aged 15-49 years, married and seeking induced abortion to terminate an unwanted pregnancy. To estimate the sample size of the main study, the P-value was supposed to be 0.5 to obtain the maximum possible variance for sample size formula proportion and be confident that we will have a sufficient sample size to achieve the research objectives. Then a sample of 392 subjects was estimated to be needed with a type 1 error of 0.05, a power of 0.80 and a sampling error of 0.01. We asked the staff of the aforementioned centers to call the first author (a midwife) when an eligible abortion-seeker come to the centers and request for abortion. First author attended those centers, interviewed the woman in a private place, and completed the study questionnaire. Because of the ille-

gality of abortion, women usually did not refer to a hospital unless some complications occur after an induced abortion. The study instrument was a self-report questionnaire consisting of three parts that was constructed through a literature review (15-20). The first part was consisted of demographic variables included age of woman and her partner, educational level of couples, the number of children, age of the minor child, job of woman and her partner, marriage durations, and the women's experience of forced sex by her husband. The second part of the questionnaire included contraceptive methods usage (i.e. pills, condom, withdrawal, an intrauterine device (IUD), tubal ligation (TL), and depo provera). In the third part of the questionnaire, we asked abortion applicants about contraceptive method they used during the last three months before the current pregnancy and also about the use of any emergency contraceptive method. We ranked each woman's regularity of contraceptive method based on a 5-point scale (Table 1) developed by Miller and Pasta (20). We also asked the participants about the importance of forced sex as a reason for an unintended pregnancy based on Miller's study (21) and undesirable sex of fetus as a reason for seeking abortion. The questionnaire was in Persian. Validity of the questionnaire was assessed through the content validity method and 10 nursing and midwifery faculty members confirmed the validity. The reliability of the instrument was examined through test-retest on 15 abortion seekers with a 10-day interval ($r = 0.86$). In this report, we compare repeat abortion-seekers with first-time abortion-seekers, separately by the contraception method use in a subsample who reported that having completed their family size was the main reasons for seeking abortion. This subsample was selected to increase the homogeneity of abortion applicants with respect to the effect of the number of living children and marital duration, the two well-known risk factors for a repeat abortion. Also, we supposed that women who consider "completed family size" as a reason for their abortion application would be more familiar with contraceptive methods.

3.1. Ethical Considerations

This study was approved by the institutional review board and the local research ethics committee in Ahvaz Jundishapur University of Medical Sciences with the code of AJUMS.REC.1393.65. Permission was obtained from the hospital officials and doctors of private offices. The purpose of the study was explained for all participants and they were assured of the confidentiality of their personal information and also were assured about their right of not to participate in the study. All the questionnaires were anonymous and all the participants signed a written informed consent form before participating in the study. The first author also counseled all abortion applicants regarding birth control methods before they leave the healthcare center.

Table 1. Frequencies for Regularity of Contraceptive Use During Three Months Before Pregnancy Among Women With Completed Family Size, Separately by Contraceptive Method (n = 247)^a

Method	Regularity of Contraceptive Use					P Value ^b
	1	2	3	4	5	
Withdrawal						
Repeat abortion-seekers	0	0	2	0	0	0.41
First time abortion-seekers	0	0	67	0	39	
Condom						
Repeat abortion-seekers	2	0	0	19	0	< 0.001
First time abortion-seekers	0	0	28	8	0	
Pill						
Repeat Abortion-seekers	31	0	0	0	0	< 0.001
First time abortion-seekers	4	0	19	0	6	

^aThe following were the regularity of use codes: Withdrawal and Condom, 1) usually failed to use method; 2) often failed to use method; 3) occasionally failed to use method; 4) rarely failed to use method; 5) never failed to use method; Pills, 1) missed 3 or more pills per month 3 times during 3 months; 2) missed 3 or more pills per month 1 or 2 times during 3 months; 3) missed 1 or 2 pills 3 or more times during 3 months; 4) missed 1 or 2 pills 1 or 2 times during 3 months; 5) never missed pill.

^bMann-Whitney test.

3.2. Data Analysis

The SPSS version 13.0 (SPSS Inc., Chicago, IL, USA) was employed to analyze the data. Descriptive statistics were calculated for demographic variables. Moreover, the chi-square test was used to compare the nominal and categorical variables (i.e. contraceptive methods used by first-time and repeat abortion-seekers). The t test was used to examine the significant differences between the quantitative variable between the two groups. Mann-Whitney U test was used to compare the regularity of contraceptive use between the first-time and repeat abortion applicants. P-value less than 0.05 was reported as statistically significant.

4. Results

Totally, 417 women were recruited during four months of sampling. Twenty-eight out of 417 women (6.7%) had an intended pregnancy; however, they were unhappy with the sex of their fetus and therefore had sought an abortion. Twelve (43%) of these 28 women were applicants for repeat induced abortion compared with only five ones (17%) of the remaining women in the sample (P = 0.001). We did not include these 28 women in contraceptive use analysis because their pregnancy was intended. Among the remaining 389 abortion applicants, 247 (63.5%) were using a contraceptive method and reported that the completion of their family size was their reason for seeking abortion. Therefore, 142 women who mentioned reasons except than completing family size for their applying for abortion (e.g. financial problems, being a student,) or

not using contraception methods were excluded from the contraceptive use analysis. Sixty-two (25.1%) of those 247 applicants had a history of abortion (repeat abortion seekers) compared with only 4 (2.8 %) of 142 women who did not report this reason for their abortion application (P < 0.001). The study process is illustrated in Figure 1. Selected socio-demographic characteristics of abortion-seekers who had completed their family size were shown in Table 2. About 33.8% of repeat abortion-seekers and 76.8% of first-time abortion-seekers were using male methods (condom or withdrawal). A significant difference was observed between the repeat and first-time abortion-seekers regarding the use of an IUD (P = 0.003) (Table 3).

All of 31 pill users in the repeat abortion-seekers missed three or more pills per month for three times during three last months before conception. The repeat abortion seekers had used condom more regularly than the first-time abortion seekers (Table 1). Moreover, forced sex was more prevalent in the abortion seekers who had used male methods. Both of the two withdrawal users in repeat abortion-seekers and 12 (11.3%) of withdrawal users in first-time abortion-seekers reported that forced sex was the cause of their unintended pregnancy (P = 0.015). Eight cases (42.1%) of condom users in repeat abortion-seekers and only one (2.8%) of the condom users in the first-time abortion-seekers reported that the forced sex was the cause of their unintended pregnancy (P = 0.004). None of 247 applicants had used emergency contraception, even though 108 (43.7%) of them thought about the probability of pregnancy during or after their suspected sexual intercourse.

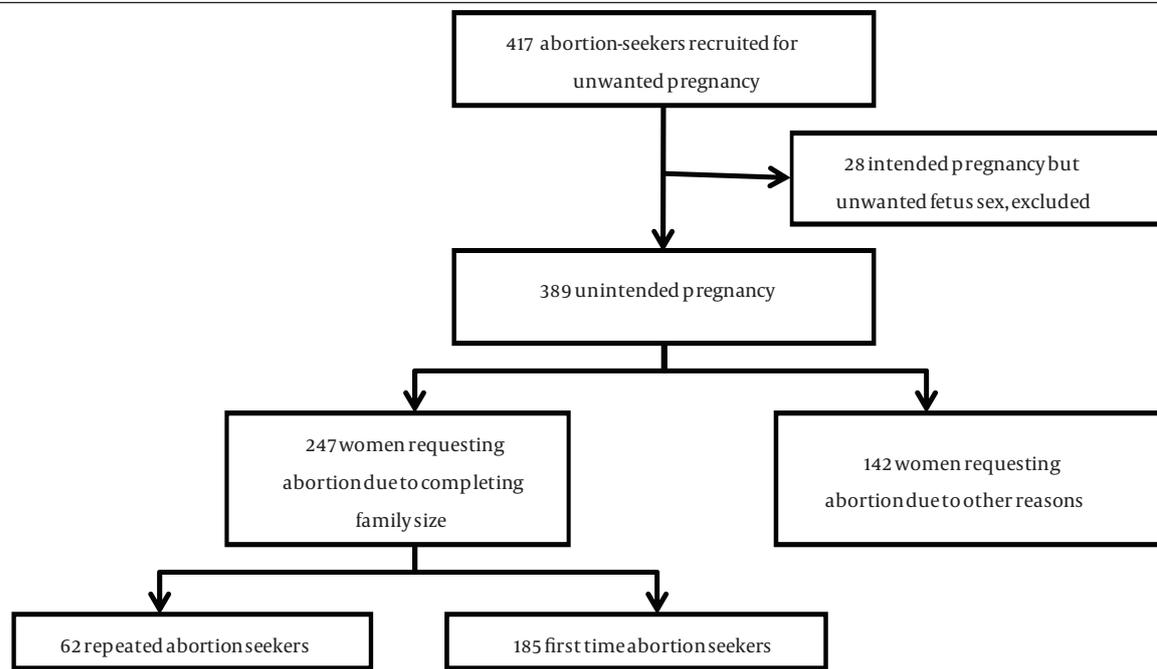


Figure 1. The Study Process

Table 2. Selected Socio-Demographic Characteristics of Abortion-Seekers Who Had Completed Their Childbearing (n = 247)

	Abortion Status		Test	P Value
	First Time	Repeat		
Age of woman, y	34.4 ± 4.6	36.1 ± 4.4	t-Test	0.012
educational level of woman, grade	6.9 ± 3.9	8.7 ± 3.1	t-Test	0.002
Age of husband, y	38.5 ± 5.1	39.6 ± 5.1	t-Test	0.145
educational level of husband, grade	8.4 ± 3.3	6.6 ± 5.4	t- test	0.003
The number of children	3.6 ± 0.9	3.1 ± 0.9	t-Test	0.001
Age of minor child	5.16 ± 2.6	5.4 ± 2.3	t-Test	0.445
Age at marriage	18.3 ± 2.1	18.4 ± 3.2	t-Test	0.831
Job of woman			chi-square	0.851
Housekeeper	157 (56.5)	52 (52.5)		
Employer	10 (9.5)	28 (28.5)		
Forced sex	12 (11.4)	2 (2.6)		
Total	185	62		P = 0.033, df = 1

Table 3. Comparison of Contraceptive Methods Used by First-Time and Repeat Abortion-Seekers Who Had Completed Their Child-bearing^{a,b}

Contraceptive Method	Abortion Status		P value ^c
	First time	Repeat	
Withdrawal	106 (57.3)	2 (3.25)	0.001, df = 1
Condom	36 (19.5)	19 (30.6)	0.067
Pill	29 (15.7)	31 (50.0)	< 0.001, df = 1
Depo provera	5 (2.7)	0	0.43
IUD	6 (3.2)	9 (14.5)	0.003, df = 1
TL	3 (1.6)	1 (1.6)	0.219
Total	185	62	-

^a Abbreviations: IUD, intra uterine device; TL, tubal ligation.

^b Data are presented as No. (%).

^c Chi square test.

5. Discussion

About 33.8 % of the repeat abortion-seekers and 76.8% of first-time abortion-seekers were using male methods (condom or withdrawal). All of pill users among the repeated abortion-seekers missed three or more pills per month for three times before conception. The repeat abortion-seekers used the condom more regularly than did those in the first-time abortion-seekers. Consistent with the present study, Prata et al. (11) have reported that women who seek repeat abortion had ever used a short-term or coital dependent method. In our study, the mean of educational level of woman was higher in repeat abortion group. This finding is consistent with results of Prata et al. (11) and inconsistent with a similar study in the Vietnam that found no association between education and repeat abortion (22). Husbands of repeat abortion-seekers had a lower education level than those of first-time abortion-seekers. Moreover, the mean education level of men whose wives had taken the pill was much lower than the men whose wife had taken male methods. This suggests a more traditional life style, a lower commitment to birth control, and an inclination to put responsibility on their wives in males with lower education level. However, if women could not use the pill regularly, this might result in an unwanted pregnancy and application for another abortion. Women who had a prior abortion-seeking behavior were using IUD 4.5 times more than those who were first-time abortion-seekers. Consistent with the present study, Prager et al. (23) found a positive association between using injectable contraceptives and repeat abortion, while Prata et al. (11) found no association between repeat abortion and the use of long-term methods. It seems that most of the women with a previous experience of an unwanted pregnancy or abortion use effective contraceptive methods, such as pills. Perhaps, the irregular contraceptive use among pill users in repeat abortion-seekers is not the exclusive reason for the failure of pill. Higher fecundity might be another reason for this failure. From a biological perspective, women who have had one abortion are more fecund than women who have not, and in turn, are at greater risk for having a second pregnancy (9). The great and unexpected difference observed between pill and withdrawal methods may be interpreted by considering the findings of Iran's Demographic and Health Survey (IDHS) in 2004 (24). According to the IDHS, the proportion of contraceptive methods used by women who got pregnant during use was as follow: pill 47.7 %, withdrawal 29.9%, condom 10.6 % and other methods 11.8 %. Also, the IDHS-2000 shows that 17.8% of Iranian women use withdrawal despite of the free availability of modern contraceptives (22). Moreover, women who use withdrawal method are more likely to be urban, from more developed provinces, and have higher education levels. In addition, fear from the side-effects of hormonal methods may also play a role in this behavior. Although our samples might not be a representative for all Iranian abortion seekers, improving contraceptive ser-

vices should be an obvious strategy to help women avoid frequent unintended pregnancies. However, recent studies have found that more intensive contraceptive counseling and service provision did not improve the quality of contraceptive use. This fact does not mean that women obtaining abortions should not receive contraceptive counseling and services, but it suggests that new strategies are needed to be developed and tested. For example, providers of contraceptive facilities might encourage the people to use newer, long-acting methods. This could be accomplished by changing the current women-based family planning services' program to couple-based programs. We also hypothesize that switching from traditional (withdrawal) method to the oral contraceptives, may not decrease the probability of another induced abortion among first-time abortion-seekers who used withdrawal method. Moreover, it is suggested that all of the couples who are first-time abortion-seekers should be trained in the use of emergency contraception. In the present study, forced sex was more prevalent in repeat abortion-seekers who used male methods. Murray et al. have reported that women who have experienced forced sex are more likely to report having had an abortion (25). Also, Gessesew et al. (26) showed that forced sex and failure of contraception were among the reasons for unwanted pregnancy. In the present study, none of the participants had used emergency contraception. In a study by Pei et al. (27), increased risk of induced abortion was attributed to the ignorance of emergency contraception across married women of childbearing ages. We suggest that couples who use the condom or withdrawal methods should be informed about the role of forced sex in attenuating the effectiveness of their contraceptive methods. Moreover, birth control pill users should be better educated about regular use of this method. As behavior change is a key concern of health education and counseling (28), improving the communication skills in midwives (as the main providers of contraception counseling in healthcare centers in Iran) can play an important role in changing their clients' behaviors regarding preventing unwanted pregnancies. The first strength of this study is that it is one of the very few studies on illegal abortion in Iran and is unique in addressing repeat induced abortion. The second strong point of our study was that we could gather data from private sectors although the physicians did not perform abortion for abortion seekers women. However, recall bias and misreporting of contraceptive use may have occurred. Therefore, the frequencies for regularity of contraceptive methods in repeat and first-time abortion seekers may be biased. Since only self-report measures were used in this study, the response consistency effect may have biased the observed relationships. However, as the perceptions and reminder are necessarily self-reported, such measures are most effective in measuring some past experiences or activities. Therefore, this

is an unavoidable criticism of this study. This study was conducted in one city of Iran and the sample is only a very small proportion of the entire target population in the country. Therefore, multicenter studies with a larger sample size would be required to ensure the appropriate generalization of the findings. Moreover, a qualitative study is suggested to explore in-depth and first-hand information about underlying causes of induced repeat abortion. In conclusion, the present study showed that using male methods are prevalent in abortion seekers. An increased focus is needed on training regular use of pills and using emergency contraception for all of the couples who are first-time abortion-seekers. Moreover, information about the role of forced sex might be efficacious in decreasing illegally induced repeat abortion in couples who use condom or withdrawal methods. The results of this study also suggest that the contraception counseling should be performed for couples who use natural or male methods to reduce the incidence of unintended pregnancy. Due to recent population policy change in Iran, these findings might be essential for making evidence-based strategies and planning the improved reproductive health policies.

Acknowledgements

The authors would like to thank all the women for their participation in this study. The authors are also thankful to Mr Keyvan Shariatinejad, MSc in Biostatistics, Faculty of Nursing and Midwifery, Mashhad University of Medical Sciences.

Authors' Contributions

Roghieh Bayrami designed the study. Roghieh Bayrami and Mozghan Javadnoori interpreted the data and wrote the paper. Roghieh Bayrami gathered data, and conducted data analysis.

References

- Gipson JD, Koenig MA, Hindin MJ. The effects of unintended pregnancy on infant, child, and parental health: a review of the literature. *Stud Fam Plann.* 2008;**39**(1):18-38.
- World health organization.. *Prevention of Unsafe Abortion.*: WHO; 2012. Available from: <http://www.afro.who.int/en/clusters-a-programmes/frh/sexual-and-reproductive-health/programme-components/prevention-of-unsafe-abortion.html>.
- World health organization.. *MDG 5: improve maternal health.*: WHO; 2014. Available from: www.who.int/topics/millennium_development_goals/maternal_health/en/.
- Tavafian S, Ramazanzadeh F. [Socioeconomic characteristics and induced abortion: a cross sectional study based on health belief model]. *Payesh.* 2007;**6**(2):157-64.
- Bleil ME, Adler NE, Pasch LA, Sternfeld B, Reijo-Pera RA, Cedars MI. Adverse childhood experiences and repeat induced abortion. *Am J Obstet Gynecol.* 2011;**204**(2):122 e1-6.
- Khan A. Induced abortion in Pakistan: community-based research. *J Pak Med Assoc.* 2013;**63**(4 Suppl 3):S27-32.
- Bayrami R, Taghipour A, Ebrahimipour H. [Experience of Unplanned Pregnancy in Women Attending to Health Centers of Mashhad, Iran: A Phenomenological Study]. *J Obstet Gynecol Infertil.* 2014;**16**(87):15-23.
- Hedayat KM, Shooshtarizadeh P, Raza M. Therapeutic abortion in Islam: contemporary views of Muslim Shiite scholars and effect of recent Iranian legislation. *J Med Ethics.* 2006;**32**(11):652-7.
- Jones R. K., Singh S., Finer L. B., Frohvirth L. F. *Repeat abortion in the United States.*New York: Alan Guttmacher Institute,; 2006.
- Bajos N, Prioux F, Moreau C. [Increase of repeat abortion in France: from contraceptive issues to postponement of child-bearing age]. *Rev Epidemiol Sante Publique.* 2013;**61**(4):291-8.
- Prata N, Holston M, Fraser A, Melkamu Y. Contraceptive use among women seeking repeat abortion in Addis Ababa, Ethiopia. *Afr J Reprod Health.* 2013;**17**(4):56-65.
- Fisher WA, Singh SS, Shuper PA, Carey M, Otchet F, MacLean-Brine D, et al. Characteristics of women undergoing repeat induced abortion. *CMAJ.* 2005;**172**(5):637-41.
- Erfani A, McQuillan K. Rates of induced abortion in Iran: the roles of contraceptive use and religiosity. *Stud Fam Plann.* 2008;**39**(2):111-22.
- Nojomi M, Akbarian A, Ashory-Moghadam S. Burden of abortion: induced and spontaneous. *Arch Iran Med.* 2006;**9**(1):39-45.
- Nguyen PH, Nguyen SV, Nguyen MQ, Nguyen NT, Keithly SC, Mai LT, et al. The association and a potential pathway between gender-based violence and induced abortion in Thai Nguyen province, Vietnam. *Glob Health Action.* 2012;**5**:1-11.
- Mentula MJ, Niinimäki M, Suhonen S, Hemminki E, Gissler M, Heikinheimo O. Young age and termination of pregnancy during the second trimester are risk factors for repeat second-trimester abortion. *Am J Obstet Gynecol.* 2010;**203**(2):107 e1-7.
- Stone N, Ingham R. Who presents more than once? Repeat abortion among women in Britain. *J Fam Plann Reprod Health Care.* 2011;**37**(4):209-15.
- Makenzius M, Tyden T, Darj E, Larsson M. Repeat induced abortion - a matter of individual behaviour or societal factors? A cross-sectional study among Swedish women. *Eur J Contracept Reprod Health Care.* 2011;**16**(5):369-77.
- Heikinheimo O, Gissler M, Suhonen S. Age, parity, history of abortion and contraceptive choices affect the risk of repeat abortion. *Contraception.* 2008;**78**(2):149-54.
- Miller WB, Pasta DJ. The Motivational Substrate of Unintended and Unwanted Pregnancy. *J Appl Biobehav Res.* 2002;**7**(1):1-29.
- Miller WB. Psychological antecedents to conception among abortion seekers. *West J Med.* 1975;**122**(1):12-9.
- Nguyen TM, Chongsuvivatwong V, Geater A, Prateepchaikul L. Characteristics of repeat aborters in Vietnam. *Southeast Asian J Trop Med Public Health.* 2000;**31**(1):167-72.
- Prager SW, Steinauer JE, Foster DG, Darney PD, Drey EA. Risk factors for repeat elective abortion. *Am J Obstet Gynecol.* 2007;**197**(6):575 e1-6.
- Erfani A, Yuksel-Kaptanoglu I. The use of withdrawal among birth limiters in Iran and Turkey. *Stud Fam Plann.* 2012;**43**(1):21-32.
- Murray N, Winfrey W, Chatterji M, Moreland S, Dougherty L, Okonofua F. Factors related to induced abortion among young women in Edo State, Nigeria. *Stud Fam Plann.* 2006;**37**(4):251-68.
- Gessesew A. Unwanted pregnancy and its impact on maternal health and utilization of health services in Tigray Region (Adigrat Hospital). *Ethiop Med J.* 2009;**47**(1):1-8.
- Pei L, Zhu L, Guo C, Liu HY. [Association between contraceptive choice and the risk of induced abortion among floating married women of childbearing age]. *Zhonghua Liu Xing Bing Xue Za Zhi.* 2013;**34**(7):677-81.
- Akin-Otiko BO, Bhengu BR. Appraisal of observance of behaviour change communication programme for maternal and child health at first level of midwifery practice in kaduna state Nigeria. *Nurs Midwifery Stud.* 2013;**2**(3):28-33.