http://dx.doi.org/10.15218/zjms.2016.0041

Prevalence and risk factors of abortion among a sample of married women in Kurdistan Region of Iraq

Received: 22/6/2015 Accepted: 20/1/2016

Fatema Mohammed Azo * Cuma AKBAY **

Abstract

Background and objective: A high proportion of maternal mortality in developing countries is caused by abortion, especially in such countries with limited abortion laws. The aim of this study was to determine the prevalence of abortion and investigate the relationship between abortion among women and their socio-demographic and obstetrical causative variables in Kurdistan Region of Iraq.

Methods: The data for the research came from 7551 married women aged 15-49 years from three governorates of Kurdistan Region who participated in the 2011 multiple indicator cluster survey. Data were collected during the period from February 13th, to March 18th, 2011 in the Kurdistan region. Logistic regression analysis was done at the binary level to determine the effect of demographic and obstetrical factors on abortion.

Results: The results showed that the prevalence of abortion in this study was 27.7%, and there was statistically significant relationship between abortion and maternal age, the higher level of education, socio-economic levels (excluding middle level), the age of marriage, the number of live children, and governorate (Duhok). There was no significant relationship between abortion and residence, occupation, type of marriage and governorate (Suleymaniye).

Conclusion: Significant relationship was found between ages, the number of live children, Residence, level of education and social economic status of women.

Keywords: Abortion; Risk factors; Prevalence; Married women.

Introduction

Abortion is the medical term for any pregnancy loss before the fetus is viable (could have lived outside the uterus) commonly called a miscarriage. A viable fetus is usually defined as a fetus of more than 20 to 24 weeks of gestation.[1] Abortion can occur spontaneously or can be induced. Miscarriage is defined as the spontaneous loss of a pregnancy before viability. It occurs in 15% to 30% of all pregnancies.[1] Maternal and prenatal cares are the best prevention for spontaneous abortion.[2] Some factors influence the spontaneous abortion rate. For example, clinically apparent miscarriage increases with parity as well as with maternal and paternal age.[3] Induced abortion occurs at the desire of the couple and an increase in the induced abortion rate is a good indicator of inadequate family planning services.[2] Each year over 200 million pregnancies occur worldwide, and approximately one third of these are unintended, and about 20% of them end in induced abortion.[4] National statistics on abortion show that the women undergoing abortion suffer from physical complications such as infections, fevers, pain and bleeding, embolism, perforation of the uterus, and anesthesia complications.[1] Psychological problems include negative reactions, sleep disturbances, regrets decision, sexual dysfunctions and depression.[5] Detailed information on induced abortion is difficult to obtain in many countries, especially in countries where abortion is limited considering the

* Soran Polytechnic University, Erbil, Iraq.
** Kahramanmaras Sutcu Imam University, Kahramanmaras, Turkey.

http://dx.doi.org/10.15218/zjms.2016.0041

experiences obtained from other studies, women often fear the reaction of hospital personnel and the consequences of social and legal of inducing abortion. Therefore, the women are less likely to visit hospitals and health centers, and in the case of visit, they don't report the real cause of their induce abortion. In 2008, an estimated 44 million induced abortions occurred in the world, almost half of which were unsafe abortion.[6] Globally, it is estimated that 47000 women die each year from complications related to unsafe abortion. Many of these deaths could be prevented through better access to sexual education, contraceptive information and supplies, and safe abortion services where allowed by law.[7] The World Health Organization (WHO), noted to save the life of a woman, to preserve a woman's physical health, to preserve a woman mental health, in the case of rape or incest, fetal impairment, economic or social circumstances, and on request as main reasons for abortion.[8] Different countries based on their culture, customs, religious beliefs and views, have imposed different laws in connection with mentioned reasons for abortion. Therefore, national policies and legislation related to abortion are very broad. According to United Nations, 97% of governments have permitted abortion to save a woman's life. Between 1996 and 2013, 57 countries increased the number of legal grounds for abortion, while eight countries reduced the number of grounds on which abortion is permitted. According to this report, in 2005 and 2013, the Iraqi government provided direct support for family planning. However, the Iraqi government is among those countries that reduced the number of grounds on which abortion is permitted. In 1996, the Iraqi government allowed most grounds of abortion, but in 2005 and 2013 the law permitted abortion to be performed only in certain cases, that related to the preservation of women's life.[7] Hence, abortion is illegal if it is performed in the absence of legal indications, such as unwanted pregnancy. The specific objectives of this study were to estimate the prevalence of abortion and to find out the relationship between socio-demographic and obstetrical factors such as parity, the age of women, education, occupation, socioeconomic status, residency, and age at marriage with abortion.

Methods

The data in this study were based on the Iraq multiple indicator cluster survey (MICS) which was conducted by the Central Statistics Organization (CSO) and the Kurdistan Regional Statistics Office (KRSO) in coordination with the Ministry of Health (MoH). The survey provides a detailed understanding of the status of children and women in Iraq. Permission for the study was obtained from the head of the Kurdistan Regional Statistics Office. MICS is an international household survey initiative developed by United Nations Children's Fund (UNICEF) to assist countries in filling data gaps for monitoring human development in general and the situation of children and women in particular. The sample for the Iraqi multiple indicator cluster survey was designed to provide estimates for a large number of indicators on the situation of children and women at the national level for urban and rural areas, for the 18 governorates and the 118 districts. A total of 7551 currently married women of reproductive age (15-49 years) from three governorates of Kurdistan region responded to the questionnaire which was developed for the mentioned survey and interview techniques was used for data collection. Data were collected during the period February 13th to March 18th, 2011 in the Kurdistan region. Demographic variables included women's age, the level of education, occupation, and residential status, type of marriage, socioeconomic status, and governorate. The obstetrical characteristics included the number of live children, age at marriage and history of abortion. The socio -economic status was constructed using

http://dx.doi.org/10.15218/zjms.2016.0041

household asset data including ownership of a number of consumer items, dwelling characteristics, water and sanitation, the number of persons per room, floor materials, roof materials, cooking fuel. Characteristics that are related to the household's wealth to assign weights (factors score) to each of the household assets. Each household was then assigned a wealth score based on these weights and the assets owned by that household. Individuals were ranked according to the wealth to the score of the household, they are living in and was finally divided into five equal parts from lowest (poorest) to highest (richest). The assets used in these calculations were as followings: electricity, radio, television, telephone, fridge, satellite, internet, power generator, deep freezer, split unit air conditioner, air cooler, mobile, bicycle, motorcycle, animal drawn cart, car and computer.

Statistical analysis

Statistical analyses were assessed using the statistical package for the social science (version 20). Descriptive analysis was conducted for categorical variables by using frequency and percentage, and logistic regression analysis was done at the binary level to determine the relationship between abortion and women's demographic and obstetrical characteristics. Logistic regression is a statistical technique for examining the relationship between an outcome measure (response variable), and one or more explanatory variables.[9] One of the purposes of logistic regression analysis is trying to predict membership of only two categorical outcomes analysis is known as binary logistic regression.[10] In the model, history of abortion was the dependent variable. Age of women, residency, occupation, type of marriage, educational level, socio-economic status, age at marriage, the number of live children and governorate as independent variables used in the model. Definition of each variable is given in Table 1 and Table 2. All statistically significance coefficients, based on a two–tailed test at the (alpha) $\alpha = 0.1, 0.05$, and 0.01 levels, are marked. Thus, demographic and obstetrical variables in the logit model are relevant in explaining abortion. Fourteen of the twenty variables are statistically significant at least 10% level of probability or better.

Results

Socio-demographic and obstetrical characteristics of the study participants

The study sample comprised 7551 women; whose ages were between 15-49 years, with the mean age of 32.77 ± 8.06 years (Table 1). The findings of the current study showed that 38.0% of participants were illiterate, only 6.2% women had higher levels of education, most were housewives (89.2%) and 10.8% were employed women. The results of the present study revealed that 94.1% of women were in the monogamous marriage (marriage with only one person at a time), and 5.9% of respondents were in the polygamy type of marriage (husbands have other wives besides his wife). According to the place of residence, 66.9% of the studied population was from urban areas, whereas only 33.1 live in rural areas. The majority (44.9%) of the women were from Suleymaniye, 28.9% of them from Erbil and 26.2% of women were from Duhok. The highest percentage (44.8%) of women had 2 to 4 children and 31.7% of respondents had five or more than five children. Thirty four percent of women, marriage was before the age of 18 years. The proportion of the study sample in each socio-economic class was as following: poorest (18.2%), second (19.1%), middle (20.2%), fourth (20.5%), and richest (21.7%). The prevalence rate of abortion in the present study was 27.7%.

http://dx.doi.org/10.15218/zjms.2016.0041

Table 1: Number and percentage distribution of respondents by selected demographic characteristics.

Variables		No.	%
Age of women	≤20	406	5.4
	21-25	1194	15.8
	26-30	1633	21.6
	31-35	1461	19.3
	>35	2857	37.8
	($\overline{X} \pm SD$: 32.8±8.06)		
Residency	Urban	5050	66.9
	Rural	2501	33.1
Occupation	Employed	812	10.8
	Unemployed	6739	89.2
Type of marriage	Polygamy	445	5.9
	Monogamy	7106	94.1
Level of Education	Illiterate	2881	38.2
	Primary and Secondary	4202	55.6
	Higher Education	468	6.2
Socio-economic status	Poorest	1379	18.2
	Second	1449	19.1
	Middle	1526	20.2
	Fourth	1554	20.5
	Richest	1643	21.7
Governorate	Erbil	2184	28.9
	Duhok	1976	26.2
	Suleymaniye	3391	44.9

Table 2: number and percentage distribution of respondents by selected obstetrical characteristics

Variables		No.	%
History of abortion	Yes	2094	27.7
	No	5457	72.3
Number of live children	0-1	1773	23.5
	2-4	3384	44.8
	5 and more	2394	31.7
Age at marriage	< 18	2566	34.0
	18-24	3831	50.7
	25-31	986	13.1
	> 31	168	2.2

http://dx.doi.org/10.15218/zjms.2016.0041

Results for binary logit model for the experience of abortion are given in Table 3. According to chi-square value (419.036) the model is statistically significant, since *P* <0.01. So we conclude that there is a highly significant relationship between dependent variable and independent variables. In addition, the model predicted 72.3% of the observation correctly. According to the results of logistic regression analysis, age of women, higher level of education, socio-economic status (excluding middle level), age at marriage, number of live children and governorate (Duhok), have shown to be the significant factors on abortion, while there are no statistically significant relationship between the dependent variable and some independent variables such as residence, occupation, type of marriage, lower level of education and governorate (Suleymaniye). The results of logistic regression revealed that the age of women and abortion were strongly related. Whatever age of women increased the likelihood of abortion is increased. The result has indicated that women of the age group 21-25 were 1.655 times more likely to had abortion relative to the women at age 20 years old and below. While the women who were at the age 31-35 years were 3.6839 times more likely to have an abortion than reference group, and women at age 36 years and above had a significantly higher odds ratio of 4.826 times to had an abortion compared to the youngest age group. The analysis indicated that women from Duhok were 1.52 times more likely to have an abortion, related to women from Erbil, while Suleymaniye governorate has not shown a significant association with abortion; however, the women from Suleymaniye were 0.9634 times less likely to have an abortion, compared with the reference group. Finding has shown that the predictor number of live children has a positive relationship with experience abortion, this means, women who have more children are more likely to have an abortion (OR = 1.0224). Regarding education, the negative relationship was present between the higher level of education and experience abortion, women who had attended higher level of education were less likely to have abortion compare to illiterate women (OR = 0.7397). The analysis also suggested that there was a negative relation between socio-economic status and abortion; women of second, fourth, and richest socio -economic status, significantly less likely to had an abortion (OR = 0.8557, OR = 0.8389, OR = 0.7915 respectively), compared with women in the poorest socio -economic class. It was also found a negative relationship between age at marriage and abortion; women who were married after the age of 18 years were less likely to experience abortion compared with those who their marriage is at the age 18 years below. In other words, whatever age at marriage increased the likelihood of abortion is decreased.

http://dx.doi.org/10.15218/zjms.2016.0041

Table 3: Results of binary logit model for prevalence of abortion and selected explanatory variables.

Variables	Coefficient	*P* value	OR
Residency			
(1: Urban; 0: Rural)	-0.0764	0.1841	0.9264
Age of women			
(1: ≤20; 0: others) (Ref)			
(1: 21-25; 0: others)	**0.5037*****	0.005	1.6549
(1: 26-30; 0: others)	**1.0122*****	<0.001	2.7517
(1:31-35; 0: others)	**1.3040*****	<0.001	3.6839
(1: ≥36; 0: others)	**1.5741*****	<0.001	4.8262
Occupation of women			
(1: Employed; 0: unemployed)	0.0685	0.5361	1.0709
Type of marriage			
(1: polygamy; 0: monogamy)	0.0827	0.4516	1.0862
Education of women			
(1: Illiterate; 0: others) (Ref)			
(1: finished primary, secondary school; 0: others)	0.0084	0.8830	1.0084
(1: Higher education; 0: others)	**-0.3016***	0.0625	0.7397
Socio-economic status			
(1: Poorest; 0: others) (Ref)			
(1: Second; 0: others)	**-0.1558****	0.027	0.8557
(1: Middle; 0: others)	-0.0607	0.419	0.9411
(1: Fourth; 0: others)	**-0.1757****	0.050	0.8389
(1: Richest; 0: others)	**-0.2338****	0.026	0.7915
Age at marriage			
(1: <18; 0: others) (Ref)			
(1: 18-24; 0: others)	**-0.1738*****	0.005	0.8405
(1: 25-31; 0: others)	**-0.5426*****	<0.001	0.5812
(1: >31; 0: others)	**-0.3233***	0.097	0.7237
Governorate			
(1:Erbil; 0: others) (Ref)			
(1:Duhok; 0: others)	**0.4187*****	<0.001	1.5200
(1:Suleymaniye; 0: others)	-0.0373	0.569	0.9634
Number of live children	**0.0221***	0.100	1.0224
Constant	**-2.2570*****	<0.001	0.1047

*, ** and *** indicate statistical significance at the 0.1, 0.05 and 0.01 levels, respectively.
Predicted correct percentage: 72.3%; Chi-Square = 419.036; P-value: 0.000; Log likelihood: 8497.17

http://dx.doi.org/10.15218/zjms.2016.0041

Discussion

The current study revealed a high prevalence of abortion among women in Kurdistan Region, which is 27.7%. This result was almost similar to findings of Iraq multiple indicator survey (2006)[11] reported that the total prevalence of abortion in currently Iraqi married women was 30%, and prevalence of abortion were higher in Kurdistan Region (31%) than the rest of the Iraq (29%). However, the result of the current study is in contrast with findings of the following studies. A study was done in Iran by Ranjbar et al. [12] to determine fertility behavior of Iranian women, who reported, the rate of abortion was 11.2%. According to the demographic and health survey in Turkey, the rate of abortion among ever married women were 21%.[13] Jones and Jerman[14] conducted a study to determine abortion incidence and service availability in the United States indicated that the abortion ratio was 21% among women aged 15-44 in 2011. Moreover, the rate of abortion in Russia was found to be 38.5% in 2011.[15] Findings from logistic regression showed that there was a statistically significant relationship between abortion and age of women, high level of education, socio-economic status, age at marriage, the number of live children, and governorate. The study conducted by Bozkurt[2] in Turkey has found almost similar results. Based on the statistically significant coefficient, the age of the women is an important determinant for abortion likelihood, and the effect is positive as expected, this finding indicates that experience abortion increases as the age of women increases. These results supported by multiple indicator cluster survey 2006 Iraq[11] that reported abortion percentage increased by age; the similar study also has shown that the older mothers were more likely to have an abortion.[2,16] Contrasted with these results, a study conducted by Pourreza and Batebi[17] who studied psychological consequences of abortion among the post abortion care seeking women in Tehran reported that younger women were more likely to have an abortion. Regarding governorate, women who lived in Duhok governorate were more likely to have an abortion than those in Erbil governorate. Regarding number of live children; the result indicated that the number of live children had statistically significant positive relationship with abortion, Similar results have been observed in the following studies: study that done by Westoff[18] to investigate recent trends in abortion and contraception in 12 countries of central Asia and eastern Europe, which reported abortion rate increased as the number of live children increased. And in the study that conducted in Saudi Arabia by Al-Nuaim et al.[19] to examine the demographic and fertility factors that may predispose to spontaneous abortion in women with prior abortion, they found a statistically significant relationship between parity and abortion. This result was in contrast with the finding of a study done in Iran by Majlessi et al.[20] which reported that there was no statistically significant association between abortion and number of children. In the current study, a negative relation between abortion and a higher level of education has been observed. The relationship of abortion to a higher level of education is a negative association that means more educated women appear less likely to experience abortion. More educated women have better social and economic level and more access to health care, these factors can express the negative association between education level and abortion. Therefore, extending the education programs about abortion and disadvantages and side-effects of abortion, especially for the housewife and illiterate women is necessary. The relation between abortion and education level varies widely across countries. A study conducted by Erfani[21] found a positive relationship between abortion and education level. Another study was carried out by Westoff[18] to investigate recent trends in abortion and contraception in 12 countries of central

http://dx.doi.org/10.15218/zjms.2016.0041

Asia and Eastern Europe. He reported there was a positive relationship between abortion and education in Rumania, Armenia, Azerbaijan, Turkmenistan, and Uzbekistan while in other central Asian and Eastern European countries, less educated women were more likely to have an abortion. Socio-economic status, the primary economic factor, has a statistically significant negative relationship with abortion means abortion experience in poor families is greater than other families. This result was in contrast with findings of a study conducted by Erfani[21] who reported the abortion rate was elevated among women who had high levels of income. Regarding marriage age, it is known as a strong obstetrical characteristic with important implications for mothers' health and their children [17]. In this case, the odds ratio was less than one; it means that there was statistically negative relation between age at marriage and abortion and found that abortion has been increased as age at marriage decrease among the women. This result was in line with the result of a study conducted by Pourreza and Batebi[17] who studied 278 women of reproductive age (15 -49 years) to detecting types and frequent psychological side effects of abortion among post abortion care seeking women in Tehran and reported that 50% of the abortion belonged to those women who married at their 20s' or under 20 years of age. The current study found no statistically significant relationship between abortion and places of residence, occupations, type of marriage. However, residency did not have a statistically important effect on abortion; it means that there is no significance difference between the women who were living in the rural or urban areas. This result supported by multiple indicator cluster survey 2006 Iraq[11], that reported abortion percentages did not vary by area of residence. Occupation of women has a positive association with experience abortion; it means that the rate of abortion in the current study is higher in unemployed women than employed women, which is statistically meaningless. This result was similar to the results of the study conducted in Turkey by Bozkurt et al.[2] They found that the percentage of women who had at least one abortion was higher for unemployed women. Erfani[21] reported the proportion of abortion was higher among employed women than unemployed women in Iran. In this study, the finding shows that unemployed women are more likely to have an abortion, which may be due to lower levels of women's education, which mentioned above.

Conclusion

The prevalence of abortion was 27.7%. Age, a higher level of education, socio-economic status, age at marriage, the number of live children, and Governorate had a significant relationship with abortion. Unemployed women, women who had lower levels of socio-economic class and education, also older women, women who had more children, and married at the lower ages, were more likely to had an abortion. The results of the present study could help policy makers to develop necessary strategies to prevent abortion, by improving women's level of education and their socioeconomic status.

Conflicts of interest

The authors report no conflicts of interest.

References

1. Pillitteri A. Maternal and Child Health Nursing: Care of the Childbearing and Childbearing Family. 5th ed. Buffalo, New York: Lippincott Williams & Wilkins; 2007. P. 215-405.
2. Bozkurt IA, Özcirpici B, Ozgur S, Shahinoz S, Shahinoz T, Saka G, et al. Induced abortion and affecting factors of ever married women in the Southeast Anatolian Project Region, Turkey: a cross sectional study. BMC Public Health 2004; 4(1):65.
3. Cunningham FG, Leveno KJ, BloomSL, Hauth JC, Gilstrap L, Wenstrom K.Williams OBSTETRICS. 23rd ed. USA: McGraw-Hill Companies; 2010. P. 215-16.

4. Cheng L. "Surgical versus medical methods for second-trimester induced abortion: RHL commentary (last revised: 1 November 2008)." The WHO reproductive health library; 2008. Available from: http://apps.who.int/rhl/fertility/abortion/CD006714_chengl_com/en/
5. Fergusson DM, Horwood LJ, Boden JM. Reactions to abortion and subsequent mental health. Br J Psychiatry 2009; 195(5):420-6.
6. Guttmacher Institute. Facts on induced abortion worldwide. New York; 2012. Available from: https://www.guttmacher.org/pubs/fb_IAW.html.
7. Department of Economic and Social Affairs, Population Division. World Population Policies. New York, United Nations; 2013.
8. Department of Economic and Social Affairs, Population Division. Abortion Policies. Oman to Zimbabwe (vol. 3). New York, United Nations; 2001.
9. Walker J. Methodology, Application: Logistic Regression Using the Data. Developed for department of transportation, national highway traffic safety administration (NHTS), Washington, DC, April 30, 1996.http://www-nrd.nhtsa.dot.gov/Pubs/96843.pdf
10. Field A. Discovering Statistics Using SPSS. 3rded. London: SAGE Publication Ltd; 2009. P. 265-72.
11. Central Organization for Statistics and Information Technology and Kurdistan Regional Statistical Office, 2007. Iraq Multiple Indicator Cluster Survey 2006. Final Report. Iraq.
12. Ranjbar F, Shirzad M, Kamali K, Akhondi MM, Ghoodjani A, Behjati-Ardakani Z, et al. Fertility behaviour of Iranian women: A community-based, cross-sectional study. Arch Iran Med 2015; 18 (1):2–5.
13. Hacettepe University Institute of Population Studies: Turkey Demographic and Health Survey, 2008. Hacettepe University Institute of Population Studies, Ministry of Health General Directorate of Mother and Child Health and Family Planning, T.R. Prime Ministry Undersecretary of State Planning Organization and TÜBİTAK, Ankara, Turkey; 2009.
14. Jones RK, Jerman J. Abortion incidence and service availability in the United States 2011: incidence and access to services. Perspect Sex Reprod Health 2011; 40(1):6-16.
15. Historical abortion statistics, Russia. Compiled by Wm. Robert Johnston. (Last updated 18 January 2015). Available from: http://www.johnstonsarchive.net/policy/abortion/ab-russia.html
16. Mosoko JJ, Delvaux T, Glynn JR, Zekeng L, Macauley L,Buve A. Induce abortion among women attending antenatal clinics in Yaounde, Cameroon. East Afr Med J 2004; 81:71-7.
17. Pourreza A, Batebi A. Psychological consequences of abortion among the post abortion care seeking women in Tehran. Iranian J psychiatry 2011; 6(1):31-6.
18. Westoff Charles F. Recent trends in abortion and contraception in 12 countries. DHS Analytical Studies No.8. Calverton, Maryland: ORC Macro 2005. http://www.measuredhs.com/pubs/pdf/AS8/AS8.pdf
19. Al-Nuaim L, Bamqboye EA, Abotalib Z, Chowdhury N, Adelusi B. Demographic and fertility variables as determinants of spontaneous abortions in women with previous abortion. Afr J Med Med Sci 1997; 27(3-4):165-7.
20. Majlessi F, Forooshani AR, Shariat M. Prevalence of induced abortion and associated complications in women attending hospitals in Isfahan. East Mediterr Health J 2008; 14(1): 103-9.
21. Erfani A. "Induced abortion in Tehran, Iran: estimated rates and correlates. Int Perspect Sex Reprod Health 2011; 37(3):134-42.