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Study of Causes, Methods and Complications of Early and Late Miscarriage due to Intentional Abortion in Women referred to Health Centers covered by Shahid Beheshti University

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Abstract

Introduction: Induced abortion is a major threat to women's fertility health. In particular, in developing countries and the societies where abortion is illegal, abortions are commonly carried out under unsanitary conditions, causing maternal complications, dangers to maternal health, and women's future infertility. These consequences are especially evident in Iran where at least 80,000 illegal abortions are done annually. The current study aimed to examine the reasons for abortion, methods of abortion, and its short-term and long-term complications.

Methods: This study, which adopted a descriptive design, was conducted among the women who had already carried out abortion and referred to one of the health, therapeutic, and educational centers affiliated with Shahid Beheshti University of Medical Sciences. The participants (N = 360) were selected the data were gleaned through a self-designed questionnaire and statistically analyzed using SPSS version 17.

Results: The results of analyzing the data collected through the 369 questionnaires revealed that the mean age of participants was 26 years (SD = 7.2 years). The main reason for abortion was financial problems. With regard to marital status, 91.3% of the participants were married. Also, considering their job, 74.2% of the respondents were housewives, while 15.5% were employed in office jobs. Further, in 55.3% of the cases, abortion had been carried out as a result of the husband's encouragement. The most common method of abortion was prescribing chemical medications, while the least popular method was intrauterine manipulations (with only 197 women reporting this abortion method). Moreover, 114 participants reported that they had accomplished curettage in a specialist physician's office without anesthesia. The short-term complications of abortion included abdominal pain after abortion and incomplete abortion. On the other hand, long-term complications entailed visceral injury (1%), complications in the next pregnancy, bleeding in early pregnancy (10.7%), preterm delivery (7.9%), and ectopic pregnancy (7.4%).

Conclusions: Scientific and religious education through appropriate procedures along with preventing unwanted pregnancy is a decisive factor in abortion.

INTRODUCTION

Abortion, which entails terminating pregnancy before the fetus has the capability to live outside the uterine environment, is of two types – namely spontaneous and induced abortion. The latter, in turn, is further divided into two categories: abortion therapy, which refers to a situation in which abortion is accomplished to maintain the mother's health; and elective abortion, which is carried out on the mother's demand [1]. Elective abortion is legal in some countries, while it is recognized as an illegal action in many other countries. The

abortion prohibition resolution was approved in 1995 in the fourth conference of the United Nations. Some European countries abide by this law, only approving a limited number of special cases for abortion. In Poland, Iraq, Lebanon, Yemen, and Syria, abortion is illegal unless there is a threat to the mother's health. Likewise, in Iran, abortion is legal in some limited cases, which were approved in December, 2003. Nonetheless, it is illegal to carry out abortion without indication and permission. The reported statistics for illegal abortions across the world is much smaller than what actually happens. In 2011, the Guttmacher Institute reported that 1.2 million illegal abortions had been annually accomplished from 2005 through 2008, with around 58% of them being carried out among women whose age ranged from 20-29 years. According to the latest report of the WHO, the proportion of pregnancy to abortion in the world is around 5 to 1 and, unfortunately, half of the abortions are carried out under unsafe conditions [2].

Unwanted pregnancy, which is a major problem among women of gestational age, is the cause of many elective abortions. Four out of every 10 pregnancies are unwanted. Based on statistics released in 2010, the ratio of wanted to unwanted pregnancy in Asia is 78 to 49 for every 1000 women of gestational age [3].

According to the statistics of the WHO published in 2007, around 210 million pregnancies are registered annually in the world, with about 80 million of them (around 40%) being unscheduled. About 42 million of these pregnancies end up in induced abortion. Out of this, 20 million abortions are carried out illegally under unsanitary conditions by untrained individuals. Unsafe abortion is the cause of 65000-70000 annual deaths among women in the world. One fourth of women who undergo unsafe abortion (over 5 million women each year) face serious complications that may cause death and require to be hospitalized. Indeed, unsafe abortion is the leading cause of 13% of deaths among mothers and 20% of the inability associated with pregnancy and delivery in the world [4, 5].

In Iran, it is estimated that 34% of pregnancies are unscheduled, out of which 16% is unwanted and 18% constitutes premature pregnancy. It is believed that annually 73000 induced abortions are performed by married women with most of them being illegal and unsafe [5]. From March, 2005 to March, 2006, the proportion of unwanted pregnancy in Iran was 6.18% [6]. According to the official statistics released in 1998, 90000 legal and illegal induced abortions are accomplished in Iran (an average of 221 abortions each day). Out of this rate, 80000 abortions are carried out illegally under unsanitary conditions [7]. A study conducted among8 hospitals in Isfahan in 2006 demonstrated that 35% of the pregnancies were unwanted. It also showed that 27.1% of women with unwanted pregnancy terminated their pregnancies through induced abortion. In this study, the rate of induced abortion was found to be 12% [8].

Abortion is accomplished through either surgical or medical methods. According to the ACOG (2011), medical methods are utilized if the women are in the first seven weeks of pregnancy. After this time, surgery is the alternative for terminating pregnancy [1]. Medical methods for accomplishing abortion are: [1] mifepristone, which is not available in Iran; [2] methotrexate, which is an antimetabolite and is not routinely used for induced abortion in Iran; [3] misoprostol, which is widely used in Iran for conducting abortions among women who are at most 63 days into their pregnancy and is effective in 92%-96% of the cases. Both methotrexate and misoprostol are teratogens. Thus, abortion should be completed when they are used [1].

In many countries, a large proportion of maternal mortality is due to complications caused by unhygienic and illegal abortion. This proportion, however, underestimates the reality since most of the reports stem from the complications caused by legal abortions. A report from Finland showed that, out of 43000 abortions carried out before the 63rd day of pregnancy, only one death was reported. It is safer to conduct abortion earlier. After 8 weeks of pregnancy, the mortality risk goes up twice for every two weeks of pregnancy. In 2008, 12 deaths caused by abortion were observed in the United States [1].

The majority of complications caused by induced and unhealthy abortions are incomplete abortions, infection, severe hemorrhage, tear, and injury to the pelvic tissues, including perforation or uterine rupture [9]. The long-term risks of such abortions also include ectopic pregnancy, chronic inflammation, pelvic infections, renal impairment, and secondary infertility [10].

From the Islamic viewpoint, abortion is primarily banned in all stages of pregnancy. However, according to secondary sentences, abortion can be accomplished under certain conditions like hardship, serious fault in the fetus, emergency, and harm for the mother. It should be noted that even in these cases, abortion should be carried out before the soul is instilled in the body. After this time (i.e. after the fifth month of pregnancy), it is very difficult to accomplish abortion following Islamic rules. In such cases, abortion is allowed only if carrying the baby might cause some risks for the mother or if it is intolerable to carry the baby [11].

METHODS

This research, which adopted a descriptive design, was conducted in the health, therapeutic, and educational centers affiliated with Shahid Beheshti University of Medical Sciences. More specifically, the women who met the inclusion criteria were invited to participate in the study. After gaining their informed consent, an already developed questionnaire was distributed among them and they were asked to complete and return it to the researchers.

The participants included women of gestational age who had carried out induced abortion over the past five years leading to the study. The data were collected from 2013 to 2014.

The participants were selected among women who were Iranian citizens, had no apparent psychological problem, and could read and write. Given the descriptive nature of the study, the sample size was calculated using the following formula: n=z2p (1-p)/d2. Since Sedgh et al. [2]have reported a 50% incidence of unsafe abortion (p=50%) and given that α=5% and d=5%, the sample size was determined to be 384. Nonetheless, because some of the questionnaires were not thoroughly completed by the participants, the total number of the questionnaires that were considered for data analysis was 360.

The data collection instrument was a self-designed questionnaire filled by each participant. The reliability of the questionnaire was calculated using a proportion of completed surveys, with the Cronbach's alpha being 0.9. First, a midwife talked to the participants about the objective and importance of the study. The respondents were assured that their data would remain confidential. Then, written informed consent was obtained from all the participants prior to administering the questionnaire.

The collected data were fed into SPSS 17 for further analysis. Descriptive statistics (e.g. mean, standard deviation, ratios, and percentages) were obtained.

This research paper was based on a proposal (code: 1392-1-157-1135) approved by Shahid Beheshti University of Medical Sciences. The ethics committee of Shahid Beheshti University of Medical Sciences approved this project and the code is SBMU.REC.1392.235.

RESULTS

The mean age of participants while conducting abortion was 26 years with standard deviation of 5.8 (ranging from 15 to 43 years). Most of them (74.2%) were housewives. Also, with regard to their academic degree, the majority (42.2%) had a diploma, whereas 16.5% held a master. Most of them (53.2%) had carried out abortion between 6 and 8 weeks of pregnancy.

The main reasons for doing abortion were financial problems (19.5%), family disputes (14.8%), psychological problems (13.3%), and fetal defects (11.7%). All other reasons are displayed in Table 1.

The methods and locations for doing abortion are respectively illustrated in Tables 2 and 3. The frequency of individuals in the light of the location where abortion was accomplished shows that most of the participants (114 individuals which is equal to 31.9% of all participants) had conducted the abortion in a specialist physician's office without anesthesia. A minimum number of participants (only 3 women, which is equal to 0.8% of all participants) had carried out abortion in the office of a general physician with anesthesia.

Table 1. Distribution of Participants based on their Reasons for doing Abortion

Variable	Number	Percentage
Physical problems	21	5.8
Psychological problems	48	13.3
Financial problems	70	19.5
Large number of children	26	7.2
Job-related problems	18	5.0
Young age for pregnancy	33	9.2
Social problems	25	6.9
Fetus' gender	14	3.9
Fetus' approved defect	42	11.7
The mother's disease	20	5.6
Pregnancy during engagement	30	8.4
Pregnancy before marriage	27	7.5
Drug use	14	3.9
Viral disease	13	3.6
Addiction	14	3.9
Pregnancy during breastfeeding	29	8.1
Family dispute	53	14.8
Others	62	17.3

Table 2. Distribution of Participants based on the Methods they had used to Induce Abortion

Variable	Number	Percentage
Drug prescription	197	55.5
Herbal medicine	39	10.8
Traditional medicine	36	10.1
Intrauterine manipulation	22	6.2
Curettage	132	37.0

Table 3. Distribution of Participants based on the Location where they had performed Abortion

Variable	Number	Percentage
Hospital	94	26.3
Specialist's office with anesthesia	31	7.8
Specialist's office without anesthesia	114	31.9
Specialist's office under sterilized conditions with anesthesia	15	4.2
General physician's office under sterilized conditions with anesthesia	3	0.8
General physician's office under sterilized conditions without anesthesia	25	7.0
Midwife's office	73	20.4

Table 4 shows the number of participants suffering from the early complications of abortion. Most of the participants (61 women, which is equal to 17.1% of all participants) reported abdominal pain, while the least frequently mentioned complication (only reported by 1 person, which is equal to 0.3% of all participants) was visceral injury.

Table 5 demonstrates the complications reported in pregnancy after abortion. In total, 171 women (47.4%) suffered from depression after abortion. Also, 176 participants (48.8%) were regretful. Menstrual disorders that were reported by the participants included menstrual irregularities (33.8%), increased volume of bleeding (32.1%), menstrual pain (22.7%), and decreased volume of bleeding (17.2%). Out of the 240 women who had aimed to be pregnant again, 11.4% suffered from infertility. Out of this proportion, 14.7% had uterine adhesion, 4.4% suffered from tubal obstruction, and 3.5% reported pelvic adhesion. Fifty

three women (16.3%) who had undergone infertility treatments had not become pregnant through any method.

Table 4. Distribution of Participants based on the Early Complications of Induced Abortion

Variable	Number	Percentage
Severe bleeding and shock	17	4.8
Fever	15	4.2
Incomplete abortion	59	16.5
Readmission	44	12.3
Infectious abortion	16	4.5
Second curettage	43	12.0
Abdominal pains	61	17.1
Uterine perforation	3	0.8
Burn	2	0.6
Injury	1	0.3
Anesthesia-related complications	8	2.2
Clot	14	3.9
Respiratory problems	3	0.8
Others	118	33.1

Table 5. Distribution of Participants based on the Complications they Encountered in Pregnancy Following Abortion

Variable	Number	Percentage
Bleeding in the early weeks of pregnancy	23	10.7
Incomplete and missed abortion	14	6.5
Ectopic pregnancy	16	7.4
Molar pregnancy	1	0.5
Induced abortion	7	3.3
amniotic sac breaking	7	10.1
Placenta previa	6	2.8
Preterm delivery	17	7.9
Insufficient fetus growth	2	0.9
Low weight baby	7	3.3
Defective baby	2	0.9
Dead baby	6	2.8
Others	97	45.1

DISCUSSION

As a major issue in societies, abortion is of paramount importance in both societal health dimension and women's physical and psychological health. In Iran, although abortion is forbidden according to people's religious beliefs, it has a high incidence.

Given that abortion is forbidden according to the religion and the permission for doing it is issued in a limited number of cases, most of the abortions are carried out secretly in non-governmental and non-standard centers, a phenomenon that has exacerbated the complications of non-standard and unsanitary abortion.

In the current study, most of the participating women were housewives and held a diploma. In this regard, therefore, the results found in this study are comparable with the ones obtained by Erfani and Weisi. Erfani conducted a study on unhealthy abortions in Tehran in two different occasions – namely 2008 and 2011. It was found that the rate of abortion was higher among employed women who had higher income and academic degrees, were not strong religious believers, and had two children [11, 12]. Weisi et al. examined the reasons and methods for conducting illegal abortion among women who referred to the special clinic of Kermanshah University of Medical Sciences. In their sample, 39.6% of women had academic degrees, 34% held a diploma, 2.24% were only able to read and write, and 2 ladies were illiterate. Furthermore, 63.7% of them were housewives, 34% were clerks, and 2 were workers [13].

In their study conducted in Turkey, Uygur et al. observed that most of the abortions were carried out among illiterate women [14]. As indicated in the current research, the average age of the participants while doing abortion was 26 years and most of them were married. Shahshahani et al. studied the frequency distribution of women who suffered from septic shock over a 10-year period. The participants had an age range of 25-35 years. It is unfortunately observed that the highest rate of unwanted pregnancy occurs in this age range, when women suffer from various types of stress. Such unbearable stress leads to induced abortions, which come with numerous complications.

Weisi et al. reported that the average age of the participants in the time of induced abortion was 29 years [13]. In a retrospective study carried out on the records of 47 patients in one of the hospitals in Shiraz, Iran, it was found that, from 1996 through 2002, a large proportion of unhealthy abortions were reported in low ages (74% of cases were less than 30 years old). In particular, 17% of the abortions were reported by women under the age of 20. A study in Sri Lanka showed that over 80% of women who intended to terminate their pregnancy were between 20 and 40 years of age [15]. Research studies have reported various reasons for doing abortion, including the sufficiency of the number of children, financial problems, lack of readiness to have babies, worries about the mother's or the fetus' health, and the lack of harmony between having children and continuing one's studies or having a job [16]. Other reported reasons are inclination to have less children, the young age of the current child, failure in using contraceptives, bad relation with husband, and the intention to have a divorce [17].

In the current study, financial problems constituted the major reason for doing abortion, which is in line with Shahshahani's findings. Shahshahani stated that the high number of participants from urban areas indicated the significance of financial and social problems in carrying out induced abortion [18]. Chinchian et al. (2008) mentioned four main reasons for conducting abortion: injection of rubella vaccine, the mother's disease, fetal defect, and unwanted pregnancy. These factors lead to abortion in different conditions, especially while families face financial problems [19]. Tavafian et al. (2008) concluded that the major reasons for doing abortion are unwanted pregnancy, the large number of previous deliveries, and moderate income of the family [20].

In his study, Kirkman found that women have complicated reasons for doing abortion and many of

them conduct abortion despite their uncertainty [21]. A study examined women's attitude and awareness toward induced abortion prior to marriage. Over half of the participants agreed with abortion. Also, around a fourth of the respondents believed that abortion could be carried out if the mother faced physical or psychological problems, became pregnant in a young age, and had a plan for divorce. Further, 8% of the participants agreed that they were eligible to have abortion if they were worried about fetal health, had the intention to keep their family small, and had a problem with their spouse [22].

In another study, 39% of the participants had 3 or more children and most of them reported that they conducted abortion because they had a small baby. Financial problems was mentioned as the second important reason for doing abortion [15]. Weisi et al. found that the most common reason for carrying out abortion among women under 29 was the short time interval between their current and previous pregnancy. The major reason for women over 29 years of age was their belief in the sufficiency of the number of children they had [13]. Some of the common illegal methods for doing abortion in Iran are using oral or vaginal prostaglandin compounds, catheterization to open the cervix and cause bleeding, amniotic membrane piercing and watering which is an indication of pregnancy termination, and sometimes doing curettage and suction curettage. All these methods are adopted in illegal centers under non-standard and unsanitary conditions while the patients are charged large sums of money. Overall, the past and present methods that were/are used to do abortion were/are considerably dependent on cultural, belief-related, and ethnic limitations. The presence of a larger number of constraints in different societies results in using individual and unhealthy methods for doing abortion, which are completed by the person herself or an untrained individual. Of course, abortion methods have partially changed as a result of progress in science and technology [23].

With respect to the abortion methods, most of the participants in this study (55.5%) reported using chemical drugs prescribed by a physician, while 37% said they had done curettage. Moreover, 32% of the latter participants had completed the curettage in the office of a specialist without anesthesia. In 20% of the cases, a midwife had performed the abortion. A study focusing on women referring to 62 rural health homes showed that 32% of the women who had experienced unwanted pregnancy had tested one or several unsuccessful methods to terminate their pregnancy. The used methods included various physical procedures, using unnatural vaginal objects, injection methods, oral medication, or a combination of these methods [24].

Weisi reported that most of the abortions had been conducted by midwives in their offices. Suction curettage was the second most popular abortion method followed by the use of misoprostol pills. Yet, some women (5 of them) had done abortion through unconventional methods like catheterization, and amniotic sac piercing [13], much the same as what had been reported in a similar study [24]. In his paper entitled "women and induced abortion outcome", Balali mentioned the psychological and physical complications caused by abortion. Accordingly, the national statistics of the US indicate that 10% of women doing abortion suffer from complications, with 20% of all side effects being categorized as severe [25].

In this study, we found that the most commonly reported post abortion complications were abdominal pain and incomplete abortion, hence the need for a second curettage and readmission. Menstrual disorder was another complication mentioned by some of the respondents. Most of them reported having menstrual pain and increase volume of bleeding upon doing abortion. Also, around 11% of women reported suffering from secondary infertility, with 4.5% of them never being pregnant again even after treatment. Moreover, about 3% of the participants had developed cancer. Additionally, 5% of the respondents reported bleeding during the 3 months following the abortion. Also, 7.5% reported RP, which is more common compared to the normal population. At the same time, 6.5% reported further unwanted abortions, 9% mentioned amniotic sac breaking, 8% reported premature delivery, and 3% mentioned placenta previa as the post abortion complications. Fortunately, most of the abortions done by the participants of this study had been performed under relatively sanitary conditions, hence the lower prevalence of complications.

One of the reasons for bacteremia among ladies is performing illegal abortions, which results in infectious abortion and septic shock [26]. The WHO has estimated that annually 68000 ladies suffer from infectious abortion. 97% of illegal abortions which lead to infection are carried out in developing countries [26]. In Shahshahani's study, which is a descriptive and retrospective research, the files of 400 patients who were suffering from septic shock and referred to the women's section of Al-Zahra and Shahid Beheshti medical centers in Isfahan were examined over a ten year period. The results showed that infectious abortions were the underlying reason for most of the septic shocks. These induced abortions had been conducted illegally under unsanitary conditions [18].

Also, the results of a prospective study indicated that using surgery for conducting induced abortion increases the likelihood of abortion in follow-up pregnancy during the first three months [27]. Numerous studies have shown that performing a large number of induced abortions (equal or more than two times) raises the risk of abortion and premature delivery in subsequent pregnancies [28, 29]. A large study conducted in Denmark provided evidence supporting the idea that using medical or surgical methods for doing induced

abortion increases the likelihood of abortion (in subsequent pregnancies) and ectopic pregnancy [30]. Stang et al., who conducted their study in the US, demonstrated that the history of induced abortion boosts the risk of very premature delivery (prior to 28 weeks of pregnancy). This is attributed to bleeding, abortion, early amniotic sac breaking, high blood pressure, and cervical failure [31]. Elizabeth B., who conducted a study in Columbia University, showed that the most common complications of abortion were tissue (2.2%), infection, bleeding, and uterine perforation, in that order.

CONCLUSIONS

Abortion is a controversial issue which has led to challenges in the society and jurisprudence. Therefore, it is essential to deal with this issue in the Islamic society of Iran [32]. According to obtained results, the main reasons for doing abortion were financial problems, family disputes, and psychological problems. Furthermore, the most and least common methods of conducting abortion were found to be prescription of drugs by physicians and intrauterine manipulation respectively. It seems that most of the abortions had been conducted in a safe environment. The major early complications of abortion were abdominal pains, incomplete abortion and readmission, and secondary curettage. More than half of the women had experienced regret and depression after abortion. Uterine adhesion was reported as a major reason for post abortion infertility. Moreover, major complications reported during the first three months of follow-up pregnancies were preterm delivery, ectopic pregnancy, and missed abortion.No matter what the strategy is, abortion of any sort poses a major threat to the health of women and indicates a gap in the public health of the community [33].

Taken together, the results of this study show that only through presenting contraceptives appropriately, making people familiar with the consequences of unwanted pregnancy, and urging women not to refer to irresponsible individuals for conducting illegal induced abortion can we prevent the complications caused by abortion. In addition, providing religious teachings and boosting people's religious beliefs can reduce the likelihood of doing illegal abortions. The first limitation of the study was its retrospective nature. Second, questionnaire was used for data collection. Using this instrument for gathering data highly depends on respondents' memory. Since the participants had conducted abortion some years before data collection, they might not have been able to remember all the details. Another limitation of the study was women's reluctance to participate in the study and provide accurate information. Indeed, many women did not agree to participate, a reason explaining why the process of sampling lasted for a long time and a large number of collected questionnaires were discarded.

Ethical Consideration

The Ethics Committee in Biomedical Research of Shahid Beheshti University of Medical Sciences has confirmed this research.

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Conflict of Interest

The authors declared no conflict of interest.

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Author's Contribution

First author: Managing the research project and approving it at university and religious research expert
Second author: Initial writing
Third author: gathering information, answering referees' questions, editing article text, journaling source writing, communicating with other authors
Fourth author: statistical analysis

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