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Evaluation of the Causes of Therapeutic Abortion Registered in the Khorasan Razavi Department of Forensic Medicine from 2012-2019

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Abstract

Background: Therapeutic abortion is a complicated issue in Islamic Countries Therapeutic abortion is a complicated issue in Islamic countries. The new population growth policies in Iran introduced updated indications for therapeutic abortion in recent years.
Objectives: This study was performed to evaluate the causes of therapeutic abortion in the Khorasan Razavi Department of Forensic Medicine from 2012-2019.
Methods: This longitudinal study was performed on all recorded documents of permitted therapeutic abortions from 2012-2019 using a researcher-made checklist.
Results: A total of 2,729 therapeutic abortion permits were issued during the study period. The mean maternal and gestational age scores at the time of abortion were 30.30±6.78 years and 16 weeks, respectively. The main sources for referral were obstetrics and gynecologist (76.2%). Fetal causes were the most common causes of therapeutic abortion (96.4%). The most common fetal and maternal causes were trisomy 21 and cardiac disorders, respectively.
Conclusion: The most common cause of therapeutic abortion was fetal causes. Among the maternal causes, maternal cardiac disorders should be identified and prevented by better pregnancy care.

Keywords: Induced abortion, Iran, Pregnancy Therapeutic abortion

1. Background

Therapeutic abortion has specific indications and issues in Islamic countries. (1) Based on Islam rules, abortion for saving the life of the mother is only permitted prior to the viability of the fetus (1-4). Before 2003, various limitations were imposed on therapeutic abortion, and this type of abortion was limited to fetal indications. The only fetal indication of therapeutic abortion was major thalassemia at that time. In 2005, the indications of therapeutic abortion were approved by the Islamic Parliament of Iran, and related approaches were presented in this regard (5). After the Fatwas issued by Islamic clerics in 2006, the spectrum of fetal indications for therapeutic abortion was extended. In this regard, the conditions that threaten the life of mothers documented severe fetal malformations that contradict the life of the infant after birth or cause debilitation and consumption of teratogenic medications during pregnancy were included among the existing indications for therapeutic abortion. (6-8)

Studies in Iran demonstrated a marked change in the trend of granting therapeutic abortion permits. In 2020, the common fetal indications for therapeutic abortion were neural tube defects (26.4%), followed by chromosomal defects (18.4%), while the common maternal indications for therapeutic abortion were vascular system diseases (43.9%), followed by cancer (13.4%) and genitourinary system diseases (9.9%) (6). Studies that evaluated the medical and therapeutic causes of abortion in Islamic countries are limited. (9, 10) In Turkey, the trend in therapeutic abortion changed with the coming of the Islamic conservative government in 2012, when the indications for therapeutic abortion were limited to medical reasons (11). Another study in Turkey in 2019 indicated that 78% of therapeutic abortions were performed based on medical indications; therefore, abortion care existed in Turkish hospitals, although these facilities performed their services regardless of the indication (12).

Khorasan Razavi, which is the second largest province in Iran, is the destination of a large number of migrants from neighboring and far provinces due to its geographical characteristics. Therefore, evaluating the causes of therapeutic abortion in this region is of utmost importance. Furthermore, in line with the childbearing persuasive policies implemented by the Islamic Parliament of Iran, evaluation of the causes of therapeutic abortion has become more important. Knowing the causes of abortion can result in designing preventive measures to reach the national goals in population growth. The Khorasan Razavi Department of Forensic Medicine also covers Golestan Province. This characteristic makes this department a good choice for studying the

causes of therapeutic abortion. In light of the aforementioned issues, the present study aimed to evaluate the causes of therapeutic abortion registered in the Khorasan Razavi Department of Forensic Medicine during eight years (from 2012-2019).

2. Objectives

This study was performed to evaluate the causes of therapeutic abortion in the Khorasan Razavi Department of Forensic Medicine from 2012-2019.

3. Methods

This longitudinal study was conducted on the records of therapeutic abortion permits granted by the Khorasan Razavi Department of Forensic Medicine from 2012-2019. Data collection was conducted from 21 August 2020-9 May 2021.

Study population

The study population included all the documents with approved therapeutic abortion permits archived in the Khorasan Razavi Department of Forensic Medicine from 2012 to 2019. The exclusion criteria were incomplete records and no access to the mother based on the recorded contact number. A total of 2729 documents were included in the study. Data were collected based on a researcher-made checklist. Four researchers extracted data from the documents. In case of incomplete records, subjects were contacted via phone calls, and the missing information was collected based on telephone interviews by the researchers.

Data collection tool

A checklist was prepared by the researchers based on a systematic review of national and international studies on the causes of therapeutic abortion. The primary checklist included all the probable indications of therapeutic abortion. The construct and content validity of the checklist was assessed by an expert panel consisting of 10 academic scholars.

Ethical considerations

This study was approved by the National Committee of Ethics in Biomedical Research (Code: IR.LMO.REC.1398.045). The anonymity of the subjects was maintained in the final report and manuscript preparation based on the ethical codes.

Statistical analysis

Data were analyzed in SPSS software (version 16) using descriptive statistics, including mean, standard deviation, median, interquartile range, frequency, and percentage.

Result

A total of 2,729 therapeutic abortion permits were granted during the study period. Changes in the rate of therapeutic abortion over time are presented in Figure 1. Most therapeutic abortion permits (17.4%) were granted in 2016, followed by 2015 (17.2%) and 2017 (16.3%). The provincial distribution of the study population is presented in Figure 2. The highest prevalence of abortion permits pertained to Mashhad (1344, 51.2%), followed by Torbat Heydarieh (146, 5.6%), Sabzevar (132, 5.0%), Torbat Jam (124, 5.7%), Neyshabour (85, 3.2%), Kashmar (71, 2.7%), Khaf (66, 2.5%), Quchan (52, 2.0%), Tayebad (51, 1.9%), Fariman (49, 1.9%), Gonabad (43, 1.6%), Sarakhs (39, 1.5%), Chenaran (36, 1.4%), Bardaskan (28, 1.1%), Shirvan (28, 1.1%), Bojnord (24, 0.9%), and Ba Kharz (20, 0.8%).

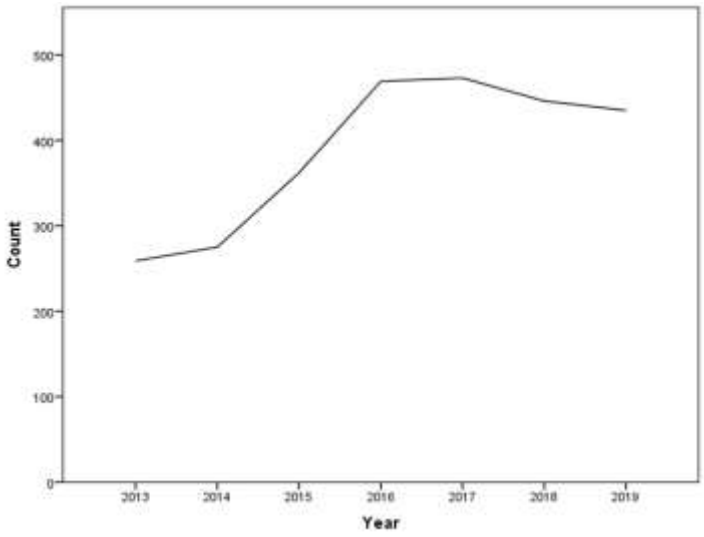

Figure 1. Abortion permits per year during the study period

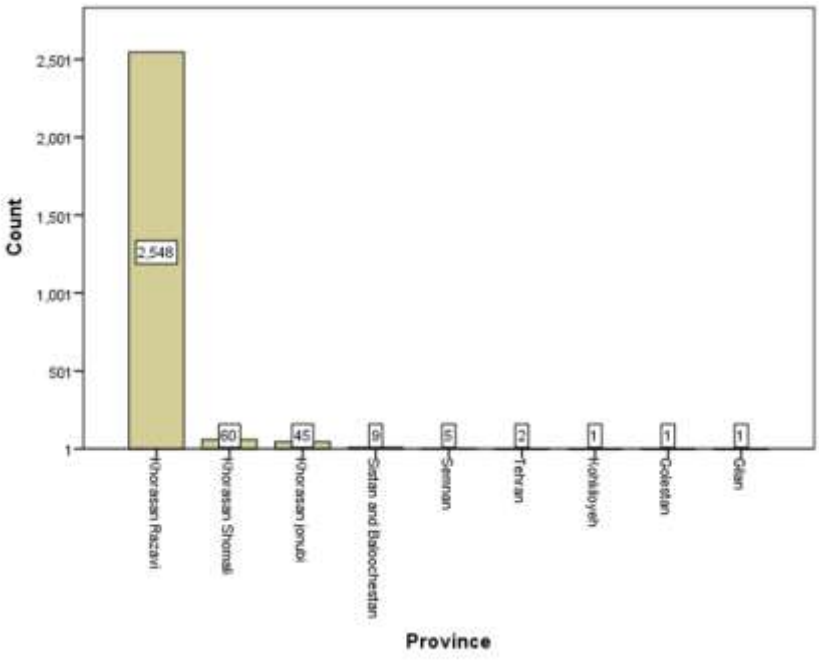

Figure 2. Provincial distribution of study population

The mean age scores of mothers and fathers were 30.30±6.78 and 34.58±6.96 years, respectively. The demographic characteristics of mothers and their spouses are presented in Table 1.

Table 1. Demographic characteristics of mothers and spouses in the study

Variable		Frequency (%)
Mother education level	Illiterate	112 (4.3%)
	Below high school	999 (38.2%)
	High school graduate	971 (37.1%)
	Bachelor	447 (96.6%)
	Master	81 (99.7%)
	PhD	7 (0.3%)
Mother job	Housewife	2239 (87.1%)
	Employee	183 (7.1%)
	Freelance	105 (4.1%)
	Government	43 (1.7%)
	Private	1 (0.001)
Marital status	Married	2596 (99.7%)
	Not married	7 (0.3%)
Living place	Suburban	43 (1.9%)
	Rural	377 (16.4%)
	Urban	1880 (81.7%)
Intended pregnancy		1150 (73.5%)
Consanguinity		77 (5.0%)
Father education level	Illiterate	33 (2.1%)
	Below high school	638 (40.5%)
	High school graduate	571 (36.3%)
	Bachelor	236 (15.0%)
	Master	82 (5.2%)
	PhD	15 (1.0%)
Father job	Freelance	1212 (77.1%)
	Employee	192 (12.2%)
	Government	147 (9.3%)
	Other	15 (1.0%)
	Private	7 (0.4%)

SD: Standard Deviation

The median (IQR) for gravida and para in mothers were 2.00 (1.00) and 1.00 (1.00), respectively. The median (IQR) for the number of live children in the study population was 1.00 (1.00). The history of previous therapeutic abortions in the mothers is illustrated in Figure 3. The majority of mothers (1177, 74.7%) did not have a previous history of therapeutic abortion (Figure 3). History of previous

anomalies in the family was present in 210 (13.4%) mothers and 245 (15.7%) fathers.

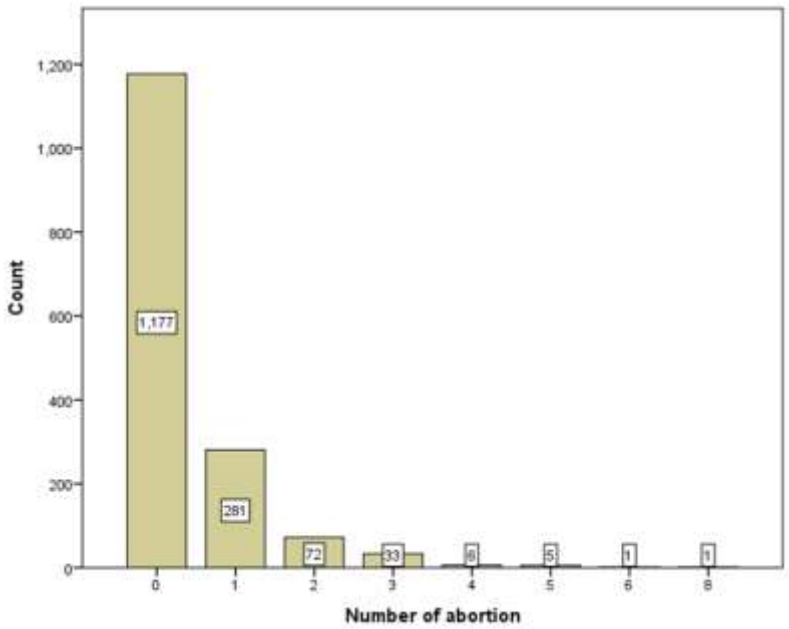

Figure 3. History of abortion in the study population

The majority of mothers (61.8%; n=970) did not receive preconception care, while 1524 (96.8%) cases received prenatal care. Most mothers (98.1%; n=1370) received folic acid, while 22 (1.6%) subjects did not use any supplements. Anomaly screening of ultrasonography was performed for 1510 (55.3%) mothers. Sources of referral are presented in Table 2. The main source for referral was obstetrics and gynecologist (76.2%), followed by sonologist (11.1%) and primatologist (5.1%). The most common reason for abortion was fetal problems (96.4%; n=2621).

Table 2. Sources of referral in the study

Source	Frequency (%)
Obstetrics and gynecologist	1541 (76.2%)
Sonologist	224 (11.1%)
Primatologist	104 (5.1%)
Genetics	37 (1.8%)
Midwife	29 (1.4%)
General physician	5 (0.2%)
Other	82 (4.1%)

The reasons for abortion are displayed in Table 3. The most common fetal reason for abortion was trisomy 21 (30.8%; n=416), followed by hydrops fetalis (30.0%; n=379) and anencephaly (9.5%; n=129). The most common maternal reason for abortion was cardiac diseases (55.8%).

Table 3. Reasons for abortion permits in the study population

Fetal reason	Frequency (%)
Trisomy 21	416 (30.8%)
Hydrops fetalis	379 (30.0%)
Anencephaly	129 (9.5%)
Polycystic kidney	91 (6.7%)
Renal agenesis	88 (6.5%)
Holoprosencephaly	73 (5.4%)
Trisomy 18	53 (3.9%)
Exencephaly	49 (4.0%)
Trisomy 13	23 (1.7%)
Meningohydroencephalocele	18 (1.3%)
Other chromosomal abnormalities	14 (1.0%)
Meningoencephalocele	11 (0.8%)
Cyclopia	4 (0.3%)
Thanatophoric dysplasia	2 (0.1%)

Schizencephaly	1 (0.1%)
Cat cry syndrome	1 (0.1%)
Maternal reason	Frequency (%)
Cardiac (valvular diseases, pericarditis, history of dilated cardiomyopathy, Marfan syndrome, Eisenmenger syndrome and etc.	29 (55.8%)
Nephrologic (renal failure, refractory hypertension, etc.)	9 (17.3%)
Neurosurgical (space-occupying lesion, etc.)	5 (9.6%)
Hematologic (Alpha thalassemia in the form of hydrops fetalis, and thrombotic disorders)	3 (5.8%)
Pulmonary (emphysema, kyphoscoliosis, etc.)	2 (3.8%)
Psychological diseases, medication use, exposure to radiation, etc.	2 (53.8%)
Gastrointestinal diseases (gestational fatty liver disease, esophageal varices, history of bleeding from esophageal varices, and autoimmune hepatitis	1 (1.9%)
Neurologic (multidrug-resistant epilepsy, severe multiple sclerosis, myasthenia gravis, etc.)	1 (1.9%)

5. Discussion

This longitudinal study aimed to evaluate the causes of therapeutic abortion in the registered abortion permits from 2012-2019 in the Khorasan Razavi Department of Forensic Medicine. This study demonstrated that the mean age of mothers at time of therapeutic abortion was 30.42±6.78 years, and the mean gestational age was 16 weeks. In an epidemiologic study on the records of the Tehran Department of Forensic Medicine, Tehran, Iran, the mean age of mothers was 30 years, and the mean gestational age was 16 weeks (6). These findings were in line with the results of the current study. As illustrated by the findings of the present study, the granted permission showed a significant relationship with marital status, mean maternal age, mean gestational age, parity, number of previous abortions, fetal male-to-female ratio, and number of previous therapeutic abortions. In agreement with the results of the current research, in a previous study on low to moderate-income countries in 2017, maternal age and marital status were correlated with therapeutic abortion (13).

The current study pointed out that the main cause of therapeutic abortion was fetal indications. In accordance with the findings of the present research, a study on 14,356 granted abortion permits in Iran from 2015-20157 reported that 91.99% of therapeutic abortion reasons were due to fetal causes and only 8.01% were due to maternal causes (6). Among the fetal causes of therapeutic abortion, neural tube, neurologic, genitourinary, and chromosomal causes were the most common, and gastrointestinal causes were the least common causes of therapeutic abortion. This finding was in agreement with the results of a systematic review of the causes of abortion and pregnancy terminations worldwide, which reported that fetal neurological defects were responsible for 50% of total abortions and pregnancy terminations (13). In a similar vein, in a study conducted in Isfahan and Tehran Provinces of Iran, neurological anomalies were the most common fetal anomalies (14, 15).

The findings of the present study pinpointed that the most common maternal causes of therapeutic abortion were cardiologic, nephrologic, neurosurgical, and psychologic reasons, while gastrointestinal and neurologic causes were the least common. In contrast to the findings of the current research, a study conducted in Ilam Province, Iran, from 2016 to 2017 reported that the most common maternal causes of therapeutic abortion were thrombotic thrombocytopenic purpura (50%), nephrologic causes (40%), hypertension (30%), and lupus erythematosus (20%) (16). This discrepancy in results can be ascribed to the small sample size and duration of the mentioned study (n=240 and one-year duration) compared to the current study (n=2729 and 8-year duration). In another study in the Fars Province, Iran, causes of therapeutic abortion were evaluated in a 7-year study (2007-2014) (17). The stated study reported that the most common maternal causes of therapeutic abortion were cardiac, hematologic disorders, and diabetes, while the least common causes were psychologic and immunologic causes (17, 18).

A previous study in 2020 demonstrated that fetal cardiac defects were associated with trisomy and monosomy in fetuses, and evaluation of the history of these defects in parents can reduce the risk of cardiologic disorders (19). They suggested more detailed prenatal care for mothers with a history of chronic diseases during pregnancy to reduce the delivery of fetuses with cardiac defects (19). They also reported a significant difference in severe cardiac diseases in fetuses born to families with a history of these diseases and families with no such history (32.3% vs 3.8%) (19). Therefore, genetic counseling is of great importance in families with a history of cardiac disorders (19). These findings were in compliance with the results of the current study.

The current study illustrated that the most common source of referral for therapeutic abortion was a gynecologist (70%). This finding was in conformity with the results of previous studies in Iran (6, 13, 15). This finding can be due to various reasons, including the performance of prenatal care by gynecologists for a large population, the medicalization of pregnancy in Iran, and the preference of pregnant women to receive care from a specialist (20). One of the strengths of the present study was the duration of the study and the large sample size. Furthermore, the regional evaluation of

the causes of therapeutic abortion provided a more detailed pattern of these causes over time in the Northeast of Iran. One of the limitations of the current study was the descriptive-analytical design of the study that prevented us from assessing the causality of the associations. Another limitation of this study was the change in various regional variables during the study that might have resulted in a mixed finding.

6. Conclusion

As evidenced by the results of this study, some maternal and fetal reasons for therapeutic abortion differed between regions of the country. Therefore, there is a need for large-scale national studies to identify the common reasons for therapeutic abortion in the country. Nonetheless, the findings of this study can be used as a reference for regional decision-making and education programs.

Acknowledgments

None.

Conflicts of interest

The authors declare that they have no relevant or material financial interests related to the research described in this paper.

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