



Maternal and Neonatal Complications Leading to Midwifery Errors in Referred Cases to the Iranian Legal Medicine Organization and Medical Council of Forensic Medicine from 2006 - 2011 in Isfahan, Iran

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Abstract

Background: Maternal and neonatal health indicators have the important role in evaluating community development.

Objectives: In this study, we examined the effects of maternal and fetal complications leading to midwifery errors in referred cases to the Iranian Legal Medicine Organization and Medical Council of Forensic Medicine from 2006 - 2011 in Isfahan, Iran.

Methods: In this cross-sectional study, we evaluated all midwifery cases that were referred to the Isfahan Legal Medicine organization and Medical Council of Forensic Medicine from 2006 - 2011 that had at least one warrant issued by the outcome of the Disciplinary Board. The data were collected by a checklist and analyzed by SPSS-18. Research data were qualitative and quantitative (discrete and continuous variables).

Results: A total of 206 cases were reviewed. In 66 cases, 32% of them the malpractice verdict in midwifery services was approved. According to our findings, the most maternal and fetal errors led to the complaint include: fetal or neonatal death (29.4%), maternal mortality (18.1%), and neurological disorders (15.3%). In addition, the highest rates of maternal medical malpractice were maternal mortality (56.8%) and in infant complications, infant mortality with 28.8% frequency ($P = 0.03$).

Conclusions: It seems the maternal health program effort is impaired in our country. The maternal mortality is unacceptable, due to the fact that many of them are preventable. Taking strategies to prevent replication errors within the care of pregnant women is recommended.

Keywords: Fetal Complication, Complaint, Midwifery, Iran

1. Background

The WHO Health System Performance Framework defines the goals of health systems as: "Improving the health of the population they serve, responsiveness, i.e., responding to people's legitimate expectations, and fair financing, i.e., providing financial protection against the costs of ill-health" (1). Nowadays, the quality of health care is known by providing service without error, at the right time by the right person and with the least resources (2). Errors in the health care system, as well as other systems, are unavoidable and despite the best efforts of medical staff, malpractice and mistakes may occur and eventually there will be complications (3). Medical errors can cause irreversible injuries and sometimes may lead to death. In the field of obstetrics and gynecology, maternal and neonatal health in-

dicators are very disturbing and have the important role in evaluating community development (4). Despite scientific advances in diagnostic and therapeutic technologies, today the complaints are on the rise in international reports (3). A study in the UK has shown that one out of every 25 hospitalized patients may be damaged by medical malpractice each year, and 48000 to 98000 patients die as a result of such mistakes (3). Also in Australia, the midwives and gynecologists pay part of the maximum amount of liability insurance premium (about 18%) while that midwives and gynecologists included only about 2% of medical staff in this country (5).

In Iran, as in other parts of the world claims for medical malpractice and the number of lawsuits are increasing, too (1). The results of a study in Isfahan indicate that the amount of medical staff complaints from 62 cases in

2005 reached to 108 cases in 2009. In this study, midwives in the ranking of complaints rated in 18th place (with a frequency of 8.5%), and gynecologists rated 3rd place (with a frequency of 3.8%) were among health care providers (1).

These complaints have some consequences, such as the defensive performance among midwives and other experts. When the legal pressure of medical malpractice becomes too much, health care providers, in most cases, do defensive operations and unnecessary actions to protect themselves against the rule (6). In midwifery care, defensive operations may be including: changes in screening pregnant patients, reducing services to at risk mothers, adopted high risk criteria for the treatment management, frequent consultation with other physicians, and as a result high costs for patients, which is a considerable concern for patients (6).

With respect to ascending complaints in case of obstetrics and gynecology, which can affect the health system, the study of complications leading to complaints is essential in the midwifery field. It could improve the health care providers' attention to mothers and infants and prevent problems that are a subsequent of medical malpractice. This led to reduction maternal mortality, treatment complications, occupational stress of midwives, and to provide better health services to mothers and infants.

2. Objectives

In this study, we examined the effects of maternal and fetal complications leading to midwifery errors in referred cases to the Iranian Legal Medicine Organization and Medical Council of Forensic Medicine from 2006 - 2011 in Isfahan, Iran.

3. Methods

In this cross - sectional study, we evaluated all midwifery cases related to midwifery services that were referred to the Isfahan Legal Medicine Organization and Medical Council of Forensic Medicine from 2006 - 2011, that had at least one warrant issued by the outcome of the Disciplinary Board.

Our inclusion criteria included two items: cases included in this study were referred to the Isfahan Legal Medicine Organization and Medical Council of Forensic Medicine from 2006 - 2011 and the cases were evaluated that had at least one warrant issued by the outcome of the Disciplinary Board. At least data were not having this criterion excluded from our study. Data gathering was

done by a checklist designed based on the variables under consideration such as age, gender, working shifts, clinical ward, kind of the error, maternal and fetal complications leading to midwifery errors, time of malpractice incidence, and the given verdict have been evaluated. Validity of checklist was confirmed by the experts of this field. The researcher then categorized the complications in the domains of prenatal care, delivery, and postpartum period care and investigated the association between these complications with the help of a research counselor who was an expert of forensic medicine and a member of forensic medicine commission. At least data was divided into two groups: maternal complications and fetal complications and the researcher investigates the relation between complications led to complaint and medical malpractice.

The researcher reviewed 355 cases related to obstetrics and gynecology during 2006 - 2011 in the medical commission and FMO and deleted 149 cases, as they did not meet the inclusion criteria. Then, we investigated 206 cases in the two above mentioned organizations.

Research data were qualitative and quantitative (discrete and continuous variables) and was measured with nominal and relative ratings scales. To describe the data, descriptive statistics (mean, maximum, minimum, and frequency distribution table) was used. In relation to quantitative variables, Mann - Whitney test and Chi - square test was used for nominal variables. The SPSS software (Statistical Package for the Social Sciences, version 18, SPSS Inc., and Chicago, Illinois, USA) was used and a P value less than 0.05 were considered statistically significant.

4. Results

In the present study, 355 cases of midwifery complaints were reviewed. A total of 149 files were excluded from the study due to lack of inclusion criteria. Finally, 206 cases were analyzed. Out of 206 reviewed file, a total of 66 cases (32%) had at least one warrant issued by the outcome of the Disciplinary Board) 38 cases in Iranian Legal Medicine Organization and 28 cases in the Medical Council of Forensic Medicine) (Table 1).

In this study, Gynecologists had the most frequent complaint among the reviewed midwifery service records (60.3%), and then midwiferies were (7.3%). The nurses had the lowest frequency of complaints (0.5%). In addition, the faculty members had lowest frequency compared with other groups (13.4%).

Mean age of service providers and patients were 45.48 and 28.01 years, respectively. The findings showed that 32.5% of malpractices occurred among the health providers aged equal to or less than 40 years, 30.9% were aged 40 - 50 years, and 17.6% occurred among those over

Table 1. Frequency of Medical Malpractice in Isfahan Iranian Legal Medicine Organization and Medical Council of Forensic Medicine (2006 - 2011)

Type of Medical Malpractice	Medical Council of Forensic Medicine, N (%)	Legal Medicine Organization, N (%)	Total, N (%)
No authentication malpractice	23 (45.0)	117 (75.4)	140 (67.6)
Medical malpractice	28 (54.9)	38 (24.5)	66 (32.0)

50 years of age. Also, 53% and 47% of the patients were living in urban and rural areas, respectively. Among the maternal complications, maternal mortality was significantly higher than others (18%, $P = 0.03$). Furthermore, in neonatal complications, neonatal death (29.4%, $P = 0.03$) and neurological complications (15.7%) had the highest frequency. In addition, the frequency of medical malpractice among maternal complications, maternal mortality, and neonatal complications was significantly higher ($P = 0.03$) (Tables 2 and 3).

In this study, the complaint in patients with normal vaginal delivery (51.30%) was more in cesarean section. While medical malpractice rate in cesarean delivery was significantly higher ($P = 0.048$). Additionally, the highest rate of complaints was obtained in primary gravitas (49.5%) and the lowest rate was in the fourth pregnancy and more (6.4%).

5. Discussion

This study examined the effects of maternal and fetal complications leading to midwifery errors in referred cases to the Iranian Legal Medicine Organization and Medical Council of Forensic Medicine from 2006 - 2011 in Isfahan, Iran. Our results indicate 32% medical malpractice in midwifery services that 7.3% of them were related to the midwives, 60.3% to gynecologists, and 32.4% to other specialist or a combination of specialists, nurse or midwives. In the present study, midwives were found to have a higher malpractice rate than nurses. This depends on the perinatal death cases covering a more significant place in the study.

The high frequency of complaints from gynecologists compared with other specialists can be associated with high coverage of their services to society, because most pregnant women, receive their health and treatment care from gynecologists. Bagherian and colleagues in their study showed that gynecologists ranked third among all health care providers with a frequency of 8.3% and midwives ranked second with 5.8% frequency of complaints (7). In another study in Iran, obstetricians had the highest rate of complaints (16.9%) and midwives had the fewest complaints (3%), respectively (8). Pakys et al., (2008) also declared that gynecologist had the highest malpractice

rate (22.2%), and midwives ranked seventh in terms of medical malpractice in Turkey (7.2%) (9).

Our results showed that most maternal and fetal complications led to the complaint, including the fetus or neonatal mortality, maternal mortality and neurological disorders respectively, also according to the verdict the highest medical malpractice in the maternal complications related to maternal mortality and in infants has been associated with neonatal mortality ($P = 0.03$). Maternal and neonatal mortality are unacceptable death, due to the fact that many of them are preventable and related to medical errors. In recent years, unsafe delivery, failure to use the correct delivery techniques, and not licensed to midwives for doing what is their main duty have caused that not only the mother and fetus but also service providers are not safe from problems related to the unprotected delivery and its margins. Esperanza et al., (2013) in their study stated that the most complaints in the field of obstetrics and gynecology that led to the complaint are neonatal mortality and the infant neurological disorders. In this study, maternal deaths are not accounted frequency (10). Also, Pakis et al., in Turkey (2009), with a review of 525 cases of malpractice autopsy stated that most cases involving medical malpractice, were perinatal mortality (15.4%) (9). A 13 - year survey in France (2012), the most important event leading to the complaint "uterine rupture" noted (11). Cited researches in infant mortality and complaints are in correlation with our study.

In our study, the highest rate of complaints was obtained in primary gravitas and normal vaginal delivery. It could be caused by the sensitivity of the first pregnancy, younger women, and as a result of rapid response to medical malpractice. This can provide the cause of more complaints. However, the highest rate of malpractice had been shown in women with four or more pregnancies and the lowest rate was in women with third pregnancy ($P = 0.41$). Women with four of more pregnancies can experience more obstetrics complications. This is due to the age of these women, low attention to prenatal health care, underlying diseases such as blood pressure, previous pregnancy complications or attempt to criminal abortion followed by unwanted pregnancies. Consistent with our result, Minkoff (2012) noted that "the degree to which fear of litigation actually is a contributor to, or perhaps even a

Table 2. Frequency of Complications Leading to Complaints

Complication Let to Complain	Medical Council of Forensic Medicine, N (%)	Legal Medicine Organization, N (%)	Total, N (%)
Fetal or infant mortality	16 (30.8)	44 (28.9)	60 (29.4)
Maternal mortality	15 (28.8)	22 (14.5)	37 (18.1)
Infant neurological disorders	7 (13.5)	25 (16.4)	32 (15.7)
Dystocia delivery	4 (7.7)	14 (9.2)	18 (8.8)
Embryopathy	0 (0.0)	4 (2.6)	4 (2.0)
abortion	3 (5.8)	7 (4.6)	10 (4.9)
Intrauterine fetal death	1 (1.9)	12 (7.9)	13 (6.4)
Unwanted pregnancy and its complications	1 (1.9)	1 (0.7)	2 (1.0)
Maternal urinary and fecal incontinence	1 (1.9)	2 (1.3)	3 (1.5)
Mother infection	1 (1.9)	3 (2.0)	4 (2.0)
Hysterectomy	2 (3.8)	6 (3.9)	8 (3.9)
Uterine rupture	0 (0.0)	2 (1.3)	2 (1.0)
Salpingectomy	0 (0.0)	5 (3.3)	5 (2.5)
Ileus in mothers	0 (0.0)	1 (0.7)	1 (0.5)
Total	51 (100)	148 (100)	199 (100)

Table 3. The Relation between Complications Led to Complaint and Medical Malpractice

Complications	No Authentication Malpractice, N (%)	Medical Malpractice, N (%)
Fetal mortality	42 (71.2)	17 (28.8)
Maternal mortality	16 (43.2)	21 (56.8)
Infant neurological disorders	26 (81.2)	6 (18.8)
Shoulder dystocia delivery	15 (83.3)	3 (16.7)
Embryopathies (fetal malformations)	3 (75.0)	1 (25.0)
Abortion	7 (70.0)	3 (30.0)
Intrauterine fetal death	11 (84.6)	2 (15.4)
Unwanted pregnancy and its complications	0 (0.0)	2 (100)
Maternal urinary and fecal incontinence	2 (66.7)	1 (33.3)
Mother infection	3 (75.0)	1 (25.0)
Hysterectomy	6 (75.0)	2 (25.0)
Uterine rupture	1 (50.0)	1 (50.0)
Salpingectomy	3 (60.0)	2 (40.0)
Bowel obstruction in mother	1 (100.0)	0 (0.0)
Total	136 (68.0)	62 (32.0)

driver of the rising cesarean section rate is not as clearly known" (12). Also, Esperanza et al., (2013) in their study mentioned that 12.7% of all obstetrics and gynecological complaints related to cesarean section and its complications (10).

In this study a high number of complaints were associated with medical malpractices in the rural areas. This

issue shows that more realistic complaints arise in rural areas. In this regard, Azab et al., in a study on complaints of malpractices that were referred to the committee of medical ethics in Egypt, concluded that the percentage of malpractices was 89% in urban areas while it was only 11% in rural areas (13). The results of Azab et al., are not in line with the present study, which can be due to dissimilarity

between the complaints and service giving methods in different parts of the world.

Medical malpractice resulting in fetal or neonatal death, maternal mortality, and infant neurological disorders has an important place among all medical malpractice cases. The maternal mortality is unacceptable, due to the fact that many of them are preventable. Taking strategies to prevent replication errors within the care of pregnant women is recommended.

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