

*Short Communication***Interventions to decrease the mortality rate among pregnant women***Marjan Beigi^{*}, Zahra Javanmardi^{*}, Shahla Shahidi^{*}***Abstract**

BACKGROUND: Since the mortality rate of mothers and infants is due to preventable factors, this study aimed to determine the effects of interventions on decreasing the mortality rate of pregnant women in Isfahan province, Iran.

METHODS: This was an interventional study. The study population included all dead mothers in Isfahan province from 21 March 2002 to 20 March 2005 and after intervention from 21 March 2006 to 20 March 2007. Data were collected using a questionnaire completed by information on medical documents (clinical and health files) as well as interviewing families, physicians and the health personnel.

RESULTS: There were 47 death cases out of which 13 were caused by bleeding, 8 by Eclampsia, 9 by embolism, 2 cases by infection, 11 by background diseases, 2 by anesthesia complications, and 2 cases had unknown causes. After interventions, the mortality rate decreased from 15 cases in 2005 to 11 cases in 2006 and 8 cases in 2007. Also, the pattern of death causes changed, so that in 2007 there was no death caused by Eclampsia, and bleeding caused just one death.

DISCUSSION: Considering the results of this study, it is necessary to provide professional health care during pregnancy and delivery as well as counseling services before pregnancy or marriage.

KEYWORDS: Mothers' death, pregnancy care, childbirth.

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There is a global effort to improve mothers' health and the mortality rate of this vulnerable group is an important index for development and health of a society.¹ The mortality rate of pregnant women in Iran has been acceptable according to the development index (24 in 100,000) and in Isfahan province it has been even lower than the whole country (14 in 100,000).¹ This lower rate is expected considering that the province is industrial and has a good economic and social status. However, there are lots of opportunities to improve this rate and health care for mothers and women in general. It is agreed upon to consider almost all death cases of mothers unacceptable, because most of death causes are preventable and in the modern world there are enough necessary equipments for death pre-

ventions and providing every women a riskless pregnancy and childbirth. Therefore, investigating these deaths can help preventing further similar cases.

Investigating these deaths, analyzing them in details and planning for intervention based on the results can be a great step towards improving mothers' health by improving the quality of services. Such studies can help those who are in the deficient processes related to mothers' mortality to correct these processes and to prevent similar cases.

This study aimed to determine the effects of interventions on decreasing the mortality rate of pregnant women in Isfahan province.

Methods

This was an interventional study. The study

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population included all dead mothers in Isfahan province from 21 March 2002 to 20 March 2005 and after intervention from 21 March 2006 to 20 March 2007. To calculate the death rate, deaths caused by casualties and accidents according to the definition were excluded. Therefore, the mothers' death cases during these years were 47 (10 cases in 2002, 11 cases in 2003, 10 cases in 2004, and 18 cases in 2005). Since the death cases in 2005 were increased, the main causes of death were investigated using a questionnaire completed by information from medical documents (clinical and health files) as well as interviewing families, physicians and the health personnel; based on them some interventions and plans were suggested and approved by the members of mortality committee in the vice-presidency office of treatment of Isfahan University of Medical Sciences. Data were collected using a questionnaire completed by information from medical documents (clinical and health files) as well as interviewing families, physicians and the health personnel.

According to the extracted causes of death, the interventions suggested for preventing similar cases were as follow:

- a. Quantitative and qualitative development of contraceptive programs and pre-pregnancy care by educating mothers and their families.
- b. Informing physicians and midwives about importance of pregnancy care and delivery's emergencies in following ways:

Frequent seminars on decreasing death rates of mothers for general physicians, gynecologists, hospital managers and administrators, midwives and all professionals who work with gynecologists in a team.

- Providing a mother's care booklet by gynecologists and midwives private clinics to improve the quality of pregnancy care.
- Teaching courses on delivery emergencies to general physicians before their work in emergency rooms.
- Preparing and sending journals about the causes of maternal death to all physicians.

- Preparing pamphlets on midwifery emergencies for physicians, residents and interns.

- Sending the history of dead patients to physicians and assistants to learn from previous mistakes.

- Sending various guidelines for correcting deficiencies, including:

1. Guidelines for all health care centers to cover Afghani pregnant women regardless of their residency status.

2. Guidelines for all gynecologists to carry out heart-lung examination as frequently as needed during pregnancy and referring to the cardiologist if necessary.

3. Guidelines for all professional physicians and midwives to educate pregnant women about dangerous symptoms and to assure them sufficient care and concern.

4. Guidelines for hospitals to join their patients' old files with new ones in order to give physicians more information. Also, to precisely complete patients' file summaries by the responsible physicians and assure that the patients would have theirs with them every time they admit to the hospital.

5. Guidelines to emphasize on doing a sonography in the first trimester of pregnancy to diagnose any unnatural issues (ectopic pregnancy, placenta previa, abortion, etc)

- c. Improving accessibility to midwifery emergency services using following guides:

- Improving the referring system, dispatching and admitting at risk mothers in central hospitals in provinces and arranging with emergency center of 115 to prioritize dispatch of at risk and problematic pregnant women.

- Identifying at risk mothers for appropriate action and follow up until recovery.

- Planning and supervising active and on time presence of gynecologists at the mothers' bed in hospitals.

- Supervising to assure accurate and careful services to mothers.

d. Improving the quality and quantity of postpartum care using following guides:

- Avoiding mothers' discharge from hospitals before complete recovery.
- Educating relevant personnel about the importance of postpartum care and directing them towards educating mothers before discharging them from hospital.

Results

Surveying the causes of deaths from 2002 to 2005 showed there were 47 death cases out of which 13 were caused by bleeding, 8 caused by eclampsia, 9 by embolism, 2 by infection, 11 by background diseases, 2 cases by anesthesia complications and 2 cases by unknown causes.

The main causes of mothers' death during these years included:

1. Lack of contraception services and counseling before pregnancy in spite of their need.
2. Lack of concern and care for the mothers' conditions and delay in providing necessary services during pregnancy by physicians and other health care personnel.
3. Mothers' lack of concern about dangerous symptoms during pregnancy and ignoring advices by physicians and health care personnel.
4. Physicians, midwives and other health care personnel's neglect and lack of concern for providing necessary services at the right time and during delivery and postpartum.

After applying interventions, the mortality rate decreased from 15 cases in 2005 to 11 cases in 2006 and 8 cases in 2007. Also, the pattern of death causes changed, so that in 2007 there was no death caused by eclampsia and bleeding caused just one death.

In 2007, out of 8 total deaths, 1 caused by anaphylactic shock after metoclopramid injection, 1 caused by bleeding due to placenta accreta, 4 cases had background diseases (cardio-vascular, nephrotic syndrome and myasthenia gravis), 1 caused by forgotten abortion and 1 caused because of anesthesia complications (difficult intubation).

Discussion

As the findings of this study showed, applying the necessary interventions planned after the extracted death causes, in addition to decrease of mothers' mortality rate in 2006, the death causes pattern also changed in this year so that there was no death caused by eclampsia and bleeding caused just one death. Also, the findings of the same year show that although the incidence of such deaths are still probable due to lack of access to midwifery emergencies or delay in treatments, the background diseases are the main causes of death among mothers. This fact declares the necessity to provide professional health care during pregnancy and delivery as well as counseling services before pregnancy or marriage. Therefore, it is necessary to consider these findings in order to achieve less problematic health system.

Other studies show that the most common causes of mothers' mortality in the developing countries are bleeding and eclampsia² and in the developed countries is embolism.³ However, the death pattern in Iran is not similar to any of these. It means that even though there is a distance to reach the developed countries' model, there have been lots of fundamental developments in health care services leading to lower rate of mortality due to midwifery causes.

Finally, it should be mentioned that performing safe mother plan, establishing mother friendly hospitals, paying attention to natural childbirth and decrease of c-section cases, as well as designing the system of categorizing prenatal services in the province are the priorities of the health system and the correct application of these plans can solve the problems of deficient services. It is hoped that the efforts of health care personnel throughout the country pave the way for prevention of avoidable mortalities among mothers and women's right in the most crucial phase of their lives which is becoming a mother would be achieved.

The Authors declare that have no conflict of interest in this study and they have surveyed under the research ethics.

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