

Investigating the frequency of risky pregnancies and its associated causes

Ali Azizi¹, Nasrin Mansori², Farhad Amirian³, Reza Gholipour Godarzi⁴, Atefe Shiravandi⁴, Abdollah Dargahi⁵, Naser Beidaghi⁵

¹Social Medicine Specialist, Assistant Professor of Social Medicine, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran

² Department of Gynecology, Imam Reza, Medical and Research Center, Kermanshah University of Medical Science, Kermanshah, Iran.

³ Department of Pathology, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran

⁴ Department of Medicine, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran.

⁵Department of Environmental Health Engineering, School of Health, Kermanshah University of Medical Sciences, Kermanshah, Iran.

*Corresponding author: E-Mail: aliazizi@kums.ac.ir

ABSTRACT

Background and goal: as the death rate of pregnant mothers is one of the important indicators in assessing the health system and even development of societies, full and detailed investigation of its associated risk factors is an important step to control it and enhance this indicator. Thus, the timely diagnosis of the risky group is the foundation of pre-delivery cares. The present research seeks to study the frequency of risky pregnancies and its associated factors among the pregnant women resorting to the mothers' health center of Songhor city in 2011.

Methodology: to determine the frequency of risky pregnancies and the factors that influence it among pregnant women, a cross-sectional descriptive study was conducted where the information books of 4000 pregnant women resorting to the health center of Songhor city was studied. The variables studied included: mother's age, age of pregnancy, number of pregnancies, background diseases of mother, number of fetuses, previous delivery backgrounds, etc. All these variables were analyzed using SPSS.

Results: as the results indicate, 16.3% of those resorting to the center were in the inappropriate age for pregnancy. 2.9% had more than 5 gravidities. 11.1% had previous abortions. 2.2% had background diseases. Based on the results of this research, inappropriate age for pregnancy and affliction with some disease, especially urinary tract infection (UTI), and abortion were the most important causes of risky pregnancy.

Conclusion: In order to prevent risky pregnancies, prenatal trainings and cares are strongly recommended during the reproductive age.

KEY WORDS: pregnancy, risky pregnancy, pregnancy cares, pregnant mother's health

1. INTRODUCTION

Efforts to enhance the health of pregnant mothers is one of the most important priorities of WHO, but there are still many pregnant women who lose their life due to the problems of pregnancy and child delivery and many more who suffer from the side effects of pregnancy. Thus, child delivery may not be so good for many of those 150 million women who get pregnant as it can cause pain, fear and even death. As nearly these deaths and side effects are inevitable, any failure in providing the mother and her infant with the required care can never be justified. The dangers that threaten the life of infants and even adults sometimes begin during the prenatal period. The most important causes of such dangers are mother's mal-nutrition, pregnancy before the age of 18 or after the age of 35, short interval between pregnancies, more than 5 cases of pregnancy, preeclampsia, placental abruption, pair's immaturity and small body size for pregnancy, mother's background diseases, addiction and problems in the previous pregnancies such as abortion, preeclampsia, cerclage, diabetes, and, above all, mother's deprivation from the fundamental cares during the pregnancy period. Thus, one of the most important issues in the field of mother's and child's health is how the mother spends her pregnancy period (Cunningham, 2005, Ghaffari, 2015). According to definitions, a pregnancy can be considered risky if the mother, fetus, or infant is exposed to intense danger of mortality or morbidity. Its global frequency has been reported to be about 20% and 50% of the prenatal deaths are also observed in risky pregnancies. Even under the best circumstances, pregnancy can be a stressful period for mothers and this stress and anxiety will grow even more if the mother has any previous medical problems or pregnancy side effects (Rafat, 2015). Those women experiencing a risky pregnancy face the physical, mental and socio-economic consequences caused by the nature of treatment and the potential need for long care at home or in the hospital. They have no choice but to adapt themselves to the new situation and the negative effects and anxiety and stress among them and their family is inevitable (Carson-Dewitt, 1999, Bastani, 2005). Of all 3 million child deliveries in the US every year, nearly 500 thousand are classified in the category of risky births due to congenital side effects (Leonard, 2003). Diagnosing the dangers and side effects along with the appropriate and timely interventions during the prenatal period can prevent mother's or infant's death. Some of the previous researches conducted in this field point to the correlation between risky pregnancy and some environmental factors such as life style, low socio-economic status, mother's occupational status, heavy and demanding jobs, etc (Testa, 2002). A research conducted by WHO in India demonstrated that the death toll among the infants born in less than 2 years

after the termination of previous pregnancy is twice as much as those born 4 years after the previous pregnancy. They believe that one of the most important causes of death toll observed among infants under the age of 1 is low birth weight. They believe that appropriate intervals between pregnancies are as important as vaccination. Mothers who put short intervals between their pregnancies have not the enough time required to compensate the requirements of their bodies for future pregnancies and this is expected to influence the development of their next infants. According to the nation-wide investigations in 2000 and researches on the state of risky pregnancies in Isfahan province, it turned out that nearly 52% of the risky pregnancies in the rural and urban areas of the above-said province are observed in the age category below 20 and older than 35 and the third or later kids of a family. Investigation of the risky pregnancies in the 2nd health center in 2006 showed that 13.9% of the pregnancies in the urban areas and 11.79% in the rural areas were in the category of risky pregnancies (James, 2010). Diagnosis of risky pregnancy dose not just constitute the first major step in preventing it, it also assesses the doctor, danger and the potential danger correctly and reduces the danger for mother, fetus or infant. Thus, the present research seeks to investigate the frequency of risky pregnancies and its associated risk factors among the pregnant women resorting to the mothers' health center of Songhor city.

2. METHODS & MATERIALS

Research methodology: This is a cross-sectional, descriptive study. The population includes 4000 women referring to the mothers' health center of Songhor city who came there with various problems from April 2011 to March 2012. The source of this research was the information book of the clients. After gaining the required permits to access the files and their information, all the patients were coded those cases who were not pregnant were excluded. Then a checklist containing variable such as mother's age, age of pregnancy, gravidity, parity, abortion, background disease, current complaint, etc was prepared and the repetitive cases were discarded. Thus some of the clients had resorted to the center for pregnancy period cares, some had resorted due to their problems in their current pregnancy. Their complaints were studied and if they fitted within the category of risky pregnancies, i.e. conditions under which mother, fetus or the infant are in the danger of intense mortality or morbidity, a special code for risky pregnancy was allocated to them further to the usual code given to every case. Finally, information about 3157 data was entered into the computer and analyzed using SPSS v.20.

3. RESULTS

A total number of 3157 mothers had resorted to the health center of Songhor city from April 2011 to March 2012. Of all the clients, 1720 (54.5%) had resorted for the pregnancy period cares and 1256 (39.8%) had the risk factors associated with risky pregnancies, while 181 (5.7%) were suffering from other problems. The following statistics was drawn concerning the number of pregnant mothers resorting to the center: 84 mothers (2.7%) aging 15 to 17, 1343 mothers (42.5%) aging 18 to 25, 912 mothers (28.9%) aging 26 to 30, 698 mothers (22.1%) aging 31 to 35, and 120 mothers (3.8%) aging 36 to 53. Among the 1256 cases in the risky category, 498 (39.6%) aged 18 to 25. This was much more than other ranges defined in terms of age frequency. The average age of the risky clients was 26.99 years old (table 1).

Table.1. frequency distribution of pregnant mothers' age in the category of risky cases

| Mother's age (years) | Frequency | Percentage |
|----------------------|-----------|------------|
| 15 – 17 | 84 | 6.7 |
| 18 – 25 | 498 | 39.6 |
| 26 – 30 | 352 | 28 |
| 31 – 35 | 202 | 16.1 |
| 36 – 53 | 120 | 9.6 |
| total | 1256 | 100 |

Of all the clients, there were 1295 with 2 gravidities which constituted the highest percentage (41%). The following statistics was achieved concerning the gravidity: 604 (19.1) with 1 gravidity, 1015 (32.3%) with 3 gravidities, 208 (6.6%) with 4 gravidities, 25 (0.8%) with 5 gravidities, 9 (0.9%) with 6 gravidities and 1 with 7 gravidities. The average gravidity was 2.3 cases. Of all the clients, 3132 cases (99.2%) were pregnant with a single fetus, while 25 (0.8%) had a twin fetus. As the analysis indicates, the greatest percentage of twins were observed among mothers older than 35 but no significant correlation was observed between the age of mother and the number of fetuses (P -value < 0.05). The frequency of the causes of risky pregnancy is represented in table 2. The most frequency causes were as follows: 183 cases of UTI (14.6%), 127 cases of previous abortion (11.1%), 120 cases of aging older than 35 (9.6%), 84 cases of aging younger than 18 (6.7%), 82 cases of negative RH (6.5%), 78 cases of excessive weight (6%), 73 cases of placenta previa (5.8%), and 74 cases of decreased fetal movement (6%).

Among the risky cases, 28 mothers were suffering from underlying diseases. The greatest number of underlying diseases were observed among the Psychiatry and Hematology group (8 cases) and gland group (5 cases). As of the Psychiatry group, 3 were suffering from convulsion, 3 were afflicted with migraine, and 2 had previous cerebral venous thrombosis. As of the hematology group, all the 8 cases previously had Anemia. In the glands group,

3 had a history of hypothyroidism and there was one with hyperthyroidism. 2 had a history of high blood pressure and 1 was afflicted with diabetes. 2 had a history of asthma and 2 had Nephrolithiasis.

Table.2. Frequency distribution of causes of risky pregnancy among the clients

| Causes of risky pregnancy | Frequency | Percentage |
|--------------------------------|-------------|------------|
| UTI | 183 | 14.6 |
| History of abortion | 127 | 11.1 |
| Aging older than 35 | 120 | 9.6 |
| Aging younger than 18 | 84 | 6.7 |
| Negative RH | 82 | 6.5 |
| Not gaining weight | 76 | 6 |
| Gaining weight | 75 | 6 |
| Decreased fetal movement | 74 | 5.9 |
| Placenta previa | 73 | 5.8 |
| High blood pressure | 55 | 4.3 |
| Anemia | 36 | 2.9 |
| More than 5 gravidities | 35 | 2.9 |
| Twin fetus | 25 | 2.4 |
| Breech presentation | 29 | 2.3 |
| Abortion | 28 | 2.2 |
| Background disease | 28 | 2.2 |
| Pregnancy diabetes | 25 | 2 |
| Premature delivery history | 15 | 1.2 |
| Myoma | 13 | 1 |
| Premature delivery | 10 | 0.8 |
| Cerclage | 7 | 0.6 |
| History of ectopic pregnancy | 7 | 0.6 |
| History of preeclampsia | 7 | 0.6 |
| CNS disorders | 7 | 0.6 |
| Macrosomia | 6 | 0.5 |
| IUGR | 6 | 0.5 |
| History of uterine fetal death | 6 | 0.5 |
| Pregnancy with IVF | 4 | 0.3 |
| Lateral representation | 4 | 0.3 |
| Molar pregnancy | 4 | 0.3 |
| DVT | 3 | 0.2 |
| Preeclampsia | 2 | 0.2 |
| Polyhydramnius | 2 | 0.2 |
| ITP | 2 | 0.2 |
| Ectopic pregnancy | 2 | 0.2 |
| Placental abruption | 2 | 0.2 |
| Pregnancy with IUD | 2 | 0.2 |
| Pregnancy with TL | 1 | 0.1 |
| Total | 1256 | 100 |

The following statistics was achieved about pregnancy: 8.2% for mothers with 1 abortion, 1.8% for mothers with 2 abortions, and 0.1% for mothers with 3 abortions with the highest rate of abortion observed in the age of older than 35 years (table 3). No significant correlation was observed between the older age of the mother and abortion history in data analysis (P-value < 0.05).

Table.3. Distribution of abortion history based on the mother's age

| Abortion history | Mother's Age | | |
|------------------|-----------------|-------------|---------------|
| | Younger than 18 | 18 to 35 | Older than 35 |
| None | 82 (97.6%) | 952 (90.5%) | 95 (79.2%) |
| Once | 2 (2.4%) | 86 (8.2%) | 15 (12.5%) |
| Twice | 0 (0.0%) | 14 (1.3%) | 9 (7.5%) |
| Three times | 0 (0.0%) | 0 (0.0%) | 1 (0.8%) |
| Total | 84 (100%) | 1052 (100%) | 120 (100%) |

As the analysis indicated, there is a significant correlation between gravidity and Para and current complaint of abortion. In the pregnant mothers with 2 gravidities and 1 Para, the highest amount of abortion complaint was observed (P-value < 0.05).

The current research found 2 cases of pregnancy with IUD where there was no significant between it and age, gravidity and parity (P-value > 0.05). A significant correlation was observed between decreased fetal movement and mother's age, parity and gravidity so that higher age, parity and gravidity resulted in decreased fetal movement (P-value < 0.05). A significant correlation was also observed between UTI and mother's age and parity and gravidity (P-value < 0.05) in such a way that older age and greater parity resulted in higher UTI and the highest percentage was observed in the cases older than 35 with a gravidity of 3 and a parity of 2. The other significant correlation was observed between breech presentation and mother's age, gravidity and parity in such a way that in the cases younger than 18 with 1 gravidity, 0 Para had the highest percentage (P-value = 0.02). A significant correlation was also observed between the complaint of mothers' not gaining weight and mother's age, gravidity and parity. According to the results, as the age, gravity and parity go up, more cases of not gaining weight are observed (P-value < 0.05).

There were 7 cases of CNS abnormality and the analysis indicated a significant correlation between higher CNS and mother's age, gravidity and parity so that the greatest number of cases were observed among those older than 35 with 6 gravidities and a Para of 5 (P-value < 0/05). There were 6 cases of DVT in our research and all of them aged 18 to 25, but no significant correlation was observed here. All these 6 cases had 2 gravidities and 1 Para in whose analysis a significant correlation was observed (P-value < 0.05). The prevalence of DVT was more frequent in the third trimester, but no significant correlation was found between them (P-value < 0.05). Among the risky factors, those correlated with mother's age are presented in table 4. Those correlated with gravidity are presented in table 5.

Table.4. age-related causes of risky pregnancy

| Cause of risky pregnancy | Mother's age (years) | | |
|-----------------------------|----------------------|----------|---------------|
| | Younger than 18 | 18 to 35 | Older than 35 |
| Abortion history | 2.4% | 9.5% | 20.8% |
| Premature delivery history | 0% | 1% | 3.3% |
| Cerclage history | 0% | 0.4% | 2.5% |
| Anemia | 8.3% | 1.8% | 8.3% |
| Placenta previa | 0% | 5.6% | 11.7% |
| UTI | 0% | 15% | 21.7% |
| Polyhydramnius | 0% | 0% | 1.7% |
| Decreased fetal movement | 0% | 4.4% | 23.3% |
| Breech presentation | 6% | 2.2% | 0.8% |
| Autoimmune thrombocytopenia | 1.2% | 0.1% | 0% |
| IUGR | 0% | 0.1% | 4.2% |
| Not Gaining Weight | 0% | 6.2% | 9.2% |
| Negative RH | 2.4% | 6% | 14.2% |
| CNS disorders | 0% | 0.1% | 5% |
| Molar pregnancy | 0% | 0% | 3.3% |

Table.5. Gravidity-related causes of risky pregnancy

| Causes of risky pregnancy | Gravidity | | |
|-----------------------------|-------------|--------------------|-------------------------|
| | 1 gravidity | 2 to 4 gravidities | more than 5 gravidities |
| Abortion | 0.5% | 4.1% | 0% |
| Abortion history | 0.5% | 17% | 45.3% |
| Mother's background disease | 1.8% | 2.4% | 5.7% |
| IUFD | 0% | 1% | 0% |
| Premature delivery history | 0% | 1.9% | 8.6% |
| History of preeclampsia | 0% | 1.1% | 0% |
| Cerclage history | 0% | 1% | 2.9% |
| Fetal macrosomia | 0% | 1% | 0% |
| Pregnancy diabetes | 0.3% | 3.7% | 0% |
| IUGR | 0.2% | 0% | 14.3% |
| Anemia | 1.3% | 3.7% | 14.3% |
| Placenta previa | 1.7% | 8.1% | 37.1% |
| Decreased fetal movement | 0% | 12% | 0% |
| UTI | 0.2% | 29.7% | 0% |
| Breech presentation | 3.5% | 1.3% | 0% |
| Not gaining weight | 0% | 12.3% | 0% |
| Negative RH | 2.5% | 10.7% | 2.9% |
| Myoma | 0% | 2.1% | 0% |
| Molar pregnancy | 0% | 0% | 11.4% |
| DVT | 0% | 1% | 0% |

DISCUSSION

As the results of the current study demonstrated, the greatest frequency of risky pregnancies was observed in the age category of 18-25 with the average age of 26.99 years old. The research conducted by Sarem over a four-year period since 1992 to 1995 showed the greatest cases of risky pregnancy in the age category 31 to 35 (Amini Naieni, 1999). In the research conducted by Mahdiyeh in the city of Bam (2001), the average age of mothers' pregnancy was 25.52 years old (SoleimaniZadeh, 2004). These researches confirm the young age for risky pregnancy and point to the fact that the age of risky pregnancy will decrease even further in a not-distant future. This is an invaluable finding.

Our research found a frequency value of 39.8% for risky frequency, while other studies have reported different frequencies. For example, in the study conducted by Mahdiyeh in the city of Bam (2001) the frequency of risky pregnancy was reported to be 52% (SoleimaniZadeh, 2004), while this frequency was reported to be 27% in the study of Alexandria, Egypt. These incongruities might be due to the different conditions in the communities studied, their risk factors, their culture of marriage and pregnancy or lack of detailed and complete access to the information of pregnant mothers. For instance, history of cesarean delivery, unwanted pregnancy, smoking, and taking teratogenic medicines are also some of the risky cases which were not asked in the data books.

In our research, the commonest cause of risky pregnancy is the inappropriate age for pregnancy (younger than 18 and older than 35) with a frequency of 16.4% followed by UTI with a frequency of 14.6%. This fact indicates that inappropriate age for pregnancy is the commonest risk factor of risky pregnancy. In the research conducted in Mahdiyeh clinic of Bam, the inappropriate age for pregnancy (18.4%) followed by UTI (12.3%) were the commonest causes of risky pregnancy (Amini Naieni, 1999). The inappropriate age for pregnancy constituted 15.2% of the cases of risky pregnancies in the study conducted in Gonabad and 25% of the cases in the study of Sarem and 15.6% of the cases in the study conducted in Alexandria, Egypt (1990) (SoleimaniZadeh, 2004). These different percentages can clearly indicate the culture of early marriage and pregnancy in inappropriate ages in small cities with less population than metropolitan areas.

The frequency of twin fetus in our research was 2.4%, while the study conducted in the US (2014) by Stephen, reported a frequency of 3.3% for this variable (O'sullivan, 2009). In the research conducted on Baghiat Allah Hospital in 2007, twin fetus had a frequency of 1.8%, while this variable has a frequency of 1.06% in the research conducted by Mac Dorman (2005) (SHVIRAGA, 2014). The higher percentage of twin fetuses can be justified by higher cases of infertility treatment.

The frequency of ectopic pregnancy in our research was 0.6% which was less than other studies. The frequency of ectopic pregnancy in the study of Sarem clinic was 2.9% (SoleimaniZadeh, 2004). According to the reported published by the college of Obstetricians and Gynecologists of USA in 2008, 2% of all the pregnancies in the first 3 months of the year were inappropriate and the low risk factors of inappropriate pregnancies in this area can be attributed to its little frequency (Chen, 2008, Rasolabadi, 2015b). It is noteworthy to keep in mind that in order to enhance the accuracy of results, those cases which were certainly ectopic received the ectopic code. There were also cases complaining about their bleeding and they had come for further diagnosis but we have no information about their pregnancy.

The frequency of placenta previa in our research was 5.8% which is more than the percentage for other parts of the world. The highest percentage of this variable was observed among those older than 35 and older age and higher gravidity and parity could well increase that percentage. This frequency in the study conducted by Cleary-Goldman (2005) was reported to be 1.6% (Cleary-Goldman, 2005). The studies conducted by Cieminski, (Cieminski and Długołęcki, 2005) and Sheiner, (Sheiner, 2001) the greatest percentage for the frequency of placenta previa was reported among those older than 35 and this is in line with the results of our research.

The frequency of preeclampsia and pregnancy diabetes in our research was much less than other studies. Preeclampsia and high blood pressure during pregnancy had a frequency of 0.2% and 2% in our study, respectively. Other researches had reported greater percentages than our research. For instance, this frequency in the study of Sibai (2009) varied from 3% to 10% (Sibai and Stella, 2009) and equaled 9.4% in the study of Sarem (SoleimaniZadeh, 2004). LissaMagloire (2013) stated in their research there are evidences indicating that 15% to 25% of those women resorting to hospital complaining of HTN were suffering from Preeclampsia. They have also reported a frequency of 6% for high blood pressure (Som and Stroup, 2011).

The frequency of pregnancy diabetes in our research was 2%, while Rahimi, reported a frequency of 3.43% (Rahimi, 2010, Rasolabadi, 2015a). The Results of the study conducted by Donal (2014) indicated that the frequency of pregnancy diabetes in the US was 6 to 7% which is more than other countries. This difference can be attributed to difference in the screening methods and demographic features such as average pregnancy age, BMI during pregnancy and diagnostic criteria (COUSTAN, 1991). The little percentage in our research can probably be due to lack of follow ups in the final diagnosis and writing defects of the files. The pregnancy age in this research was much lower than similar researches and their BMI is probably not dangerous and the very same can reduce the risk of diabetes.

The frequency of anemia in our research was 2.9% which had a correlation with age, gravidity and parity so that it had the greatest frequency among two risky age ranges. This frequency in the study conducted by Davari, (2005) was 8.6% (Davari-Tanha, 2008). The significant reduction in this frequency is due to better training and pre-pregnancy cares. The highest frequency of anemia among the pregnant women (50%) was reported in the study of Kalaivani, (2013) (Kalaivani, 2009).

The frequency of premature delivery in our research was 0.8% and this percentage increased as the mother's age, gravidity and parity increases. This frequency in the study of Sehati, (2009) was 4.13%. In A research conducted by Wang, from 2001 to 2009, the risk of premature delivery was reported to be 8.6% mostly due to multi-parity and medical side effects and fetus disorders and old age of mother (FARAJI, 2012, Sullivan, 2012). The low percentage of premature delivery in our research is probably due to the fact that this center refers patients to other clinics and it is impossible to follow the patients' medical strategy. Thus, no clear diagnosis was written for these patients in their files. Gravidity values more than 5 in our research constituted 9.6% of the cases.

4. CONCLUSION

The results of this research emphasize the importance of greater attention to pregnant women, particularly in terms of teaching special prenatal cares and pregnancy prevention in inappropriate age. It is also necessary to take all necessary measures to prevent UTI. As UTI can be a cause of developing infants with little weight, it is strongly recommended to teach points about total urine depletion before and after intercourse and sending urine samples for urine cultivation in each visit during pregnancy in pre-marriage consultation classes, pre-pregnancy consultations and during pregnancy cares. Furthermore, when risky pregnancy is diagnosed for a woman, it is necessary to provide her with constant and special health care during pregnancy, delivery and one year after delivery.

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