Contribution of Maternal Demographic and Medical Factors to the Risk of Prematurity in Qom Hospitals

Gholamreza Jandaghi¹, Zohreh Khalajinia², Parvaneh Sadeghi Moghadam²

¹University of Tehran, Tehran, Iran; ²Qom University of Medical Sciences, Iran

Abstract

Background. Prematurity remains the most significant cause of neonatal morbidity and mortality. Knowing which group of women is at risk for developing preterm labor will define a target population for better prenatal care and preventive modalities.

Aim. The aim of this study is to determine prevalence of premature birth and to examine effect of maternal demographic features, socioeconomic state and employment in the duration of pregnancy.

Material and Methods. A comparative cross sectional study designed to examine effect of obstetric and demographic features of women who delivered in the obstetric department of Qom Hospitals (Qom, Iran) between 22/5/2009 to 20/11/2009.

Results. The frequency of preterm delivery among live births was 5.6%. Increasing maternal parity, short inter pregnancy interval, low socioeconomic state, emotional stress, lack of regular antenatal care, antepartum hemorrhage, had significant relationship with preterm labor.

Conclusion. Addressing prematurity in this population will require earlier initiation of prenatal care to allow for early detection and management of complications of pregnancy. Initiatives directed toward reducing the frequency of short inter pregnancy interval could have beneficial effect.

Introduction

Prematurity is a serious health problem. Babies born too soon can have lifelong or life threatening health problems.

Prematurity and low birth weight are the third most common causes of infant’s death. Many premature babies spend weeks or even months in the neonatal intensive care units.

After birth while many premature babies grow up healthy, others have lifelong disabilities, such as cerebral palsy, mental retardation, chronic respiratory problems, visual and hearing loss [1]. More than 10 Billion dollars spent on neonatal care in the United States Of America in 2003 was spent on the 12.3% of infants who were born preterm. The rate of premature births in European countries is 5-7% [2]. Studies represent the doubling rate of prematurity during the last 15 years [3].

Approximately one third of all preterm deliveries are due to adverse maternal or fetal complications that warrant early delivery: Such as hypertension, antepartum hemorrhage, diabetes or fetal growth retardation [4]. The other two third categorized as spontaneous, prompted many investigators to search for variable risk...
factors that they lead to preterm delivery [5]. Knowing which groups of women are at risk for developing preterm labor will define a target population for better prenatal care and preventive modalities that lead to decreasing rate of prematurity [6].

The aim of this study is to determine prevalence of premature birth and to examine the effect of maternal demographic and socio-economic features in the duration of pregnancy.

Materials and Methods

This research is a comparative cross-sectional study. The study sample included all 10913 singleton deliveries with 28 or more gestational weeks between 22/5/2009 to 20/11/2009 in Qom Hospitals. All deliveries were used to determine the incidence of preterm rate. Out of 10913 deliveries there were 612 deliveries terminated before 37 weeks of gestational age. To study the contribution of maternal demographic and medical factors to the risk of prematurity we used a random sample of 200 preterm deliveries as case group proportional to the number of deliveries in each hospital. For each preterm delivery we took the next term delivery following it in that hospital to have a group of 200 term deliveries as control group.

The inclusion criteria were: gestational age between 28-42 weeks, live birth, in-hospital delivery, regular cycle and exact known date of last cycle. The exclusion criteria were: non-Iranian nationality, gestational age less than 28 weeks, still birth, multiparity, in-home delivery, alcohol consumption, smoking, irregular cycle, non-exact date of last cycle and consumption of oral contraceptive pills.

Under consideration variables were: age, body mass index (according to preconception or first trimester weight), parity, employment, work status, maternal and paternal educational level, socioeconomic state, family population, interval between pregnancies in multiparous, prior history of conditions such as: infertility, abortion, repeated abortion, preterm delivery and unwanted pregnancy during gestation the enjoyment rate of antenatal care, history of hospital admission, surgery, pre partum hemorrhage.

Interview forms and patients medical records were instruments of collecting data. SPSS was used for statistical analysis of data for description of data's average index, standard deviation and frequency tables were used too. For comparison of two groups Fisher and Man Whitney tests were used. Logistic regression was used to omit the effect of confounding variables.

Results

During 6 months 10913 mother delivered their infants that 612 of them (about 5.6%) were terminated before 37 weeks of gestational age. The average gestational age in preterm deliveries was 33 week with standard deviation of 2 weeks. In evaluation of individual characteristics of two groups there was no significant relationship between duration of pregnancy and maternal age, employment, physical stress of work, level of parents education, body mass index, the family population, post histories of abortion, infertility, hospital admission during pregnancy. There was significant relationship between maternal parity and premature delivery (p-value < 0.04).

Table 1: Distribution of Pregnancy Interval and Socio-economic Status.

<table>
<thead>
<tr>
<th>Socio-economic Status</th>
<th>Pre-term</th>
<th>Term</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency (Percent)</td>
<td>Frequency (Percent)</td>
<td>Frequency (Percent)</td>
</tr>
<tr>
<td>Low</td>
<td>128 (64.0)</td>
<td>92 (46.0)</td>
<td>220 (55.0)</td>
</tr>
<tr>
<td>Medium</td>
<td>30 (15.0)</td>
<td>40 (20.0)</td>
<td>70 (17.5)</td>
</tr>
<tr>
<td>High</td>
<td>42 (21.0)</td>
<td>68 (34.0)</td>
<td>110 (27.5)</td>
</tr>
<tr>
<td>Total</td>
<td>200 (100)</td>
<td>200 (100)</td>
<td>400 (100)</td>
</tr>
</tbody>
</table>

Chi-Square Statistic=13.46; Df=2; p-value=0.01.

More than 50% of women who delivered their infants prematurely were multiparous while in Term group 42% of mothers were multipar. In multipar women there was a significant relationship between short inter pregnancy interval (calculated from time of last delivery to the onset of recent conception) and premature delivery. Study showed 69% of multipar women who borned their infants prematurely had less than two years inter pregnancy interval.

Inter pregnancy interval in Term group was 3.2 times more than that in Preterm group. This study showed 64% of women who experienced premature birth had low socio-economic status, while 46% of Term group was in this socioeconomic state. This difference was statistically significant (p-value= 0.000) (Table 1).

Twelve percent of mothers with premature deliv-
Discussion

Premature delivery is the leading cause of prenatal mortality and morbidity and is the main risk factor for adverse pregnancy outcome. Premature infants have an increased risk of mental retardation, blindness, hearing loss and broncho pulmonary dysplasia. The imposed costs to society in terms of acute and chronic medical cares as well as long term handicaps has made preterm delivery a serious subject for research. In this study 612 of 10913 pregnancies terminated before 37th weeks of gestation. Prevalence of premature birth was 5.6% which is in agreement with researches of Mortem and his colleagues in Sweden %5.5 of neonates were born prematurely [7].

Prevalence of preterm birth in USA was %12.3 in 2003 [8], the greater rate of prematurity in USA seems to be due to occurrence of multiple pregnancy associated with infertility treatment. This study revealed mothers who delivered their babies prematurely had more chance of being in low socioeconomic state. This result is consistent with finding of performed study in USA 2001 [9].

Results showed relationship between regular prenatal care and preterm delivery was statistically significant (p-value= 0.000). Different studies show that improvement in prenatal care decreases the risk of premature delivery [10]. Early and adequate prenatal care is critical in detecting which group of women are at greater risk of preterm delivery, early detection of preterm labor is important because tocolytic therapy is more effective when given soon.

One study showed surgery and anesthesia increase the risk of premature delivery which is similar to our results [11]. A prospective study on 5872 women with preterm delivery showed close relationship between emotional stress and preterm delivery. This result is similar to our findings [4].

Result of one study among black women showed that short inter pregnancy interval had increased risk of preterm delivery. Mohamadian and his colleagues showed negative relationship of inter pregnancy interval and rate of premature birth [12]. Finding of this study are similar to our result. As our result a research by Babianski showed multiparous women had more chance of preterm delivery [13]. Dr. Senson in Denmark find that premature delivery among the persons with prior history of abortion was 2-2.5 times more common than pregnant women without this problem [14]. According to our results there was no statistical significant difference between two groups regarding to post history of abortion or repeated abortion. The difference results may be due to smaller number of samples in our study.

References

6. Coleman AC. Fetal Fibronectin Detection in Preterm Labor, Evaluation of Prototype beside Dipstick Technique and Cervi-
Clinical Science


