INVESTIGATING THE CAUSES OF NEONATAL MORTALITY AND ITS PREVENTION METHODS IN URMIA CITY

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ABSTRACT

Introduction: According to that infant mortality rates indicative of the community health status, therefore, knowing the major causes of neonatal death is very effective in reinforcing pregnancy, childbirth, and newborn care system plans in the community. This study was conducted to study the causes of neonatal mortality and its prevention methods in Urmia city. **Method:** In this descriptive cross-sectional study, 510 infants who died in Urmia during 2015-2017. Data were collected using the records of the infant cases and analyzed by SPSS software and statistical tests. **Findings:** The results showed that the mortality rate in the boy newborns was higher than the girls and the most common cause of infant mortality was premature birth defects (75%).Other causes of the neonatal mortality were: congenital and chromosomal abnormalities (19.6%), accidents (0.2%), cardiovascular diseases (0.4%) and other causes (4%). **Discussion & Conclusion:** According to studying, the most common causes of infant mortality are prematurity and low birth weight. Therefore, it is recommended to teach mothers how to prevent the birth of premature and low birth weight babies and how to care for premature and low birth weight infants.

Keywords: Death and mortality of neonatal, premature and low weight, prevention methods.

INTRODUCTION

Efforts to improve the health and reduce the mortality rate of infants are very valuable from different aspects of health, social, psychological and economy. Its benefits are not limited to just the neonatal period, but to all of the human lifetime. But despite the efforts that made and the 50% reduction in infant mortality in the country, there has been little success in reducing infant mortality. Major deaths of infants occur in the hospital and the study of the causes of neonatal death is one of the important tools for selecting intervention and evaluating its effectiveness [1].

According to the World Health Organization, of the 130 million births per year in the world, about 4 million babies die in their first 28 days of birth; Three quarters of these deaths occur in the first week of birth and more than a quarter of the deaths in the first 24 hours of birth [2].These deaths account for more than 40% of the total deaths of children under the age of 5 years, therefore, with regard to development goals, the death rate of this age group should be halved by 2015 in countries with high mortality rates [2].Two-thirds of all neonatal deaths occur in only 10 countries, mainly in the Asian continent [3]. In our country, The current infant death rate is 3.18 / 1000 live births (DHS in the 2000 year) and 17.66 (vital life in 2002). In fact, about 20,000 babies die annually before reaching 1 month of age, while there are no precise statistics on stillbirths[4]. According to the statistics, the mortality rate of children under the age of 5 years in the past two decades has fallen in all countries. Despite this change, there are still no significant changes in the mortality rate of infants less than 28 days, especially in developing countries[5].Infant mortality rates are one of the most important health indicators in the community that is affected by various factors[6].On the other hand, it is considered the main element of development and one of the most important foundations for achieving this goal will be based on the consideration of children of the next generation [7].The causes of neonatal death are generally divided into two categories: Biological and non-biological. Although biologic factors such as premature infections, and asphyxia at birth are of the known causes of infant mortality, non-biological causes are equally important. These include mother's socioeconomic status, gender, and level of education [8].In countries with low socioeconomic status, causes such as congenital infections and birth defects, prematurity, and abnormalities are more common causes [9].The highest neonatal death occurs in the first 24 hours of life, accounting for 65% of all infant deaths. Infections 36%, prematurity 28%, asphyxia around 23% are the main causes of neonatal death around the world [10, 11]. In the United States, 50% of infant deaths in 2002 were due to the following four factors: Congenital anomalies, prematurity disorders, nonspecific LBW, sudden infant death syndrome, and infants affected by maternal complications [12].

The total death rate of infant's death is 66% in the first year of infant lives which is about 70 percent in our country (50 percent of the deaths of children under the age of 5 is the death of infants). 84% of infant death occurs in the first week, in the high-risk period, and 50% of that deaths are in the first 24 hours [13-15]. The rate of infant death in advanced countries is 5 per 1,000 births. The mortality rate of infants below one-year-old, from 197 countries in the survey period from 2005 to 2010 is at the 115th rate with 16.27 per 1,000 live births [12]. On the other hand, according to the pattern of death in our country, the most common causes of death are: Prematurity, labor injuries, underweight, congenital anomalies, infections, and asphyxiation. Compared to the causes of death in developing countries, which are the most common causes of death is infectious diseases and also major causes of death in developed countries are congenital anomalies and prematurity. The death pattern in our country is not similar to developed countries, nor similar to developing countries, and therefore we are in an epidemiological transition [14, 15].

With a careful look of infant mortality rates in our country and its direct impact on mortality rates of infants and children under the age of 5 and, on the other hand, the different causes of infant mortality according to the availability and quality of health services

in different countries, identification of these factors is necessary [16].

Considering the importance of infant mortality and regional and time differences in their occurrence, the present study was conducted to investigate the causes of neonatal mortality and its prevention methods in Urmia city so that its results could be planned to reduce neonatal mortality.

METHOD

This research is a historical cross-sectional study in which the causes of neonatal mortality over the three years of 2015, 2016, 2017 in Urmia city has been studying. Our study population consisted of all dead babies in hospitals and health centers of Urmia. In this research, our researchers referred to Urmia Health Centers. And studied all cases of reported neonatal deaths. And in order to complete the questionnaire, according to the place of birth of these infants, they went to the hospital archives of the place where the baby was born, and the delivery and neonatal records of the infants were checked. The sample includes all cases of neonatal death in the last 3 years in the city of Urmia, which had the status of research units. SPSS software was used to analyze the data.

Research limitations

- In this study, some cases of neonatal death in some medical centers or homes may not have been reported that are beyond the scope of the researcher.
- In this study, the causes of neonatal mortality are the diagnosis of specialists and the cause contained in the case of the neonate. In some cases, the accuracy of this diagnosis is beyond the control of the researcher.
- It should be noted that the results of this study may not be generalized to other hospitals in the country.

Ethical Considerations: The ethical considerations of the research included confidentiality and lack of mentioning the name of the participants.

RESULTS

In this study, 510 neonates were studied, which 166 neonates died in the year 2015, 173 newborns died in 2016, and 171 neonates died in 2017. (Figure -1).

Fig.1: Neonatal mortality over the three years of study
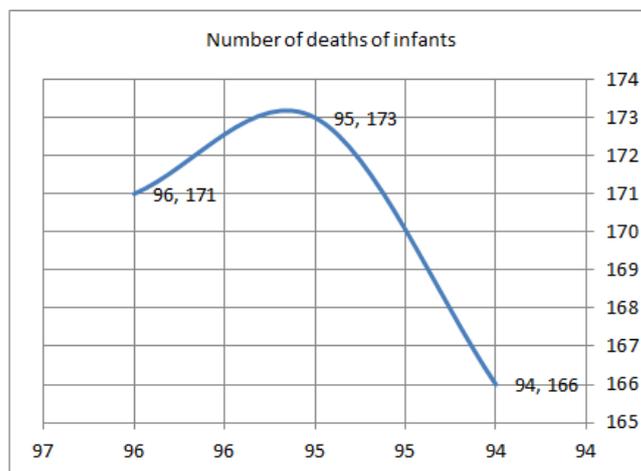
In terms of the sex of the infants, 272 cases (53.4%) and 238 cases (46.6%) were respectively male and female. The death of boy infants was greater than the girls. The death of the newborns in the city is greater than the ones borne in the village. Also, babies born naturally had fewer deaths than the ones borne with cesarean section. (Table 1).

Table 1: Frequency distribution of infant mortality by demographic information

Study variables		2015 Number (percent)	2016 Number (percent)	2017 Number (percent)		Total Number (percent)
Gender	Female	81 (15.9)	82 (16.07)	75 (14.63)		238 (46.6)
	Male	85 (16.65)	91 (17.85)	96 (18.9)		272 (53.4)
Habitat	City	123 (24.1)	117 (22.9)	101 (19.8)		341 (66.8)
	Village	43 (8.5)	56 (10.98)	70 (13.72)		169 (33.2)
Type of delivery		Natural	63 (12.35)	82 (16.07)	71 (13.93)	216 (42.35)
		Cesarean section	103 (20.25)	91 (17.8)	100 (19.6)	294 (57.65)
Place of death		Home	4 (0.78)	2 (0.39)	5 (0.98)	11 (2.15)
		Hospital	165 (32.35)	171 (33.52)	162 (31.98)	449 (97.85)

The causes of death during the three years showed that the first cause of death is premature and low birth weight infants (75.68%) and the second cause is congenital and chromosomal abnormalities (19.6%).

Causes of infant death	2015 Number (percent)	2016 Number (percent)	2017 Number (percent)	Total Number (percent)
Prematurity and low birth Weight	127 (24.9)	135 (26.47)	124 (24.31)	386 (75.68)
Congenital and chromosomal abnormalities	25 (4.9)	36 (7.05)	39 (7.65)	100 (19.6)
Accidents	1 (0.2)	0	0	1 (0.2)
Cardiovascular disease	0	2 (0.4)	0	2 (0.4)
Other	13 (2.6)	0	81 (1.52)	21 (4.12)

DISCUSSION

This study was designed because the study of the causes of death is the first step towards reducing it during infants. Such studies may yield different results in different countries over the years, which can be analyzed and reduce the predicted and avoidable deaths. In this study, most neonatal deaths are due to premature and low birth weight and included in the newborn period. However, these babies are only about 0.07 of the total number of births, but about two-thirds of the deaths associated with their neonatal period [17]. In a study in Bangladesh in 2005, the main cause of neonatal death announced: Prematurity and low birth weight (70%), hard labor (16%), and delivery in an unfavorable condition (16%) and unknown death reasons (34%) [18]. Considering that the main cause of death in recent research is prematurity and its complications, this study coincides with the present study. In a study in Togo, premature and respiratory distress syndrome totaled 45.6% of the causes of death [19]. While Foran and coworkers in Ireland reported congenital anomalies as the first cause of death (40%) and others (37%) [20].

Considering that the first major cause of death in this study was prematurity, it is consistent with other studies in Cameroon [21], Canada [22], China [23] and Japan [24]. However, the results of Javanmardi and coworkers [25], which reported congenital anomaly as one of the most common causes of neonatal death, were not consistent. In a study in the United States that compared infant mortality rates between 1981 and 2000, the most important cause of death during these 20 years was prematurity and low birth weight, then inherited anomalies [26], which is also

consistent with the present study. In this study, 65.67% of deaths occurred in cesarean delivery, due to the supportive effects of vaginal delivery to reduce the severity of respiratory distress syndrome, this result is also logical. This issue shows the importance of vaginal births and its benefits in the development of neonatal survival and avoidance of unhealthy cesarean delivery. The results of this study are consistent with the studies conducted in Tehran [27] that can be attributed to higher cesarean delivery in high-risk pregnancies. Considering the prematurity and low birth weight as the most important determinants of neonatal mortality, it is possible to reduce premature and low birth weight born babies by increasing the quality of prenatal care and the prevention of early delivery and making changes in the social and economic status of the community mothers and correct implementation of educational intervention plans for high-risk groups. Therefore, the medical team's preparation for the birth of premature infants and the provision of NICU equipment in terms of facilities, and especially hospital personnel, can be helpful in reducing infant mortality.

Prevention Methods

As a pregnant mother, remember that increased fetal mobility depends on the progress of pregnancy, the feeding of the mother and her lifestyle during pregnancy. Also, it's very difficult to care for premature babies born with preterm labor. Therefore, every pregnant mother should have several steps to prevent her baby from birth at a low birth weight, including:

1. Start early care of yourself and the fetus inside the uterus before birth

   Caring for pregnant women is one of the best ways to prevent births of low birth weight and early births. During this period of life, certain diseases such as preeclampsia and gestational diabetes that affect the development of the fetus are detected easily. In addition, overweight, blood pressure, child growth, and fetal heart rate will be controlled when a pregnant mother refers to a gynecologist.

2. Increased maternal and fetal weight gain with proper nutrition during pregnancy

   As you know, women's use of a healthy and nutritious diet, especially at the beginning of pregnancy, has a special impact on the development of the fetus in the uterus. Therefore, all women should considerably increase the consumption of foods rich in folic acids, such as whole grains, fruits, and vegetables at the start of pregnancy, so that they can help increase their baby's weight and health.

3. Make changes in the lifestyle of pregnant women

   Smoking by pregnant women increases the possibility of having low birth weight babies. So, every woman should stop smoking and drug use right after awareness of her pregnancy. Of course, having enough sleep and low stress will also help in the development of the fetus in the uterus of pregnant mothers.

4. Medical conditions for pregnant mothers must be kept under the control of a gynecologist

As previously mentioned, mothers with high blood pressure or gestational diabetes significantly increase the possibility of born a baby with low birth weight. Therefore, mothers with these problems should try to keep their body complications in control of these problems and diseases and minimize the risk of having a baby with a low birth weight. If despite her mother's efforts during pregnancy, her baby was born with low weight, parents should do well after the baby is born, because changes in the maintenance of the baby can change their weight.

What mothers can do to help their low birth weight babies:

- The first point about keeping low-birthweight babies is that parents should forget about their child's weight and instead they must be more active to compensate for the problem.

- Breastfeeding low birth weight babies: Proper and immediate breastfeeding after birth improves not only weight in low birth weight infants, but also significantly improves the immune system of these infants.
- Regular examination of low birth weight infants by pediatrician: While low birth weight babies are regularly examined by a pediatrician, his growth milestones will be identified.
- The weight of low birth weight infants should be monitored regularly by their parents: As you know, the weight of the baby with a low birth weight will rise slightly. Therefore, how to increase the weight of such babies should be carefully checked by their parents, as long as its weight increases, it can be controlled because it can be dangerous and cause weight problems in the future of these babies.
- Parent's effort to raise the healthy weight of their low birth weight babies: As a mother of a low-birth-weight baby, remember that adding sugar or refined foods to gain baby weight is very dangerous and non-profitable. Each mother should only breastfeed her baby until six months old and only after 6 months of age is allowed to use other foods to feed such infants.
- Mothers who have given birth to underweight babies must have more patience: As a parent of a low weight baby, remember that your child's weight gain will not happen over a night, as the weight gain of the newborns may take months. So, work carefully with your poor baby and do not miss your hope. Try to be patient in such cases and see only the positive aspects.

After all, keep in mind that with simple efforts in the home, weight control for babies will be easy. Because if the pursuit of maternal home remedies is not appropriate for raising her baby weight, the child should be admitted to the hospital and need long-term treatment.

Conclusion

According to findings, the most common causes of infant mortality are premature and low birth weight. Therefore, in order to prevent the death of infants, mothers should be trained to prevent the birth of a premature and low birth weight babies. Meanwhile, the mother's attitude and behavior must be increased for the care of preterm and low birth weight infants to reduce death

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