A Study of Frequency and Causes of One Month To 5-Year-Old Child Mortality and Its Affecting Factors

Mandana Zafari*, **Leila moslemi, Elieh abbasi, Homeira Tahmasebi**

Midwifery Department, Islamic Azad University, Sari Branch, Sari, Iran

Abstract this study was designed with an aim to examine factors associated with these deaths in Sari. In this descriptive-analytical and retrospective study, all children from one month to 5 years old who were admitted to and died in Bu Ali Hospital during 2009 were studied. Data were collected through questionnaire and studying medical records of 1 month to 5-year-old children and then were analyzed by SPSS software. Among 2417 children aging 1 month to 5 years old, 72/2% were male and others were female, and 72/2% of infant death was for 1 month to 1-year-old children, and also the most common cause of death was due to cardiac arrest (44/4%). According to this study there was a meaningful relationship between the numbers of twins, maternal age in childbirth, and frequency of pregnancy care with the mortality rate of children under the age of 5. But there was not any meaningful relationship with other variables. Special attention to children under the age of 5, special care for high risk mothers, providing health education, and special care of mothers can play an effective role in reducing infant mortality.

Keywords Mortality , Children , Under 5 Years Old, Risk Factors

1. Introduction

To be aware of the cause of mortality and its affecting factors in identifying health status within community and common diseases for planning health and training issues, and the creation of new hospital posts can have an effective role. This identification, especially about the causes of child deaths under the age of 5, has gained particular importance. Under the age of 5, child morality is one of the most important health problems in developing countries because still about 30% of all deaths occur in this age group (1).

Annually, about 10/5 million and daily over 26 thousand children under the age of 5 die from mostly preventable diseases and about 40 percent of these deaths occur in the first months of life (2). This statistical index not only shows the quantity and death frequency, but also reflects the quality of life. According to available statistics, from the total annual birthrate in the world, more than 14 million die in the first year of their life and approximately 60% of all deaths in the first year of life are neonatal ones (3). In recent years, the health network in the country has provided suitable ground for providing services so below 5-year-old child mortality declined in recent decade, however, the number of deaths of children below 5 years in our country is much higher than the one in developed countries. Based on the vital horoscope

* Corresponding author:

mandanazafari@iausari.ac.ir (Mandana Zafari)

of live births, our country's infant mortality rate in 1384 was 21 out of one thousand live births (4). However, according to an annual rate, infant mortality declined from 20 million in 1960 to 9/7 million in 2006. In 2006, more than 80% of deaths of below 5-year-old children were in sub-Saharan Africa and South Asia. In order to achieve the Millennium Development Goal for below 5-year-old children's survival, this rate should be reduced to half by 2015 that this amount in 2006 was 72 children from 1000 which in 2015, it should reach to 31 children in 1000. In China, the rate of 45 deaths per thousand live births in 1990 reduced to 24 deaths in 2006 and this decline in India was 34% and in the whole world was 23% (during this period time) (1).

The major causes of death in children below 5 years old were: causes related to embryonic period (36%), pneumonia (19%), diarrhea (17%), malaria (8%), measles (4%) and AIDS (3%) is (5).

The highest mortality rate of children below 5 years old in developing countries is in Sierra Leone (270 deaths per 1000 live births) having the first place and the lowest rate is in Cuba (7 deaths per 1000 live births) which is placed in 157th position (1).

Since every society has its own economic, social, cultural, health, political, and geographical condition which can directly or indirectly have an effect on the causes of death in that society, particularly on below 5-year-old child mortality, and due to the sensitivity of this period and the different causes of death in this age group with the other age groups, and to obtain a measure of health status in the region, it is necessary to study this issue in several areas. Because Bu Ali

Children's Hospital in Sari city is the only pediatric medical and training center that generally provides medical services for children in urban and rural region, thus the aim of this study was to determine the frequency and causes of death in below 5-year-old children in Bu Ali Hospital in Sari during 2009.

2. Methods

This study is a descriptive-analytical and retrospective study in which the community of the study consisted of 2417 children under the age of 5 (of course after the neonatal period) who were admitted in 1387 at Bu Ali hospital. The study was performed in retrospective method and the information was collected based on data available in medical records of children who died. Variables included: gender, age, cause of death, birth rank of the dead baby, status of infants who died which included: age, birth weight, birth date, and place of birth; age difference of the dead child with previous child, a history of previous child's death in mother (including miscarriage, stillbirth, or death after birth) or (risk during mother's pregnancy), maternal age at pregnancy and the number of birth control in pregnancy. Also in this study, the cause of death was determined based on the classification and diagnosis of diseases mentioned in the final discharge summary sheet that was matched with death certificate, which were classified in 7 groups. Data analysis was performed using SPSS software and chi-square test was used to determine the relationship between these variables and mortality rates. The level of statistical significance in this study was 0/05.

3. Results

Among the 2417 one month to 5-year-old children hospitalized at Bu Ali Hospital in Sari in 1387, 18 deaths were observed in which 13 persons (72/7%) were boys and 5 persons (28/8%) were girls. Among them 7 cases (38/9%) were 6-2 months, 6 cases (33/3%) were 6 to 12 months and 5 cases (28/8%) were 2-5 years old. the total 18 persons died with different causes: 8 (44/4%) with cardiac arrest, 1 (5/6%) due to cardiopulmonary arrest, 4 persons (22/2%) with disseminated intravascular coagulation due to (DIE), 2 persons (11/1%) with respiratory distress, 1 (5/6%) with meningitis, and 1 (5/6%) with myocardial hypertrophy, and 1 (5/6%) due to hydrocephalus (Table 1).

Of these, 6 (33/3%) were first child, 7 (38/9%) were 2nd to 4th child and 5 persons (27/8%) were fifth or more than it. The age difference of dead child with previous child in 8 cases (44/4%) were less than 18 months, in 5 cases (27/8%) 35-18 months, and in 4 cases (22/2%) mothers with a history of child death including abortion, stillbirth and postnatal death were reported.

Birth place of all children who died was hospital. Among the dead children, 7 persons (38/9%) were the result of term delivery, and 6 persons (33/3%) were the result of preterm delivery. Six cases (33/3%) of the dead children had birth weights of less than 2 kg, 4 cases (22/2%) weighing 3-2 kg and the rest (44/4%) more than 3kg. Among them, two cases (11/1%) were twin and the remaining pregnancies were singleton. Seven mothers (38/9%) had a history of high risk pregnancies and 1 mother(6/5%) was below 18 years, 10 cases (55/6%) were 35-18 years old, and 2 cases (11/1%) were over 35 years. Number of birth control in 12 cases (66/7%) was less than 8 times and for the rest of the cases (44/3%) it was more than 8 times. Also according to Table 1 and based on the Chi-square test, there is a significant relationship between cause of death, the number of twins, maternal age at childbirth, and pregnancy care frequency with the morality rate of below 5-year-old children but this relationship was not significant with other variables (Table 2).

Table 1. Frequency distribution of infant deaths according to cause of death

Frequency Percentage	Frequency	Cause of Death
36.7	22	Cardiac Arrest
15	9	Cardiopulmonary Arrest
10	6	Sepsis
1.7	1	HF
16.7	10	RDS
8.3	5	DIC
3.3	2	CHD
1.7	1	Anomaly
1.7	1	Diuresis Metabolic
3.3	2	Septic Shock
1.7	1	Meconium Aspiration
100	60	Total

Table 2. Investigating significant relationship between some variables with infant mortality

Test Probability	Critical Chi-Square	Observed Chi-Square	Degrees of Freedom	Amount of Chi-square in Test	Agent
0.1	3.8	2.4	1	Gender	1
0.5	7.8	2.2	3	Birth Weight	2
0.000	7.8	61.3	3	Gestational Age	3
0.000	18.3	75.3	10	Cause of Death	4
0.1	5.9	3.7	2	Age at Death	5
0.000	15.5	206.4	8	Cause of Hospitalization	6
0.000	5.9	39.9	2	Maternal Age	7
1	3.8	0.000	1	Type of Delivery	8

4. Discussion

The findings of this study show that morality rate in boys is more than girls. This is in accordance with the international findings (1), probably due to the cultural issues (baby girl less referred) and boys' vulnerability. The highest mortality was seen in children below one year (2 months to 12 months) old and this finding is consistent with all the literature and studies (6, 3, 7 and 8). In this study, the most common causes of mortality were cardiac (44/4%), DIC (22/2%), and respiratory distress (11/1%). In a survey conducted by Hajian, the most common causes of mortality were infectious diseases (35/8%), respiratory (21/5%), and cardiovascular (10/3%) which was approximately consistent with the present study (9) whereas studies in Bangladesh (10), America (11, 12), Niamey (13), Thailand (14), India (15), and the World Health Organization report (16) have reported Acute respiratory infections, diarrhea, malnutrition, measles, and prematurity as the main causes of less than 5 years old children's morality. Although Health Organization in 2008 reported that in developing countries, diarrhea (19%), acute respiratory infections (13%), measles (10%), and prematurity (10%) were considered as the causes of less than 5 years old children's deaths (16), in this study, heart and cardiovascular problems and respiratory were the most common causes of death.

In this study, 44/4% of dead children had a previous birth interval of less than 18 months. However, based on studies and literature, the shorter is the interval of one child from previous child, the more is the risk of babies' not staying alive (17, 18, and 19). Also based on Namakin and et al.' theory, the death risk of infants who had more than 36 months interval was estimated that this indicates the importance of family planning services and compliance with the recommended interval (at least three years) between the two deliveries (20). In this study, 33/3% of children who died had less than 2 kg birth weight and were premature. These factors in literature and studies have been determined as risk factors for child death (6, 12, 21, and 22). Considering that the low birth weight (LBW) is associated with low socioeconomic status, as maternal diseases such as anemia, malnutrition, inadequate care during pregnancy, and birth complications increase the rate of LBW, it seems that promotion of maternal health and live in the area has an important role in reducing LBW and also in the case of LBW,

infants morality be prevented by providing early adequate health services and appropriate training recommendations. Also risk of death in infants whose mothers were identified high risk during pregnancy, as well as mothers who had a history of abortion and stillbirths were more than other mothers that this emphasizes the importance of special attention to high risk mothers. In similar studies, children whose mothers were high risk have always been in higher risk of death (6, 12, 15, 16 and 22). In addition in this study, 66/7% of mothers whose children died had inadequate prenatal care. Many women who receive inadequate prenatal care are at risk of complications during birth. There are some barriers to prenatal care which includes: poor economic status, lack of insurance, lack of free care services, and inadequate training about the importance of prenatal care (6). This study was consistent with that of Namakin and et al. (2).

Finally, considering the large number of factors shown significantly associated with infant mortality rates have significant are changeable. With increasing awareness of families, improving the quality of life, optimizing prenatal care, strengthening family planning programs, training about the identification of mothers requiring maternal care and giving appropriate services to them, paying particular attention to low-weight and premature infants, and providing more facilities to provide certain hospital services to this children many deaths during this critical period can be avoided. Due to the high incidence of mortality in children below 5 years, the necessity of comprehensive studies of cognitive health plan to prevent diseases and create facilities and services is essential in reducing their mortality.

5. Conclusions

According the result of this paper and detection the risk factor of one month to under 5 years old mortality ,we can suggest that , carefull prenatal care and consultation before pregnancy can reduce these mortality.

ACKNOWLEDGMENTS

REFERENCES

[1]   world health organization. The state of the worlds children. Unicef. United nations children fund 2008.

[2]   Gary king: langche zeng. Improving forecasts of state failure. World politics 53 (4): 623-658.

[3]   Esmail nasab n, Mojdzadeh sr, Nadim ah . an epidemiological study on still birth, neonatal mortality and their determinant factors , kurdistan province in 1998. hakim research journd 2002;4(4) : 272 – 277 . (persain).

[4]   statiStical unite , birjand university of medical sciences. Statistical reports ; 2007. (persain).

[5]   Unices , state of the worlds children 2003 infant mortality table.

[6]   Behrman re , Kliegman r , Nelson we. Nelson text book of pediatrics. 17th ed . Philadelphia : sounders; 2004

[7]   Sharifi fs. Cause of mortality in new bors and children under 5 years of age in northen iran , Iranian journal of pediatrics 2002 ; 2(12) : 22-25

[8]   Lawogin to . risk factor for infant mortality in rural African community . soc health 2001 ; 127(2): 114-118

[9]   Hajian k , Savad kohi r , Hamedi m , Moshtaghian sh. Ethiology of under 5 yearsold mortality in amirkola hospital of Babol. J research in medicine 2000 ; (3) : 199-204(persain)

[10] Solway sm, Nasim sm . trend and cause of mortality in children below 5 years of age in Bangladesh. Diarrheal dis res 1994;12:187-93

[11] Merrick n, Davidson b. Tehran of acute gastroenttitis too much and too little care. Clinical pediatrics 1996;427-435

[12] Parashehr u, Holman r , Bercsee j . Emidemiology of diarrheal disease amony children enrollrd in four west coust health maintenanece organization : j of pediatr inf dis 1998;77:603-610.

[13] Barennes h, Banos mt , Gurba d. malnutrition and health status of children under 5 years old in the suburban zone of Niamey nigery. Med trop 2000;55:139-142.

[14] Suwanythe s. Ruangkanchanasert s , Chantroyanasiri t , Hotrakitya s. risk factor associated with mortality of peneumonia in thai children under 5 years. Southeast asian j trop med public health.2005,25:60-66.

[15] Singh m,Deorari ak , Paul uk , etal. Causes of neonatal death in tertiary care in dehli . ann trop pediatric 2003;10:157.

[16] Word health organization . the world heath report , Geneva . 2008,pp:1-20.

[17] Alhosani ha , Brebner j , Bener ab , Norman jn. Study of mortality risk factors for children under age 5 in abndhabi . eastern Mediterranean health journal 2003;9(3): 333-342

[18] Khaled my. Indices and socidemographic determinants of childhood mortality in rural upper agypt. Soc sci med. 2000;57:185-197

[19] Agha s. the Determinants of infants mortality in Pakistan . soc sci med 2000;51:199-208.

[20] Namkin k , Shriszadeh. Effective factors on frequency of under 5 years old children in birjand. 2009;3(1):16-21.

[21] Navaie f. Effective factors on frequency of neonatal mortality , journal of isfahan univ of med sci 1997 ; 47(15):28-32.

[22] Fujita t. Risk factors for infants mortality from disease in jupan 1955-1988. Nippon koshu e I sei zasshi 2001;48(6):449-459