

Infant Deaths and Stillbirths in Samsun Province in 2007

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Abstract

Objective: The aim of this study is to assess the perinatal and infant mortality statistics data, and to determine their basic descriptive characteristics in Samsun, between 1 January and 31 December 2007.

Methods: We analyzed the data included in the Infant Death Certificates which were sent to Provincial Directorate of Health in 2007. According the World Health Organization recommendations, babies weighing under 500g or born before 22 completed weeks of gestation are not included in the study.

Results: The total number of births was 18892. Of total births, 91 stillbirths and 167 infant deaths were declared. Of infants deaths 95 occurred in early neonatal, 38 in late neonatal and 34 were in post neonatal period. The perinatal mortality rate was 9.84 per 1000 and stillbirth mortality rate was 4.82 per 1000. Also, the data show that Neonatal Mortality Rate was 7.07 per 1000, of which early neonatal mortality rate was 5.05 and late neonatal mortality rate was 2.02. The infant mortality rate for the recent period was 8.88 per 1000. Infant's weight at birth is also closely associated with their chances of survival. Sixty-seven percent of neonatal deaths and 69.2% of stillborns were premature born babies.

Conclusion: In this study neonatal and perinatal mortality rates in our province were found lower than the studies in the region have been done before and the average found in Turkey. Decreasing in these rates of our province reflects the development of basic health services organization in the years. Nevertheless reduction of our perinatal and neonatal mortality rates to the levels in developed countries, it is essential to investigate causes of deaths with advanced studies and to following up the antenatal period.

Keywords: Perinatal mortality, infant mortality, stillbirth, prematurity.

Samsun İli 2007 yılı bebek ölüm ve ölü doğum istatistikleri

Amaç: Ülkemiz genelinde perinatal ölüm ve yenidoğan ölümleri konusundaki çalışmalar kısıtlıdır. Amacımız, 2007 yılı Samsun İli perinatal, neonatal ve bebek mortalite hızı ve ölüm nedenlerini değerlendirmektir.

Yöntem: Çalışmamızda, Samsun İl Sağlık Müdürlüğü Ana-Çocuk Sağlığı ve Aile Planlaması Şube Müdürlüğüne 2007 yılına ait gönderilen "Bebek Ölümleri Bilgi Formu" bilgileri değerlendirildi. Ana- babaları Samsun ilinde ikamet eden, doğum ağırlıkları 500 gr veya gebelik yaşları 22 haftanın üzerinde doğan 258 adet bebeğe ait bebek ölümleri bilgi formu değerlendirmeye alındı. Bebek mortalite hızlarının hesaplanmasında Dünya Sağlık Örgütü'nün kriterleri kullanıldı.

Bulgular: Samsun İli toplam nüfusu 2007 yılı için 1177185 ve toplam doğum sayısı 18892'dir. Toplam 91 ölü doğumun ve 167 bebeğin bir yaşına gelmeden kaybedildiği belirlendi. Bebek ölümlerinin 95'i erken neonatal, 38'i geç neonatal, 34'ü postneonatal

dönemde meydana geldi. Samsun'da 2007 yılı perinatal ölüm hızı binde 9.84, ölü doğum hızı binde 4.82, erken neonatal ölüm hızı binde 5.05, geç neonatal ölüm hızı binde 2.02 olarak hesaplandı. Neonatal ölüm hızı binde 7.07, postneonatal ölüm hızı binde 1.81 olup, bebek ölüm hızı binde 8.88 olarak bulundu. Gebelik yaşı dikkate alındığında, erken neonatal ölümlerin %69.5'inin, geç neonatal ölümlerin %60.5'inin prematür bebekler olarak doğdukları görüldü.

Sonuç: Çalışmamızda ilimizde neonatal ve perinatal mortalite oranları Türkiye ortalamasından ve bölgede daha önce yapılmış çalışmalardan daha düşük oranlarda bulundu. İlimizde bu oranlardaki azalma yıllar içinde temel sağlık hizmetlerinin organizsyonundaki gelişmeleri yansıtmaktadır. Perinatal ve neonatal mortalite oranımızı yine de gelişmiş ülkelerdeki seviyelere indirilmesi için ölüm nedenlerinin ileri çalışmalarda araştırılması, antenatal takibin yapılması ve yaygınlaştırılması esastır.

Anahtar Sözcükler: Perinatal mortalite, neonatal mortalite, ölü doğum, prematür doğum.

Introduction

The health index of a community is the basic element that designates the development and improvement of that country. Child and especially infant health are initially affected from the negations that may cause break down the health. Therefore the statistics data and objective index of perinatal, natal and postnatal periods are one of the main standards in planning health care and to asses the level of the health of community.¹ Thus neonatal and infant health are the important subjects as in all over the world. The studies about the perinatal and infant deaths are insufficient all over our country.^{2,3} According to the data of Turkey Demographic and Health Survey (TDHS) neonatal mortality rate was 17 per 1000, post neonatal mortality rate was 12 per 1000 and infant mortality rate was found 29 per 1000 in 2003. In last few years the perinatal mortality rate in university hospital and major obstetrics and gynecology hospitals were reported. In respect of these data The Black Sea Region has the highest perinatal mortality rate.³

The aim of this study is to assess the rate of perinatal and infant mortality statistics data, and to determine their basic descriptive characteristics in Samsun, Black Sea Region, between 1 January and 31 December 2007.

Methods

In this study, we analyzed the data included in the Infant Death Certificates which were sent to Provincial Directorate of Health in 2007. These forms were filled in at health centers where infant deaths and stillbirths occurred. We analyzed 258 infant death certificates that belong to infants whose parents stay in Samsun. According the World Health Organization (WHO) recommendations, babies weighing under 500g or born before 22 completed weeks of gestation are not included in the study.¹

The information in the infant death certificates about date of birth/stillbirth and death, cause of death, place of death, place of birth, type of birth, birth weight, gestational age, existence of congenital malformation, address and identification of parents, number of stillbirths, births and abortions, age of mother, relationship and number of total follow up, etc. are analyzed in our study. Infants that birth weights under 2500 g are regarded as low birth weight. Perinatal Mortality Rate, Stillbirth Rate, Early and Late Neonatal Mortality Rate, Neonatal Mortality Rate, and Infant Mortality Rate for 2007 are calculated by using the following formulas:^{2,4}

Perinatal Mortality Rate = Stillbirths + Early neonatal deaths (0-6 days) x 1000 / Total births (Stillbirths + live births) ; Stillbirth rate = Stillbirths x 1000 / Total births (Stillbirths + live births) ; Early Neonatal Mortality Rate = Early neonatal deaths (0-6 days) x 1000 / Live births; Late Neonatal Mortality Rate = Late neonatal deaths (7-27 days) x 1000 / Live births; Neonatal Mortality Rate = Neonatal deaths (0-27 days) x 1000 / Live births ; Infant Mortality Rate = Infants deaths (0 - 364 days) x 1000 / Live births.

Number of total births of Samsun in 2007 for calculating the mortality rates are acquired from Provincial Directorate of Health. In our study "SPSS for Windows13.0" was used for statistical analysis.

Results

Samsun's population in 2007 was 1177185 and 18892 babies were born dead or alive with a birth weight of more than 500 grams and a gestational age over 22 weeks. In the study period 8745 births occurred in the towns and 10147 births occurred in the center (7676 of them in the Samsun Maternity and Children s Hospital) of the city. 143 of these births occurred at home without any medical support and 222 of them with the medical support of midwives at home or in the mother - children health centers.

Of total births, 91 stillbirths and 167 infant deaths were declared with Infant Death Certificates. Of infants deaths 95 in early neonatal, 38 in late neonatal and 34 were seen to occur in the post neonatal period. Most of the deaths occurred in infant period before completing the first month of life (n=133/167), and 71.4 % of these deaths(n=95/133) occurred in first 7 days of life (Table 1). We determined that 50 infants (29.9 %) died at their day of birth.

Table 1. The infant mortality and stillbirths statistics data in Samsun in 2007.

Total births (Stillbirths + live births) (n)	18892
Live births (n)	18801
Stillbirths (n)	91
Early neonatal deaths (0-6 days) (n)	95
Late neonatal deaths (7-27 days) (n)	38
Neonatal deaths (0- 27 days) (n)	133
Post neonatal infants deaths (28-364 days) (n)	34
Perinatal Mortality Rate (%0)	9.84
Stillbirth Mortality Rate (%0)	4.82
Early Neonatal Mortality Rate (%0)	5.05
Late Neonatal Mortality Rate (%0)	2.02
Neonatal Mortality Rate (%0)	7.07
Infant Mortality Rate (%0)	8.88

The results show that the perinatal mortality rate was 9.84 per 1000, and stillbirth mortality rate was 4.82 per 1000. Also, the data show that Neonatal Mortality Rate was 7.07 per 1000, of which early neonatal mortality rate was 5.05 and late neonatal mortality rate was 2.02. The infant mortality rate for the recent period was 8.88 per 1000. The infant mortality and stillbirths statistics data are given at Table 1.

When gestational age is taken into account, 69.5% of early neonatal deaths and 60.5% of late neonatal infant deaths are preterm babies (Table 2). In all groups there was a relationship between the gestation age and birth weight ($P<0.05$). However, only 23.5% of postneonatal infant deaths (n=8/34) are born preterm; and only one case of those have birth weights under 2000g.

The most important causes of neonatal death were stillbirths, prematurity and interested problems. Infant's weight and gestational

Table 2. The main properties of neonatal and infant death cases in Samsun in 2007.

	Stillbirths	Early neonatal deaths		Late neonatal deaths	Post neonatal deaths
		0. gün	1 -6. gün	7-27.gün	28-364. gün
N	91 (%)	50 (%)	45 (%)	38 (%)	34 (%)
Sex					
Female	36 (39.6)	19 (38.0)	16 (35.6)	21 (55.3)	15 (44.1)
Male	51 (56.0)	23 (46.0)	29 (64.4)	13 (34.2)	19 (55.9)
Missing	4 (4.4)	8 (16.0)	-	4 (10.5)	-
Mode of delivery					
Vaginal birth	59 (64.8)	27 (54.0)	18 (40.0)	17 (44.8)	21 (61.7)
Cesarean section	31 (34.1)	21 (42.0)	26 (57.8)	19 (50)	13 (38.3)
Missing	1 (1.1)	2 (4.0)	1 (2.2)	2 (5.2)	-
Gestational age					
Preterm	63 (69.2)	38 (76.0)	28 (62.2)	23 (60.5)	8 (23.5)
Term	28 (30.8)	12 (24.0)	17 (37.8)	15 (39.5)	26 (76.5)
Birth weight					
< 999 g	18 (19.8)	13 (26)	7 (15.5)	8 (21.0)	-
1000-1499 g	20 (22.0)	13 (26)	9 (20.0)	7 (18.4)	1 (2.9)
1500-1999 g	10 (11.0)	8 (16)	7 (15.5)	6 (15.8)	-
2000-2499 g	10 (11.0)	3 (6)	5 (11.2)	2 (5.3)	5 (14.8)
2500-3999 g	27 (29.6)	12 (24)	15 (33.4)	13 (34.2)	27 (79.4)
> 4000 g	6 (6.6)	1 (2)	2 (4.4)	2 (5.3)	1 (2.9)
Consanguinity					
No	63 (69.2)	37 (74)	36 (80)	27 (71.0)	30 (88.3)
Yes	5 (5.5)	4 (8)	3 (6.7)	5 (13.2)	3 (8.8)
Missing	23 (25.3)	9 (18)	6 (13.3)	6 (15.8)	1 (2.9)
Mother age (year)					
Mean (SD)	29.19 (6.52)	26.90 (6.17)	26.55 (5.76)	28.83 (6.51)	25.48 (5.81)

age at birth were closely associated with their chances of survival. Sixty-seven percent of neonatal deaths and 69.2 % of stillborns were preterm born babies. Perinatal asphyxia was reported the reason of nine of infant deaths in the Infant Death Certificates.

Discussion

Mortality rates calculated for neonatal and post neonatal periods in Samsun in 2007 are respectively lower than 17 per thousand and 12 per thousand which were the values reported

for Turkey in THDS-2003.2 We found stillbirth rate as 4.82 per thousand and perinatal mortality rate as 9.84 per thousand in our study. Also, stillbirth rate is lower than 13.0 per thousand value that was reported by THDS-2003.2

It was determined that early neonatal mortality rate was 17.2 per 1000, stillbirth rate was 18.0 per 1000 and perinatal mortality rate was 34.9 per 1000 in Turkey in 1999 at the hospital based multicenter perinatal mortality study of Turkish Neonatology Association. In this study in The Black Sea Region, perinatal mortality

rate, 71.9 per 1000; early neonatal mortality rate, 17.4 per 1000; and stillbirth, rate 17.4 per thousand were assessed to be high.³

It was reported that perinatal mortality and stillbirth rates were 87.7 and 49.7 per 1000 respectively, and early neonatal mortality rate was 39.9 per thousand in 1106 births at Ondokuz Mayıs University Faculty of Medicine, Samsun.⁵ It is seen that our results are so unlikely when compared with the other two studies.

As indicated at the first study, finding the mortality rate lower than those in THDS-2003 and the other studies in hand reflects the results of the university hospitals which are the reference centers. Especially high risk pregnancies and births were accepted by these hospitals and realizing 7-10% of the births occurred in the clinics may act the statistic datas.³ Also, during the study period, university hospital was the only neonatal intensive care unit in our province.

The study in which the Infant Death Certificates of Aydın province in 2004 assessed, declared a neonatal mortality rate of 7 per 1000, post neonatal mortality rate of 5.2 per 1000, infant mortality rate of 12.2 per 1000, stillbirth rate of 9.6 per 1000 and perinatal mortality rate of 14.8 per 1000.⁶ Thus our results were closer to the values of this study, since in both two studies all infant deaths and stillbirths occurred in the two provinces were evaluated.

Our finding the infant and neonatal mortality rate lower than previously reported Turkish data, reflects the effectiveness of settled mother and child health care for a long time in Samsun. On the other hand we think that settling a neonatal intensive care unit with an insufficient capacity in Samsun Maternity and Children's Hospital and establishing the family practice in

2007 have significant effect on the results of the study.

As known deaths in perinatal period is due to prenatal problems, mother health care at birth, congenital anomalies and prematurity.^{1,7} However, the results in Samsun introduce that preventing the death of infants it is necessary to attach importance to perinatal period especially.

In our study, one third of stillbirths were term babies. Death of a mature fetus like this is generally accepted preventable. It is considered that the reason of stillbirths in the third trimester must be researched and preventable ones should be appointed.

The most important causes of death were antepartum stillbirths, prematurity and related problems. To prevent these deaths, improving the quality of prenatal and postnatal care and decreasing the number of preterm births are the first precautions. Even though the postnatal deaths seem rarely it should be followed up the risks of this period.

Neonatal asphyxia is one of the most important causes of the early neonatal deaths in Turkey and all over the world. As the reported perinatal asphyxia rate of our study is lower the country rate, Neonatal Resuscitation Education Program which has been regularly performing in Samsun is thought to be so valuable.

Even though our findings reflect the decreasing rate of perinatal mortality, our results introduces that the pregnancies especially in third trimester should be carefully followed up. Also, reduction in the perinatal and neonatal mortality rate in Samsun is likely to be possibly only with improvement the factors that cause realizing the stillbirths, prevention of prematurity and improvement in neonatal intensive care.

Conclusion

In this study neonatal and perinatal mortality rates in our province were found lower than the studies in the region have been done before and the average found in Turkey. Decreasing in these rates of our province reflects the development of basic health services organization in the years. Nevertheless reduction of our perinatal and neonatal mortality rates to the levels in developed countries, it is essential to investigate causes of deaths with advanced studies and to following up the antenatal period.

Kaynaklar

1. WHO. Neonatal and Perinatal Mortality: Country, Regional and Global Estimates. Geneva -World Health Organization: 2006.
2. Hacettepe University Institute of Population Studies, Ministry of Health General Directorate of Mother and Child Health and Family Planning, State Planning Organization and European Union. Turkey Demographic and Health Survey TDHS-2003. Ankara - H.U. Institute of Population Studies: 2004.
3. Erdem G. Perinatal mortality in Turkey. *Paediatr Perinat Epidemiol* 2003; 17(1): 17-21.
4. Macfarlane A, Mugford M. Epidemiology. In: Rennie JM (Ed). *Roberton's Textbook of Neonatology*. Elsevier Ltd-2005; 3-41.
5. Aygün C, Çetinkaya M, Aydın O, Alper T, Karagöz, Küçüköçük Ş. Perinatal mortality in 2003 in Ondokuz Mayıs University Faculty of Medicine. *Çocuk Sağlığı ve Hastalıkları Dergisi* 2004; 47: 177-187.
6. Okyay P, Atasoylu G, Meteoglu D, Demiroz H, Çobanoğlu M, Beser E. Infant Deaths and Stillbirths in Aydın Province in 2004. *ADÜ Tıp Fakültesi Dergisi* 2006; 7(2): 3-12.
- 7) Walsh CM, Fanaroff AA. Epidemiology. In: Martin JR, Fanaroff AA (Ed). *Neonatal-Perinatal Medicine, Diseases of the Fetus and Infant*. Mosby Inc.-2006; 19-25.