Perinatal mortality rate in a teaching hospital in Sudan. *Review of 15 years*

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Although there has been a world-wide decline in the perinatal mortality rate over the past decades due to the improvement in the health services, it is still a major public health problem. Despite great strides in obstetrical services and neonatal care, perinatal mortality has not been completely eliminated. In view of this, we designed our study. The study was carried out in Wad Medani Teaching Hospital, Medani City, Sudan. Case notes were reviewed for all perinatal deaths and deliveries occurring from 1st January 1985 up to 31st December 1999. The variables used are the gestational age at delivery, birth weight, congenital malformation, mode of delivery, obstetrical complications, medical complications with pregnancy, the blood grouping and rhesus of both partners and the newborn and cardinal signs of infection. Perinatal mortality in this study is defined as mortality in fetuses weighing more than 500 gm, who die at birth, before delivery or before the end of the first week of life.[1] The perinatal mortality rate is defined as the number of perinatal deaths per thousand live births.[2] The whole period is divided into three of 5 year intervals (1985-1989, 1990-1994, 1995-1999). The literature is reviewed to compare results of similar studies.

During the period 1985-1999, 2340 perinatal deaths occurred. The total number of deliveries in the same period was 44605, giving an overall perinatal mortality rate of 52.5/1000 live births. During the period 1985- 1989 there were 859 perinatal deaths and 12230 deliveries, so the perinatal mortality rate was 77.7/1000 live births, during 1990 - 1994 the perinatal deaths were 793 and there are 14002 live births, thus the perinatal mortality rate was 54.4/1000 live births. In the last period 1995 - 1999 the perinatal deaths were 626 and the total number of deliveries were 18373 giving a perinatal mortality rate of 34.1/1000 live births. The unrecorded deliveries accounted for 27812/44608 (62.3%) while the remaining 16793/44605 (37.7%) are booked cases. The cases received from rural areas are estimated to be 28520/44605 (63.9%), while the remaining 16085/44605 (36.1%) came from urban areas. It is clear that the perinatal mortality rate declined each year being 77.8/1000 live birth in 1985 and 29.7/1000 live birth in 1999. **Table 1** shows the distribution of perinatal deaths according to the causes. Those causes are mainly pathoclinical.

Table 1 - Distribution of perinatal deaths (n) according to cause.

Causes	1985 - 1989 n	(%)	1990 - 1994 n	(%)	1995 - 1999 n	(%)	1985 - 1999 n	(%)
Prematurity	390	(16.7)	292	(12.5)	268	(11.4)	950	(40.6)
CMF	150	(6.4)	139	(5.9)	123	(5.3)	412	(17.6)
Stress during labor	130	(5.5)	100	(4.3)	72	(3.1)	302	(12.9)
APH	80	(3.4)	72	(3.1)	55	(2.3)	207	(8.8)
Pre-eclampsia	45	(1.9)	35	(1.5)	17	(0.7)	99	(4.1)
IUGR	33	(1.4)	27	(1.2)	25	(1.0)	85	(3.6)
Infection	34	(1.5)	26	(1.1)	18	(0.8)	78	(3.4)
RDS	25	(1.1)	19	(0.8)	15	(0.6)	59	(2.5)
Rh Incompatibility	27	(1.2)	18	(0.7)	4	(0.2)	49	(2.1)
Undetermined	37	(1.5)	35	(1.4)	29	(1.2)	101	(4.1)
Total	**951**	**(40.6)**	**763**	**(32.6)**	**626**	**(26.8)**	**2340**	**(100)**

CMF - congenital malformation,
APH - antepartum hemorrhage,
IUGR - intrauterine growth retardation,
RDS - Respiratory distress syndrome, Rh - Rhesus

Prematurity accounted for 40.6% of cases, while in 4.1% of cases the exact cause is not determined. It is clear that neural defects accounted for almost half of the cases (53.4%), while multiple congenital malformation accounted for 45/412 (10.9%). The overall perinatal mortality rate in our study is 52.5/1000 live births. This rate is low compared with Erdem's[1] findings in Turkey (62.9%). This difference could be explained by the fact that Erdem studied the population who are predominantly rural and semi-urban. Prematurity is the leading cause of the perinatal deaths accounting for 40.6%. this result is comparable with Joseph's[2] findings in his study in Canada (38.9%). Attempts to prolong the pregnancy are frequently mandatory but must be pursued with constant reevaluation of both maternal and fetal gain from therapy. Evidence of chorioamnionitis was found in 20% of our preterm deliveries. Where, however, adequate neonatal facilities are not available, suppression of preterm labor will be of value to allow transfer to a center where neonatal problems can be dealt with. Congenital malformation is the second cause of perinatal deaths accounting for 17.6%. This is similar to 16.7%

found by Lius[3] in Canada. Almost half of the cases (53.4%) are neural tube defect anomalies. All these congenital malformations are incompatible with extra uterine life. Fetuses with congenital anomalies incompatible with fetal growth and development are often aborted early in gestation (first trimester). Other anomalies, however, do not become life threatening until birth. Reduction in perinatal mortality from congenital malformation could be achieved by an increased in emphasis on screening in early second trimester with termination of pregnancy being offered in identified cases. Preconceptional vitamin supplementation might reduce the risk of neural tube defects in the offspring. Pre-pregnancy counseling of couples at increased risk of having a child with chromosomal, structural, metabolic or hereditary disorder should be increasingly used. Congenital malformation of the gastro-intestinal tract (tracheoesophageal fistula), lungs, diaphragmatic hernia accounted for 27.5% of perinatal deaths. These congenital anomalies only become life threatening after the central nutrition and respiratory function are required by extra-uterine life. Stress in labor accounted for 12.9% of our perinatal deaths. This is similar to 11.6% found by Sheiner.[4] Stress in labor lead to asphyxia which kills the fetus during labor or shortly after delivery. These are cases where death of a healthy baby is attributed to mechanical obstruction, damage during labor or delivery or to a trauma caused by instrumental intervention. Those perinatal deaths can be reduced to the minimum by proper care at delivery. Maternal diseases such as hypertension, pre-eclampsia and diabetes are usually associated with antepartum hemorrhage intra-uterine growth retardation (IUGR) and respiratory distress syndrome: together they accounted for 19% of perinatal deaths. The result is comparable with the 18.2% found by Winbi.[5] There is a marked reduction in the perinatal deaths due to these maternal cases. This was attributed to the increase in induction and elective cesarean section rate, better prenatal assessment of fetal well being, better anticonvulsant therapy and a generally healthy population. Fetal ascitis contributes 8.2% of perinatal deaths in our study. This is mainly caused by rhesus incompatibility. Rhesus hemolytic disease of the newborn is now a relative rarity. Such patients are now receiving better genetic and hematological care. Rigorous enforcement of rhesus prophylaxis in all women at risk of sensitization at any stage of pregnancy is essential.

In our study infection contributed to only 3.4% of perinatal deaths. Neonatal bacteremia is reduced to the minimum by proper care at delivery and the availability of antiseptic conditions. The exact etiology of 4.1% of perinatal deaths is not determined. These include perinatal deaths due to anoxia without evidence of preceding maternal complication or undue mechanical stress during labor. Any study of perinatal mortality rate should always be directed towards finding the cause, treating the cause and preventing the cause. Such a study always requires hematological facilities, (anemia, syphilis, toxoplasmosis, diabetes and rhesus incompatibility) urine analysis (pre-eclampsia, chronic nephritis, diabetes and significant bacteriuria). The help of ultrasound should never be ignored. Perinatal deaths can be reduced by proper antenatal care. This help in early detection and prompt treatment of so many complications which can be prevented. Ideal care at delivery should always include institutional deliveries under the supervision of trained medical and nursing staff. The partograms can clinically predict cases that may require obstetrical intervention.

Today, the constant attention of the neonatologist, pediatrician, and expert nursing personnel in the care of newborn babies is essential. In order to achieve our goal, we need to have good resuscitative measures with machines, suction apparatus, small laryngoscopes and continuous oxygen supply. Incubators are necessary for premature and high risk neonates.

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