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## PERINATAL MORTALITY – A PROSPECTIVE VIEW

### PERINATALNI MORTALITET – PROSPEKTIVNI POGLED

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*Professional paper*

*Key words:* perinatal mortality

**SUMMARY. Objective.** To study the perinatal mortality rate in King Abdulah hospital, the various factors contributing to perinatal mortality rate and to draw strategies to reduce it. **Method.** A prospective study from January 2003 to January 2006 (total period of 36 months) was done in the labor and delivery unit in King Abdullah hospital, Bisha, Kingdom of Saudi Arabia. All stillbirths and all live births that died within one week of birth were recorded. **Results.** Out of a total of 9412 deliveries, the perinatal mortality rate (PMR) was calculated to be 24.3 per 1000 livebirths and stillbirths. It was also studied that PMR was greater in the male fetuses than in the females. The common cause of PMR was unknown 26.2%, followed by prematurity, congenital malformations, maternal diseases, antepartum haemorrhage, cord accidents, twin – twin transfusion syndrome, perinatal asphyxia, hydrops fetalis and infection. In the absence of postmortem study in this country, all perinatal deaths where the cause was unidentified were listed as unknown cause and that constituted the majority. **Conclusion.** In general the PMR was found to be higher in male fetuses, birthweight below 1000gms, increasing maternal age > 46 years, and grandmultigravida G<math>\geq 10</math>. A strategy to reduce PMR is highly recommended.

*Stručni članak*

*Ključne riječi:* perinatalni mortalitet

**SAŽETAK. Cilj istraživanja.** Istražiti stopu perinatalnog mortaliteta u bolnici Kralja Abdulaha te različite čimbenike koji pridonose perinatalnom mortalitetu i zacrtati strategiju njegova sniženja. **Metoda.** Učinjeno je prospektivno istraživanje od siječnja 2003. do siječnja 2006. (ukupno razdoblje od 36 mjeseci) u rađaonici i opstetričkom odjelu bolnice Kralja Abdulaha u Busha-i, Kraljevini Saudi Arabija. Zabilježeni su svi mrtvorodeni i oni umrli prvih sedam dana života. **Rezultati.** Od ukupno 9412 poroda stopa perinatalnog mortaliteta (PMR) je bila 24,3 na 1000 mrtvorodjenih i živorođenih. PMR je bio viši u muške nego u ženske novorođenčadi. Uzrok PMR-a je bio nepoznat u 26,2%, zatim je uzrok redom bila nedonošenost, kongenitalne anomalije, bolesti majke, prijevodna krvarenja, komplikacije pupkovine, blizanački transfuzijski sindrom, perinatalna asfiksija, fetalni hidrops i infekcija. Zbog nepostojanja postmortalnih analiza u ovoj zemlji, sve perinatalne smrti bez nedokazanog uzroka su prikazane kao nepoznate. **Zaključak.** PMR je općenito nađen višim u muških fetusa, porodne težine manje od 1000 grama, u žena starijih od oko 46 godina te u »velikih« multipara (>10 poroda). Preporučena je strategija za smanjenje PMR-a.

## Introduction

The perinatal mortality rate (PMR) is 'the number of stillbirths plus early neonatal deaths, per 1000 live and stillbirths'. A stillbirth is now defined as a baby born dead after the 24th week of gestation (the dividing line having changed from 28 weeks in 1992). Neonatal deaths are divided into 'early' (within 7 days of birth) and 'late' (from 7 to 27 days after birth).<sup>1</sup> The PMR is a good measure of antenatal, intrapartum and postpartum care. It reflects the quality of obstetric health care in a region, state, country or universe. The rate is low in developed countries as 10/1000 live births while it is high in developing countries as 100/1000 live births. The reason for this is clear. Good maternal health and education, low parity, high socioeconomic status and high standards of maternal and child health care prevail in the developed countries. Multiparity, low socioeconomic status, poor maternal health, poor health care facilities, home deliveries, preterm births, lack of neonatal

intensive care units are some of the factors leading to increased perinatal mortality in the developing countries.

## Methodology

This is a case control study conducted in the labor and delivery unit in King Abdullah Hospital, between January 2003 to January 2006, comprising 36 months. The approval of the ethical committee was obtained. All stillbirths that delivered in the labor and delivery unit were recorded. An information sheet about each woman with a stillbirth was filled in by a trained Registrar at the time of delivery. The criteria for stillbirth was death of a fetus weighing at least 500 gms or after 22 completed weeks of gestation. In case of stillbirths the data collected were gestational age of stillbirth, mode of delivery, congenital abnormality, sex and weight of the fetus.

Also all newborns who required admission in the Neonatal intensive care unit were followed and neonates

who died in the first week of life were recorded. In case of death in the first week after delivery data collected were gestational age of birth, mode of delivery, congenital abnormalities, sex, birth weight, cause of admission to NICU and cause of death.

In all cases of stillbirth or early neonatal deaths the maternal data collected were age, parity, gestational age of delivery, complications of pregnancy and / or labor and mode of delivery

## Results

During the study period there were total of 9412 deliveries. There were 111 sets of twins and 3 sets of triplets. The twinning rate was 11.9 per 1000 maternities.

Among this there were 165 stillbirths and 64 early neonatal deaths. Therefore the total number of perinatal deaths were 229 (Table 1).

Stillbirths comprised 72% of perinatal deaths. The perinatal mortality rate was calculated to be 23.2 in 2003, 24.2 in 2004, 25.4 in 2005. The average perinatal mortality rate during the study period was 24.3 per 1000 live births and stillbirths. It was also studied that PMR was higher for male fetuses than the female fetuses: the PMR for male fetuses was 26.95 per 1000 and that of female fetuses was 21.56 per 1000.

The common causes of perinatal mortality were unknown causes 26.2%, prematurity 18.7%, congenital malformations 18.3%, maternal diseases 12.6% (diabetes and hypertension), antepartum haemorrhage 5.6% (placental abruption), cord accidents 3.4%, twin – twin transfusion syndrome 2.10%, postdate 2.10%, perinatal asphyxia 2.10%, hydrops fetalis 1.8% and infections 0.80% (Figure 1 & Table 2). Since postmortem examination was unavailable, any death without a clinically identifiable cause has been labeled as unknown cause 62 (27%) of perinatal deaths weighed less than 1000 gms and 5 (2.1%) cases weighed more than 4500 gms.

Two important maternal factors that could contribute to perinatal mortality were also analysed. Those were the age and parity of the mother. The maximum numbers of mothers were between 21–30 years. Teenage mothers represented 8.8% and mothers over 46 years were 1%. The PMR was significantly increased with advancing age and in women over 46 years it was 2.5 folds greater than that of teenage mothers (42.1 versus 17.3 per 1000 total births – Table 3.). Primigravida were 22%, multigravidas were 37.6% and grandmultigravi-

Table 1. Distribution of stillbirth & END during the study period  
Tablica 1. Razdioba mrtvorodenih i rano neonatalno umrlih

Year	Total births	Stillbirths	END	Total
2003	2935	47	21	68
2004	3130	52	24	76
2005	3347	66	19	85
Total	9412	165	64	229

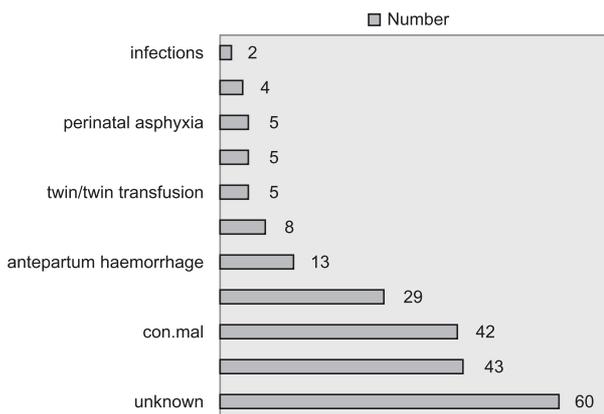


Figure 1. The common causes of perinatal mortality  
Slika 1. Uobičajeni uzroci perinatalne smrti

Table 2. The common causes of perinatal mortality (number & percentage)  
Tablica 2. Uobičajeni uzroci perinatalne smrti (broj i %).

Cause	Number	Percentage
Unknown	60	26.20%
Prematurity	43	18.70%
Cong. malf.	42	18.30%
Maternal disease	29	12.60%
Antepartum haemorrhage	13	5.60%
Cord accident	8	3.40%
Twin/twin transfusion	5	2.10%
Post date	5	2.10%
Perinatal asphyxia	5	2.10%
Hydrops fetalis	4	1.80%
Infections	2	0.80%

Table 3. Distribution of patients by age and its relation to the PMR.  
Tablica 3. Razdioba trudnica po dobi u odnosu na PMR.

Age	Number	Perinatal death	PMR
≤ 20	809	14	17.3
21–25	2534	54	21.3
26–30	2538	63	24.8
31–35	1756	43	24.5
36–40	1123	39	34.7
41–45	326	12	36.8
> 46	95	4	42.1

Table 4. Distribution of patients by parity and its relation to the PMR.  
Tablica 4. Razdioba trudnica po paritetu u odnosu na PMR.

Parity	Total	%	PMR
Primigravidas	2001	22%	20,0 ‰
Multigravidas	3461	37.60%	20,2 ‰
Grand multiparas	3719	40%	32,0 ‰

das were the highest percentage 40%. The PMR was 20 in primigravidas, 20.2 in multigravidas and 32 per 1000 total births in grand multigravidas. (Table 4)

## Discussion

In Saudi Arabia the perinatal mortality rate was reported to be 39.8 per 1000 births in Saudi maternity hospital in Riyadh in 1988 by Swaillem et al.<sup>2</sup> and was reported to be 31.4 per 1000 births in Jeddah in 1992 by Milaat et al.<sup>3</sup>

Saudi Arabia, though is a developing country, is considered on the higher level of development. Bisha is a town in the Southern province and our hospital is secondary care centre and a referral centre. Antenatal care is excellent in the hospital as well as in the surrounding Primary health centers for low risk pregnancy (pregnant woman is seen in our hospital early for booking and dating scan, then at 20 weeks for anomaly scan and another visit at 32–34 weeks for placental location. But women with high risk pregnancy need usually more frequent visits. Intra partum monitoring is up to standard with one to one nurse to patient ratio in almost all cases, in high risk women, continuous electronic fetal monitoring is carried out using a cardiotocography (CTG) machine that can be packed up with fetal blood sampling, which allows early and timely detection of abnormalities and these appropriate surgical intervention (usually within 30 minutes of decision in case of crushed caesarean section). There is a well equipped Neonatal intensive care unit having 16 neonatal ventilators and 32 neonatal cots with the availability of some essential drugs such as surfactants for premature infants. We also have four pediatrics surges who can deal with some congenital structural malformations such like hydrocephalus, diaphragmatic hernia and esophageal atresia.

Referral from PHC in the ante partum or intra partum period for cases that may need a neonatal cot (eg. IUGR, preterm labour or suspected threatened preterm labour) is usually prompt and timely. Then what could be the possible causes for the high PMR when compared to the developed countries. The recent figures in the United Kingdom is 8.4/1000 in 2004 and 8.2/1000 in 2005.<sup>1</sup> Absence of prenatal diagnostic tests, absence of termination of pregnancy for congenital abnormality and absence of autopsy, both due to religious reasons may be a reason for the picture of increased PMR.

Multigravida (> 5 pregnancy) is a common feature in Saudi Arabia. It is not infrequent for us to encounter at

least 3 grand multigravidas in 24 hours. A study in King Abdulaziz hospital in Jeddah, in 2004, confirmed that multiparity was a risk factor for increased perinatal mortality.<sup>4</sup> This is supported by our current study.

More morbidity were accounted among the twin pregnancies and it has been studied that IUD, birth-weight discordancy, necrotising enterocolitis and neuromorbidity is high for monochorionic twins.<sup>5</sup> Assisted reproductive techniques are becoming increasingly available in less developed countries and are resulting in multiple pregnancies and preterm births. As many as half of all twins and almost all triplets are born before term and die at rates several times as high as those among full-term infants.<sup>6</sup>

We could not reason out why PMR was gender specific, more in males than females.

Even though we have a high attendance of pregnant women in the antenatal care, about half of women presenting in labour are unbooked. They are visitors from other regions or mothers negligent of the pregnancy. It is in such women that we face more problems of post-dates, meconium liquor, malpresentations, medical complications (pre eclampsia, uncontrolled diabetes), previous C/S with unknown notes and grand multi gravida. All these features add to the perinatal mortality.

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