

## ***Unattended Deliveries and Perinatal Outcome: A Tertiary Hospital Experience***

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### **Summary**

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**Objective:** To determine the neonatal morbidity and mortality pattern in a cohort of infants born outside hospital but admitted in Abha Maternity Hospital, Saudi Arabia.

**Patients and Methods:** The charts of 151 women and their infants born at home or *en route* to the hospital were reviewed and the findings were compared with those of 300 in-hospital (in-born) deliveries from January 1990 to December 1996.

**Results:** Of the 151 unattended deliveries, 36 percent occurred at home and 64 percent in motor vehicles. Eighty-three percent of the out-born and 63 percent of the controls had no antenatal care. The incidence of respiratory distress syndrome (RDS) was significantly higher ( $p=0.002$ ) among the out-born cases. Perinatal mortality among the out-born deliveries was 6.7 percent, in contrast to the 1.0 percent in the in-born group.

**Conclusion:** Despite adequate health facilities and governmental financial support, lack of health education and initiative on the part of the patients might be a major contributing factor to the high level of unattended deliveries with the associated adverse outcome. Intensive health education with emphasis on the need for antenatal care and on the dangers of delivering infants outside health facilities is advocated.

**Keywords:** Unattended delivery, perinatal outcome, Saudi Arabia

### **Introduction**

THE availability of medical facilities, the level of expertise of the health caregiver and the compliance of

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the patient contribute to the favourable outcome of pregnancies in any community. Perinatal mortality is dependent on the health of the mother and is a reflection of the quality of care provided during pregnancy, delivery and the neonatal period. Although pregnancy outcome is usually good in technologically advanced countries, maternal and foetal catastrophes can occur if pregnancy ends unexpectedly in unattended delivery.<sup>1-4</sup> In less privileged countries, maternal and neonatal fatalities are known to be common even in deliveries conducted in hospitals. It is therefore reasonable to expect that more deaths would result when labour and delivery are unsupervised and take place in non-sterile conditions at home.

Saudi Arabia is a fast developing country with very rapidly expanding, well-distributed and free medical and obstetric facilities. Despite these, we have observed that many mothers in the Assir region of Saudi Arabia still give birth unattended or with the aid of untrained assistants outside medical facilities. Owing to the paucity of data on unattended deliveries in Saudi Arabia, the present retrospective case-control study

was carried out to (a) determine the perinatal morbidity and mortality for births before arrival in Abha Maternity Hospital (AMH), (b) identify the magnitude of the problem and consequently, (c) suggest ways of improving foetal and neonatal outcome. Born before arrival at the hospital, out-born or unattended delivery, is defined as delivery of infants at home, *en route* to the hospital either in a private car or ambulance, in other places such as on the street and sometimes within hospital premises unattended by a physician or a qualified midwife. Abha City, with a population of about 200,000 is the largest city in the Assir region of Saudi Arabia. The latter has a population of about two million and a land mass of 8,000 square kilometres. There are at least, 18 other hospitals and 238 primary health care centres in the region. Abha Maternity Hospital (AMH), which serves both urban and rural civilian populations, has 100 obstetric beds, four delivery rooms and a 20-bed neonatal unit. It is a teaching hospital, which offers obstetric and gynaecology training for undergraduate medical students of the College of Medicine, King Khalid University and postgraduate doctors. It also serves as a regional tertiary referral centre for obstetrics and gynaecology. The obstetric service has modern facilities for foetal ultrasonography and cardiotocography for biophysical profile monitoring. The average delivery rate in the hospital is 3,800 per year. The neonatal service has facilities for incubator care, ventilation, parenteral nutrition and surfactant administration. The neonatology resident, specialist and/or consultant on duty examines every infant admitted, and the gestational ages of the infants are estimated using Dubowitz modified method.<sup>5</sup>

### Materials and Methods

The maternal and neonatal files of all cases admitted to the Abha Maternity Hospital within 24 hours following unattended deliveries from January 1990 to December 1996, were studied. Data obtained from maternal records included age, parity, duration of pregnancy at delivery and postpartum haemoglobin. Three hundred women matched for age, parity and duration of pregnancy, who delivered vaginally during the same period in AMH, served as controls. Mothers who had instrumental vaginal deliveries were excluded from the control group. The corresponding records of the infants of the mothers in the two groups were also reviewed. Data obtained from the infants' records included mother's antenatal care, gestational age, birth weight, mode of delivery, management in the hospital and outcome (dead or discharged). For the purpose of this study, a stillbirth is defined as a foetus delivered at 28 weeks of gestation or more with no signs of life. Early neonatal mortality is death, which occurred during the first week after birth. Perinatal mortality rate is defined as the number of stillbirths and early neonatal deaths per 1,000 total births.

Statistical analysis was carried out using the Statistical Package for Social Sciences (SPSS for MS Windows Release 9.0). Independent sample t-test was used for comparison of means, while chi-square and Fisher's exact tests were used for qualitative data. The level of significance was set at 0.05. Odds ratio with 95 percent confidence interval were calculated wherever applicable.

Table I

*Characteristics of Unattended (n=151) Mothers and Controls (n=300)*

<i>Characteristics</i>	<i>Unattended Mothers Mean (SD)</i>	<i>Controls Mean (SD)</i>	<i>*t-value</i>
Age (years)	26.45 (5.98)	26.66 (6.07)	0.076
Parity	3.64 (2.87)	3.22 (2.85)	0.294
Duration of pregnancy (weeks)	39.31 (2.51)	39.28 (1.67)	0.002
Post-delivery haemoglobin(g/dl)	11.5 (1.94)	12.3 (1.57)	0.172

\*t-value is significant if >1.96

SD = Standard deviation

**Table II***Morbid Conditions of Out-born (n=10) and In-born (n=5) Infants admitted to the Newborn Unit*

Type of Morbidity	Out-born Infants No (Percent)	In-born infants No (Percent)	P-value	Odds Ratio (95 Percent CI)
RDS	7 (4.7)	1 (0.3)	0.002*	14.46 (1.84-661.78)
Infection	1 (0.7)	1 (0.3)	0.56	2.01 (0.02-158.04)
Asphyxia	1 (0.7)	1 (0.3)	0.56	2.01 (0.02-158.04)
Anaemia	1 (0.7)	0 (0.0)	0.33	-
Jaundice	0 (0.0)	1 (0.3)	0.67	0 (0-78)
IUGR	0 (0.0)	1 (0.3)	0.67	0 (0-78)

IUGR: Intra-uterine Growth Retardation  
\* Significant P-value

RDS = Respiratory Distress Syndrome  
CI = Confidence Interval

**Table III***ANC Status of Subjects and Controls with related Perinatal Mortality*

	Received ANC No (Percent)	Did not receive ANC No (Percent)	Perinatal Mortality No (Percent)
Subjects ((n=151)	26 (17.2)	125 (82.8)	10 (6.6)
Controls (n=300)	110 (36.7)	190 (63.3)	3 (1.0)

ANC = Antenatal care

**Table IV***Perinatal Mortality among Out-born and In-born Infants*

	Out-born	In-born	P-value	Odds Ratio (95 Percent CI)
Fresh IUFD	1	0	0.33	-
Macerated IUFD	1	0	0.33	-
Neonatal deaths	8	3	<0.008*	5.58 (1.31-32.99)
Total number (% mortality)	10 (6.6)	3 (1.0)	<0.00142*	7.07 (1.78-40.42)

IUFD: Intra-uterine Foetal Death

\* Significant P-value

CI = Confidence Interval

## Results

During the seven-year period under review, a total of 151 women with unattended deliveries were admitted with their babies into the Abha Maternity Hospital. Fifty-five (36.4 percent) of the deliveries took place at home and 96 (63.6 percent) occurred in cars *en route* to the hospital. All the deliveries (attended and unattended) were singletons and spontaneous vaginal. The demographics of these mothers and the controls (Table I) show close similarities regarding the two groups of women in terms of age, parity, duration of pregnancy and postpartum haemoglobin. The gestational ages of the neonates as determined by history and by neonatal characteristics (Dubowitz score), were similar ( $t=0.002$ ). In the unattended group, there were seven preterm and 144 term babies while among the 300 controls, there were 11 preterm and 289 term babies.

Table II compares the patterns of perinatal morbidity in the out-born and in-born infants. There was significant difference in the incidence of respiratory distress syndrome (RDS) in the study group compared to the control group ( $p=0.002$ ); all the seven (100 percent) preterms in the unattended group developed RDS compared to only one (9.1 percent) of the 11 preterms in the control group. The differences in the frequencies of other variables such as infection, birth asphyxia, anaemia, jaundice and intrauterine growth retardation were not significant.

Table III demonstrates the antenatal care status of the women in the two groups and the corresponding perinatal mortality. One hundred and twenty-five (82.8 percent) of the 151 women and 190 (63.3 percent) of the 300 controls did not have any form of antenatal care. Ten (6.6 percent) of the out-born and five (1.7 percent) of the in-born infants required admission into the newborn unit. There were two intrauterine and eight neonatal deaths from the unattended deliveries (6.6 percent mortality); the control cases had three neonatal deaths but no intrauterine deaths (1.0 percent mortality) as shown in Table IV. Six of the neonatal deaths among the out-born deliveries were admitted with severe RDS. The perinatal mortality among the unattended group was significantly higher than that recorded in the controls ( $p<0.001$ ).

## Discussion

This study has clearly demonstrated that unattended delivery is fraught with dangers; the incidence of respiratory distress syndrome and foetal/neonatal wastage were significantly higher compared with hospital delivery. Bhoopalam and Watkinson<sup>1</sup> in their studies from East Birmingham revealed that women

who delivered before arrival at the hospital, tended to be either multigravid inner city Asians living a long way from the hospital, or unmarried, unbooked, younger white Europeans. Multigravidity and teenage pregnancy are fairly common phenomena in Saudi Arabia.<sup>6</sup> The country is an oil-rich state with majority of families living far above poverty line, where many families own more than one motor vehicle, where services at government medical institutions are free and within easy reach and illegitimate pregnancy is rare.<sup>7</sup> In view of these basic facilities and opportunities, the Saudi pregnant women is not expected to be at any disadvantage compared to pregnant women from less privileged countries. These facilities are however, not fully utilized by the various communities.<sup>6</sup> There is therefore, a need to educate these women on how to avail themselves of the facilities.

In the present study, the foetal and neonatal wastage was seven times higher ( $OR=7.02$ ) among the unattended compared with hospital deliveries. Respiratory distress syndrome (RDS) was about 15 times ( $OR=14.64$ ) more likely to occur in unattended delivery than in hospital delivery. The incidence of RDS was higher among out-born compared to inborn preterms (100 percent vs 9 percent). This most probably implies that the risk of developing RDS by preterm infants is relatively greater if they are born outside hospital. There is the obvious risk of out-born infants suffering undetected birth asphyxia and hypothermia, two factors that are well known causes of surfactant destruction and hence, the development of RDS.

A hospital-based study such as this is not necessarily representative of the community situation and is very likely to underestimate the full spectrum of the dangers. We suspect that more infants are dying at home due to lack of immediate neonatal resuscitative measures especially as no cases of breech deliveries were reported. The fact that 64 percent of the unattended deliveries took place in cars *en route* to the hospital reflects a dangerous delay in starting off for the hospital when the women were in labour. Various workers have demonstrated significant differences in the perinatal mortality rate in relation to the place of birth, with out-born infants at a relatively greater disadvantage.<sup>1-4,8</sup> Beeram *et al*<sup>8</sup> revealed from their survey a two-fold increase in the morbidity and an 11-fold increase in the mortality rate among out-born compared to infants born in hospital. Potter *et al*<sup>8</sup> investigated this problem in 1980 in South Africa, and found that these infants had lower birth weights and higher morbidity than in-born controls. The risk factors they identified were relative inaccessibility of health care facilities, distance from their homes to hospital, and

lack of available ambulance services. In contrast, the primary health care centres with a 24-hour maternity service are within easy reach of almost every family in Assir. The city provides a 24-hour ambulance service but it appears that these services were poorly utilized.

This study also highlights the non-attendance for antenatal care among the women in this environment. As high as 83.3 percent of unattended mothers and 63 percent of the controls did not have any form of antenatal care. In a previous report on AMH, Bahar<sup>9</sup> revealed that in 1994, 11.3 percent of patients who were delivered in the hospital received antenatal care in the hospital; 5.3 percent booked and had antenatal care in the primary health centres only, while the remaining 83.3 percent did not have any documented evidence of regular antenatal care. This negative attitude towards antenatal care is expected to cause not only unnecessarily high perinatal mortality and a high percentage of prematurely born and damaged infants, but also an increase in the maternal morbidity and mortality. In a retrospective study of 4716 births in the northern region of Saudi Arabia, El-Gilany<sup>10</sup> revealed that early registration for antenatal care and higher number of visits were associated with significantly lower rates of stillbirths, early neonatal deaths and perinatal mortality. Chamberlain *et al*<sup>11</sup> and Davies *et al*,<sup>12</sup> however concluded from their studies that where women are tightly screened and appropriately selected for home birth, the risk to mother and infant is no greater than for those of a similar low-risk profile who are hospital-booked and delivered. This can only apply to a population where the women present themselves at the antenatal clinic to receive such an individually specific advice from professionals. Moreover, the safety of such delivery can only be fully guaranteed if it is conducted by a trained birth attendant or midwife. Birth attendants or domiciliary midwives are regularly being trained and re-trained in Abha, to undertake such deliveries in Assir region but it is not evident if any of the women in this series benefited from their services.

It is important to evaluate prospectively, the circumstances that lead to birth before hospital arrival and to identify proper intervention measures necessary to achieve the goals of safe delivery. The study suggests that despite adequate health facilities and financial support from the government, lack of health education and initiative on the part of the patients might be a major contributing factor to the unacceptably high level of unattended deliveries and the associated outcome. Mass health education, incorporating

community outreach programmes on the values of antenatal care and changes of attitude and acceptability of medical care, are needed in this population. Prenatal visits afford excellent opportunities to educate expectant mothers and their spouses concerning emergency labour and delivery.<sup>13</sup> Where the values of antenatal care are fully appreciated and accepted, young couples would be taught how to identify the signs of early labour and the need to report promptly at the hospital or the nearest primary health care centre when in labour. This is to avoid unattended deliveries, thereby reducing the incidence of respiratory distress syndrome and perinatal wastage.

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