

## **ANALYSIS OF DELIVERIES IN JIMMA HOSPITAL: A FOUR YEAR RETROSPECTIVE STUDY**

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**ABSTRACT:** This study was conducted to analyze the outcome of deliveries in Jimma Hospital between 1985 and 1989. There were a total of 4251 deliveries, 769 of which were abnormal. The maternal morbidity and mortality rates were 84.8 and 11.5 per 1000 live births respectively. The major causes of morbidity were postoperative surgical wounds in 91.8% and postpartum haemorrhage in 4% of cases. The leading causes of death were ruptured uterus (47.7%), puerperal sepsis (27.3%) and postpartum haemorrhage (13.6%). A significant proportion of deaths and illness occur in patients who were referred and among those unable to pay their hospital fees.

There were a total of 371 perinatal deaths with a stillbirth to neonatal death ratio of 3.09:1. The perinatal morbidity and mortality rates were 53.5 and 95.9 per 1000 live births respectively. The commonest causes of perinatal death were obstructed labor (22.8%) and ruptured uterus (18.2%). The major reported morbidity were low birth weight 58.9% and low Apgar Score 35.7%. Perinatal mortality is higher in referred mothers and in those who do not pay their hospital fees.

Finally the type of intervention received during deliveries are described. The association of maternal characteristics with maternal and perinatal mortality and morbidity are analyzed and recommendations given.

### **INTRODUCTION**

Maternal and perinatal morbidity and mortality are common worldwide problems (1). Globally 500,000 pregnancy related deaths occur annually most unnecessarily. 95% of these deaths occur in developing countries where 85% of all births occur (2) and most neonatal deaths occur during the birth process or in the first week of life (3). Maternal and perinatal morbidity and mortality are clinical problems with social, economic, political and managerial facets (2). Insufficient health services, poor accessibility and low utilization contribute to the problem. Lack of transportation, high illiteracy rates, low family planning practices, poverty and malnutrition play an important role in this problem. For existing staff and facilities to be efficiently used to improve the maternity care of an area, the local obstetric pattern needs to be understood (4). This inevitably places a great emphasis on the value of good records, as well as their regular and frequent review. If this can be done, then maternity care can be closely adapted to the local needs and facilities of a community and be a dynamic, growing service, sensitive to changes in obstetric outcome over time. Hence, this study is intended to describe and analyze perinatal and maternal outcome

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### **METHODS**

Jimma Hospital has a 200 bed capacity, 12 of which are maternity beds. The hospital attends an average of 1000 deliveries per year. This review was conducted on deliveries attended in Jimma Hospital from September 11, 1985 to September 10, 1989. Each maternal delivery is routinely registered according to age of mother, address, outcome of delivery, weight, length, Apgar score and head circumference of live born, length of stay in the hospital and type of delivery as normal (N/D), cesarean (C/S), forceps (F/D), vacuum (V/D), etc. The cause of morbidity or death of mother or newborn is not available in the record book but was checked from the card of the mother, face sheet, lab results and discharge remarks. The study included 4251 mothers, out of which 769 were selected according to the following criteria, mothers who underwent C/S, F/D, V/D, hysterectomy, craniotomy, those who stayed more than 3 days, those who died during delivery, those whose newborn died before or after delivery, low birth weight, and Apgar  $\leq 6$ . The data collection was done during Hidar 1-30 1982 EC. The data was analyzed by computer and chi-square statistics calculated.

## RESULTS

There were a total of 4251 deliveries during the years 1985-1989, for an average of 1062 deliveries per year. There were a total of 769 abnormal deliveries. The age distribution of mothers delivering during 1985-1989 is shown in table 1: the age group 19-22 compose the highest proportion, i.e. 27.2%.

329 mothers were ill from causes associated with delivery or its complications for a maternal morbidity rate of 84.8/1000 live births. The age specific morbidity includes a higher rate of maternal morbidity at the extremes of age, i.e.

Table 1. Distribution of Deliveries by age group. Jimma Hospital 1985-1989.

Age	No	%
15-18	557	13.1
19-22	1156	27.3
23-26	893	21
27-30	995	23.4
31-34	200	4.7
35-38	370	8.7
39-42	80	1.9
43-46	1	0.1
Total	4251	100

age groups 15-18 and 31-38, with 93 and 110 per 1000 live births respectively. These differences were not significant at  $P < 0.05$ . The causes of morbidity are shown in table 2. Post operative surgical wounds account for 91.8% of cases, postpartum hemorrhage (PPH) for 4%, puerperal sepsis 2.1% and vesicovaginal fistula 1.5%.

Table 2. Causes of Maternal Morbidity. Jimma Hospital. 1985-1989

No	Causes	No	%
1	post operative surgical wound	302	91.8
2	Postpartum hemorrhage	13	4
3	puerperal sepsis	7	2.1
4	vesico vaginal fistula	5	1.5
5	retained placenta	2	0.6
	Total	329	100

During 1985-1990 there were 44 maternal deaths recorded, resulting in a maternal mortality rate of 11.3 per 1000 live births. As shown in table 3, uterine rupture was the leading cause of death (47.7%) followed by

puerperal sepsis (27.3%), PPH (6.8%) and eclampsia (4.5%). There were significant differences in the incidence of maternal mortality by age groups at  $P < 0.05$ , which increased with age.

Table 3. Causes of Maternal deaths in Jimma Hospital, 1985-1989

Causes	No	%
1. uterine rupture	21	47.7
2. puerperal sepsis	12	27.3
3. postpartum hemorrhage	6	13.6
4. antepartum hemorrhage	3	6.8
5. eclampsia	2	4.5
6. others	1	2.3
Total	44	100

77.3% of deaths occurred in mothers who were referred and 22.7% occurred in those who were not. Similarly 53.5% of illnesses occurred in those who were referred. The difference was significant at  $P < 0.05$  (table 4). 59% of the deaths and 45.3% of illnesses occurred in mothers who could not pay their hospital fee, but this was not significant ( $P < 0.05$ ).

Table 4. Maternal Morbidity and death by referral status. Jimma Hospital, 1985-1989

	Referred		Not Referred	
	No	%	No	%
Death	34	77.3	10	22.7
Ill	176	53.5	152	46.2

$P < 0.05$

There were a total of 372 perinatal deaths with 281 stillbirths and 91 neonatal deaths making the stillbirth to neonatal death ratio 3.09:1. The perinatal mortality rate is 95.9 per 1000 live births. Obstructed labor accounts for 22.8% of the perinatal deaths, uterine rupture for 18.2% and 17.2% are unexplained. (see table 5). There was no significant difference in the rate of perinatal deaths in different age groups ( $P > 0.05$ ).

Table 5. Causes of perinatal death in number and percent. Jimma Hospital. 1985-1989.

Causes	No	%
1. Obstructed labor	85	22.8
2. Uterine rupture	68	18.2
3. Unexplained	64	17.2
4. Preterm	35	9.4
5. Prolonged labor	33	8.8
6. Fetal distress (unexplained)	22	5.9
7. Cord prolapse	18	4.8
8. Antepartum	16	4.3
9. Pre-eclampsia	11	2.9
10. Sepsis	9	2.4
11. Respiratory distress (unexplained)	6	1.6
12. Others	5	1.3
Total	372	100

The perinatal morbidity rate was 53 per 1000 live births; low birth weight accounted for 58.9% of cases, low Apgar score for 35.7% and preterm deliveries for 2.4% (table 6). No significant difference in perinatal morbidity by age of mother was found. 41.2% of deaths and 68.4% of sickness occurred in newborns of referred cases and 57% of perinatal deaths and 65% of illness occurred in newborns of mothers who do not pay their hospital fees.

Table 6. Causes of perinatal morbidity. Jimma Hospital. 1985-1989.

Causes	No	%
1. Low birth weight	122	58.9
2. Low Apgar score	74	35.7
3. Preterm	5	2.4
4. Congenital abnormalcy	2	1.0

5. Others	4	1.99
Total	209	100

Among the various intervention used, C/S occurred in 5.4% of deliveries, forceps in 1.8%, and hysterectomy in 1.7% (Table 7).

Table 7. Type of intervention. Jimma Hospital. 1985-1989.

Type	No	%
Cesarean section	230	5.1
Forceps delivery	77	1.8
Hysterectomy	75	1.7
Craniotomy	19	0.4
Vacuum	9	0.2
Normal delivery	3841	90.5
Total	4251	1000

## DISCUSSION

It was reported in Ethiopia in 1972 that maternal mortality constituted 7% of all deaths and it was estimated that the maternal mortality rate was 20 per 1000 (5). If this estimate was true, maternal mortality would be four times higher than the highest estimate for the regions of the world as defined by WHO 1977 (6). This was challenged by a community based study done in Addis Ababa by Kwast (1985) (7), which revealed a MMR of 5.66 per 1000 live births which is in good agreement with WHO estimates. Hospital based studies in Addis Ababa by Frost (1984) and Seyoum (1988) (8,9) found rates of 7.8 and 9.6 respectively. In this study the MMR, despite exclusion of abortion, was found to be 11.3 which is higher than previous studies. This could be explained by the fact that the previous studies were done in Addis Ababa where health facility accessibility is better than Jimma. Jimma is more representative of rural communities with relatively poor health service accessibility, lower socio-economic conditions and literacy rates and poor transportation. Causes of maternal death identified by Seyoum are similar, except that deaths due to abortion are excluded from this study. Uterine rupture rather than puerperal sepsis was leading cause of death in this study.

The lower incidence of maternal death in the age group 15-19 may be explained by the exclusion of deaths from abortion. On the other hand, the higher rate of morbidity in this age group could be explained by the use of cesarean section in this age group, who are usually primi

Perinatal mortality in this study is 95.9 per 1000 live births. This is significantly higher than reported by Naeye et al (10) which found a rate of 63. Comparison is difficult between these two studies. The latter is a community based study on perinatal mortality in Addis Ababa and the differences could be due similar reasons for maternal mortality. On the other hand, a hospital based study by Frost (8) in Addis Ababa found a perinatal mortality rate of 80 per 1000 live births, which is similar to this study. The still- birth to neonatal death ratio is 3.09:1, indicating the importance of maternal factors in perinatal mortality. This is unlike developed countries (11) where the ratio is 1:1, with maternal and fetal factors contributing equally to perinatal mortality rate. This ratio as reported by Naeye et al (10) and Frost (8) were 2.7:1 and 1.9:1 respectively.

The leading causes of perinatal death reported by Naeye et al were amniotic fluid infection, obstructed labor, and congenital syphilis in descending order and in Frost's study were uterine rupture, cord prolapse and obstructed labor. This study showed obstructed labor and uterine rupture as the leading causes.

## CONCLUSION AND RECOMMENDATION

This study, though it has its limitations, indicates there may be regional differences in the causes of perinatal and maternal mortality and morbidity. This variance may be explained by social, culture, economic and other influences. The study supports the importance of reviewing one's own maternity records in order that major problems can be identified which are regionally specific and appropriate solution sought. The fact that uterine rupture is the commonest cause of maternal death indicates that antenatal follow up, early identification and

referral of high risk mothers before labor starts is of paramount importance. In this way a significant reduction in maternal mortality can be expected. Similarly as obstructed labor is the major cause of death, the above measures should reduce the MMR. Finally this study is not an end in itself but a means for others to do further study on these maternal and perinatal problems.

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