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A Study of Maternal and Perinatal Death at Western Regional Hospital, Ramghat, Pokhara, Nepal

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Abstract: ***Background: Maternal and perinatal death in Nepal is one of the serious problems. It was found that most deaths occur due to poor health services provision as well as lack of access to and use of services. Socio-economic determinants such as poverty, social exclusion and low levels of education significantly contribute to death and disability. Materials and Methods: A retrospective study was carried out analyzing all case records of perinatal and maternal deaths in the department of obstetrics, gynecology and seriously ill Neonatal Care Unit, Western Regional Hospital, Pokhara from 15 April 2015 to 15 April 2018. Data of all births, maternal and perinatal death were reviewed. The reasons for perinatal death and maternal death were also studied. Results: It was found that perinatal death was serious problem among death in hospital. It was found that on an average of three years period the major causes of total perinatal death were asphyxial conditions developing in labour (27.27%) followed by deaths before the onset of labour (24.70%). Majority of maternal death was due to pulmonary embolism (44.44%). Mother age below 20 years and above 40 years were the largest risk factors for perinatal and maternal mortality. Increasing in the level of education was associated with decrease in both perinatal and maternal mortality. Conclusion: The major causes of perinatal death were asphyxia followed by death before the onset of labour and that of maternal death was pulmonary embolism. Socio economic factor such as age of mother, educational level and area of residence directly affects perinatal and maternal mortality rate.***

Keywords: death, maternal, mortality,perinatal

1. Introduction

Maternal death is defined as "the death of a women while pregnant or within 42 days of termination of pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes."[1]There are approximately 4 million neonatal deaths and half a million maternal deaths worldwide each year.[2]Worldwide, there are over 6.3 million perinatal deaths a year, almost all of which occur in developing countries and 27% of these in the least developed countries. Nepal,like many developing countries still experiences high levels of maternal and perinatal deaths. Nepal has shown significant progress in reducing maternal and perinatal mortality over the past two decades.[4] Maternal mortality is one of the major health issues in Nepal. Maternal mortality continues to be the major cause of death among women of reproductive age in many countries. Over a 13 year period in , Tribhuvan University Teaching Hospital,perinatal mortality was 21.5 per thousand births.[3] The perinatal death rate reflects the status of maternal and child health, the conditions of obstetrics care and the level of economic development of a country. It also reflects both the characteristics of reproductive health and quality of antenatal care, delivery, and newborn care.[3]

The causes of maternal death may be either direct due to obstetric complications of pregnancy, delivery or the puerperium or indirect such as pre-existing diseases or diseases developed during the pregnancy that are worsened by pregnancy.[1] Out of the total maternal deaths, direct causes comprise nearly 80%. Common direct causes are hemorrhage (25%), infection (15%), unsafe abortion (13%), hypertension and eclampsia (12%), obstructed and prolonged labor (8%), and other causes (8%). The remaining 20% deaths occur by indirect causes.[4] Maternal mortalities are also caused indirectly by hepatitis, diabetes, malaria, infections, malnutrition, and anemia. The indirect causes, though preventable, contribute to about 24% of all maternal deaths in the world.[4] Recognized risk factors for perinatal mortality as confirmed by other studies are increased parity, increased age of the mother, and male child.[5]This study was conducted to identify the causes and attributing factors to maternal and perinatal death at Western Regional Hospital, Pokhara.

2. Materials and Methods

A retrospective analysis of all maternal deaths from April 15 2015 to 15April 2018 at Pokhara Academy of Health Sciences (PAHS). Three year was categorized as year I from mid April 2015 to mid April 2016, year II from mid April 2016 to mid April 2017 and year III from mid April 2017 to mid April 2018. Data were extracted from case records of hospital after obtaining clearance from institutional ethical review board. The records were studied regarding mother's age, parity, socioeconomic status, mode of delivery, presence of medical conditions prior to pregnancy, type of treatment at the hospital and causes of death. The data of neonates were taken from case records in seriously ill Neonatal Care Unit (SNCU). The reasons for perinatal death and maternal death were also studied by using semi structural questionnaire. Data entry was done in Microsoft office excel and analyzed by SPSS 17 software.

3. Results

Table 1 shows the total cases admitted in the hospital from April 15, 2015 to April 15, 2018. It was found that total number of deliveries in hospital decreased between 2015 and 2018 that from total of 9087 cases in 2015/2016 to 8657 in 2017/2018. Out of total deliveries, 72.66% were normal deliveries. Assisted deliveries were done in 3.01% and Caesarean sections were done in 24.32%.Table 2 shows total

maternal and perinatal death in the hospital. The perinatal death was 1.67% in the first year and was increased to 2.53% in the third year. The maternal death was 0.02% in the first year and increased to 0.057% in the third year.

Table 1: Total cases during three years

S.N	Description	Year I	Year II	Year III	Total
1	No of normal deliveries	6632 (72.98%)	6703 (74.08%)	6134 (70.86%)	19469 (72.66%)
2	No of assisted deliveries (Complicated)	331 (3.64%)	219 (2.42%)	257 (2.98%)	807 (3.01%)
3	No of LSCS	2124 9 (23.37%)	2126 (26.17%)	2266 (16.17%)	6516 (24.32%)
Total no of deliveries		9087 (100%)	9048 (100%)	8657 (100%)	26792 (100%)

Table 2: Total number of deaths

S.N	Description	Year I	Year II	Year III	Total
1	No of maternal deaths	2 (0.022%)	2 (0.022%)	5 0.0577%)	9
2	No of perinatal deaths	151 (1.66%)	217 (2.39%)	219 (2.529%)	587
3	No of early neonatal deaths	48	89	76	213
4	No of still births	103	128	143	374

Out of total 26,792 deliveries in the hospital, maternal death was recorded 9 and perinatal death recorded 587. It was observed that perinatal mortality rate was 21.9 per 1,000 birth and maternal mortality rate was 3.3 per 10,000 births.

Table 3: Causes of perinatal death

Conditions	Year I	Year II	Year III	Total
Deaths before the onset of labour	36 (23.84%)	46 (21.20%)	63 (28.77%)	145 (24.70%)
Congenital anomalies or lethal malformations	11 (7.28%)	25 (11.52%)	23 (10.50%)	59 (10.05%)
Conditions associated with immaturity	26 (17.22%)	43 (19.81%)	42 (19.18%)	111 (18.91%)
Asphyxial conditions developing in labour	38 (25.16%)	70 (32.26%)	52 (23.74%)	160 (27.26%)
Specific conditions other than above	40 (26.49%)	33 (15.21%)	39 (17.8%)	112 (19.08%)
Total	151 (100%)	217 (100%)	219 (100%)	587 (100%)

Table 3 shows the causes of perinatal death. It was found that on an average of three years period the leading causes of total perinatal death were asphyxial conditions developing in labour (27.27%) followed by deaths before the onset of labour (24.70%).

Table 4: Causes of maternal death

S.N	Causes	Percentage
1	Pulmonary embolism	44.44
2	Postpartum hemorrhage / coagulation disorder	22.22
3	sepsis	22.22
4	Induced abortion	11.11
Total		100

Table 4 indicates shows the major causes of maternal death. Majority of maternal death was due to Pulmonary embolism (44.44%), Postpartum hemorrhage/ coagulation disorder (22.22%), sepsis (22.22%) and induced abortion (11.11%).

Table 6: Factors affecting the mortality

Factors	Percentage (%)
Poor awareness of ANC and birth preparedness	8.38
Home delivery	1.17
Prematurity	16.44
Delay in seeking health care	8.22
Asphyxia	22.65
Poverty	14.26
Malnutrition	16.11
Illiteracy	3.36
Poor transportation facilities	9.40
Total	100

Table 6 shows factors associated with parental and maternal mortality. Asphyxia (22.65%) was the leading cause of mortality followed by prematurity (16.44%). Figure 1 shows age of mother admitted in hospital. The majority of women admitted for delivery in hospital were the age between 20-30 years. Figure 2 shows the relationship between mother's age and mortality. Mother age below 20 years and above 40 years were at the highest risk for perinatal and maternal mortality. Figure 3 shows relationship between place of residence of mother and mortality. Both maternal and perinatal rate were found to be high in rural areas followed by semi urban areas. The Neonatal and maternal mortality were found to be low in urban areas. Figure 4 shows the relationship between the level of education of mother and mortality.With increasing the level of education both perinatal and maternal mortality was decreased.

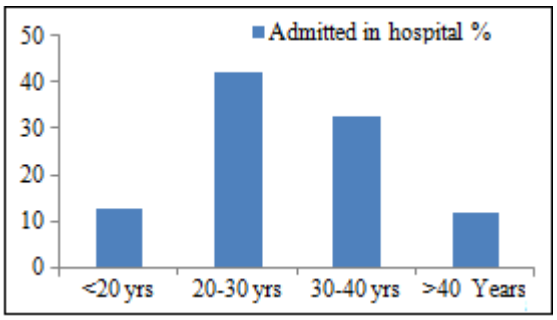

Figure 1: Age of mother admitted in hospital

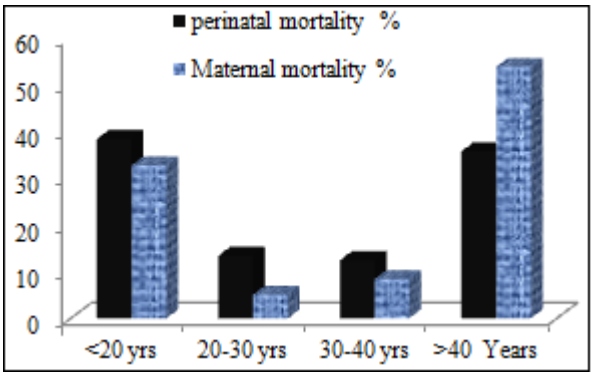

Figure 2: Relationship between age of mother and mortality rate

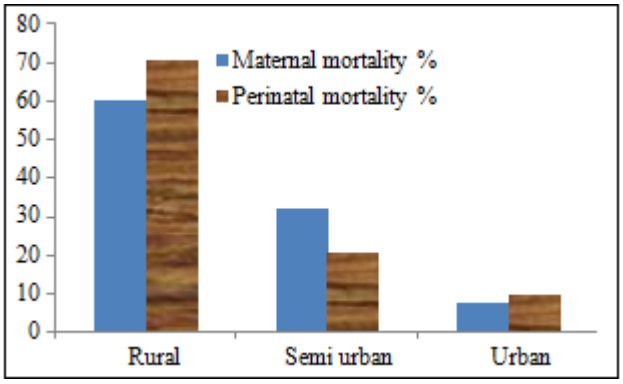

Figure 3: Relationship between place of residence and mortality

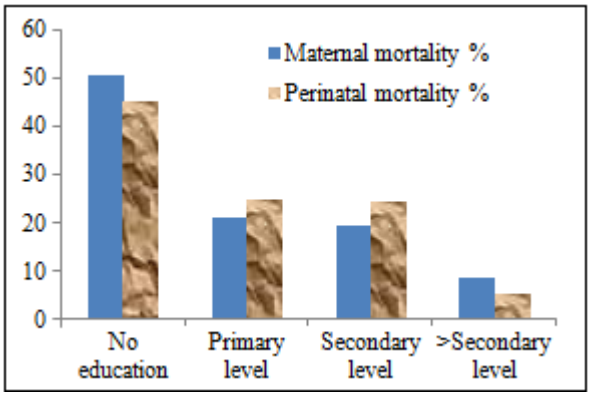

Figure 4: Relationship between education level of mothers and mortality rate

4. Discussions

In this study both maternal and perinatal death rates showed an increasing trend in the three years. PAHS is tertiary level hospital. A WHO study during this period has found these rates as decreasing.[6]This may be due to small sample size, lack of NICU and MICU facilities. Complicated cases are referred from nearby health institution.[14] In Nepal, the national perinatal mortality rate has slightly declined from 47 in 2001 to 45 per 1,000 pregnancies in 2006.[7]In this study the leading cause of perinatal death was asphyxia conditions developing in labour (27.62%). Similarly Manandhar et al. also found perinatal asphyxia as the major cause of neonatal death.[8]This reflects either delay in receiving appropriate obstetric care due to geographical difficulty or poor ante partum and intra partum obstetric care. This may also indicate a lack of proper intra partum monitoring and timely appropriate interventions. Global studies on causes of maternal mortality have revealed hemorrhage, hypertensive disorder, unsafe abortions and sepsis in decreasing order of frequency. In this study pulmonary embolism was found to be the number one cause (44.44%). This is similar to finding of Panting et al where the major cause of maternal mortality was pulmonary embolism and cardiac causes((40%).[9]The second major cause of maternal mortality in this study was postpartum hemorrhage. The decreasing trend in hemorrhage related deaths could be attributed to wider availability of sonography for earlier detection of placenta previa and timely intervention and availability of blood transfusion. A study done by Family Health Division /Minitry of Health and Population in 1998 found that post-partum hemorrhage (46.3%), obstructed labor (16.3%), eclampsia (14.3%) sepsis, puerperal sepsis (11.8) and abortion were major causes of maternal death[10]. In this study, 22.22% of death were attributed to sepsis. This is similar to study done by Rijal P et al where mortality rate due to sepsis was 19.6%. This may be due to early intervention with the use of rational antibiotics in the hospital settings. In this study, 11.11% of death were due to abortion which is also similar to Rijal et al where 8.9% deaths were due to abortion.[11]

Though abortion has been legalized in Nepal, unsafe abortion is still a major cause of maternal mortality. This may be due to easy access to medicine causing abortion in the local pharmacies. In this study maternal and perinatal death was highest among those who live in rural areas. This may be due to lack of health infrastructures and skilled man powers, lack of good transport facilities and delay in referral system. In our study, mortality was highest among the illiterates. This may be due to lack of health awareness. This is supported by National Demographic Health Survey data which showed women residing in rural areas are more likely to experiences perinatal losses than urban women. [10]Educated mothers are less likely to experiences perinatal losses than uneducated mothers. In this study mortality was highest among women more than 40 years of age. Age factor is directly proportional to maternal mortality. This is supported by study done by M night et al in Great Britain where mortality in women more than 40 years age was 3–4 times higher than for women aged 25–29 years. [12]In this study poor awareness to ANC, home deliveries, delay in seeking health care, poverty malnutrition, illiteracy, poor transportation facilities are major factors leading to maternal and perinatal mortality. Unsafe, unhygienic and sometimes fatal natures of practices conducted by traditional birth attendants may be the reasons for maternal deaths in some cases.[13]

5. Conclusion

Birth asphyxia was the leading cause of perinatal death while pulmonary embolism was leading cause for maternal death. This suggest that the quality of care provided during pregnancy and delivery remains sub-optimal. An emphasis on intra partum care is required. Though there is implementation of safe motherhood program in our hospital, maternal and perinatal death rates show increasing trend. Introduction of NICU and MICU facilities, increasing the number of skilled human resources and necessary equipment may reduce these mortality rates. Improvement in socio economic factor such as age of mother, educational level, economic level, number of ANC visits may reduce the number of perinatal and maternal mortality.

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