Original article

Maternal, fetal and new born outcomes in pre-eclampsia and eclampsia: a hospital based study

N Pokharel[1], M Shrestha [1], M Regmi [2]
[1]Department of Maternal Health Nursing, [2]Department of Obstetrics & Gynecology, B.P. Koirala Institute of Health Sciences, Dharan, Nepal

Abstract

Background: Pre-eclampsia /Eclampsia are becoming a leading cause of maternal and neonatal morbidity and mortality in developed and developing countries. Developing countries are at higher risk of facing this problem. **Objective:** To assess the maternal, fetal / newborn outcome of pre-eclampsia and eclampsia among mothers admitted in maternity ward of BPKIHS. **Methods:** This is a hospital based cross sectional study carried out in maternity ward at BPKIHS. A total 150 pregnant women (diagnosed of preeclampsia/eclampsia cases-75 and controls -75) included using purposive sampling technique. Data was collected using self-developed pretested, semi structured performa by the interview. Detailed physical examination and observations were also done. **Results:** Preterm delivery, early rupture of membrane, need for an assisted vaginal delivery (vacuum and forceps) and caesarean delivery, were significantly higher in cases than controls ($P < 0.001$). Abnormal range of fetal heart rate, still birth, intrauterine fetal death, birth asphyxia ,need for resuscitation, low birth weight and intrauterine growth retardation were significantly higher in cases than controls ($P < 0.001$). **Conclusion:** Maternal, fetal and newborn outcome such as preterm delivery, caesarean section, birth asphyxia, low birth weight and intrauterine fetal death are more common seen among women who were diagnosed with preeclampsia /eclampsia than normal pregnancy. It is very important of early identification and prompt management to prevent complication of both mother and fetus.

Keywords: eclampsia, fetal and newborn outcome, maternal outcome, preeclampsia

Introduction

Pregnancy and childbirth is considered as normal physiological process, but it is associated with certain risk to the life of both mother and baby. In too many countries, maternal mortality is a leading cause of death for women of reproductive age. Most maternal deaths result from haemorrhage, complications of unsafe abortion, pregnancy-induced hypertension, sepsis and obstructed labour.[1] In addition to women dying from obstetric complications, many women also suffer from serious chronic disabilities resulting from pregnancy and childbirth. Maternal mortality is a global burden, lots of women dying due to pregnancy and childbirth-related complications.[2]

Every six minutes, a woman dies of a pregnancy related complication called pre-eclampsia nine women an hour, according to the pre-eclampsia foundation. The disorder, which is linked to hypertension and affect 3 million women a year worldwide, can be equally devastating for infants.[3] Nepal has one of the highest maternal mortality is 281 /100000 live birth in South - East Asia region. The contributing factors to maternal

Address for correspondence
Nirmala Pokharel
Additional Professor
College of Nursing , BP Koirala Institute of Health Sciences, Dharan, Nepal
Email: nirmalapokhrel123@yahoo.com

death were found to be due to delay in deciding, delay to seek caring, delay in reaching care and delay in receiving care.[4] In Nepal, preeclampsia/ eclampsia is the second leading direct cause of maternal mortality at the community level after post partum haemorrhage.

It is the number one direct cause of maternal death in health facilities which accounts for 30% of maternal deaths. Maternal mortality and morbidity study of Nepal 2008/2009 revealed that 21% maternal death was due to eclampsia, which was increased from 14% in 1998.[5] It is important that the doctors and midwives should have knowledge about this life threatening condition and its outcome on the mother and baby. By his/ her ability to identify the early effect of pre-eclampsia may well prevent a crisis developing later in the pregnancy.

Methods

The study subjects were 150 pregnant women in which cases 75 women diagnosed with pre-eclampsia/eclampsia and control 75 normal pregnant women admitted in maternity ward of BPKIHS for delivery during June 2005 to June 2007. This is a hospital based cross sectional study with purposive sampling. Ethical clearance was obtained from IERB (institutional ethical review board) and informed consent was taken from the respondents. Data were entered into a computer and analyzed using statistical package for social studies (SPSS) software version 12.0 with descriptive and inferential statistics.

Results

Among the total of 150 women (75 cases and 75 controls), most (69.3% & 80.0%) of them in both the groups were in the age group between 20 -30 years and were from rural area. Hindu constituted the largest proportion (88.0%, 95.0%) in both group respectively. 38.6% of the respondents in both groups had completed secondary education. 84.0% of cases and 92.0% of controls were house wives by their occupation. (Table -1)

Table 1: Respondents characteristics (n = 150: cases -75, controls -75)

Background	Cases n (%)	Controls n (%)
Age (years)		
Below 20 yrs	9 (12.0)	5(6.6)
20 to 30 yrs	52 (69.3)	60 (80)
More than 30 yrs	14 (18.6)	10(13.3)
Residence:		
Rural	45 (60.0)	39 (52.0)
Urban	30 (40.0)	36 (48.0)
Religion:		
Hindu	66 (88.0)	71(95.0)
Buddhist	4 (5.0)	4(5.0)
Muslim	2 (3.0)	-
Christian	3 (4.0)	-
Education:		
Illiterate	19 (25.3)	10 (13.3)
Primary (1-5 class)	12 (16.0)	27 (36.0)
Secondary (6 -10 class)	29 (38.6)	29 (38.6)
S.LC & above	15 (20.0)	9 (12.0)
Occupation:		
Housewife	63 (84.0)	69 (92.0)
Service	6 (8.0)	4 (5.3)
Business	1 (1.3)	2 (2.6)
Laborer	5 (6.6)	0
Type of family:		
Nuclear	21 (28.0)	34 (45.3)
Joint	54 (72.0)	41 (54.6)

Primigravida was seen 58.6%, of cases and 61.3% of control. Still births were observed only in 9.3 % cases but not seen in controls. 14.2%, of cases and 3.4% of control had history of abortion. History of neonatal death was found more (9.2%) in cases than controls (3.4 %). Gestational weeks less than 37 at the time of delivery were found more (28.0 %) in cases than (2.6%) controls (Table -2).

Table 2: Gestational Weeks of the Respondents (n = 150: cases -75, controls -75)

Gestational age (weeks)	Cases n (%)	Controls n (%)
Less than 37 wks	21 (28.0)	2 (2.6)
More than 37 wks	54 (72.0)	73 (97.3)

Four percent in cases and 1.3% in controls had history of preeclampsia. Eight percent of cases had a family history of hypertension whereas in control it was only 1 %. Fifty eight percent women in cases had completed more than four

antenatal visits and 40% of the controls did the same (Figure-1).

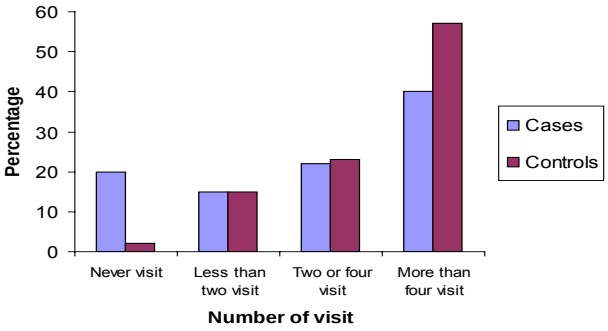

Figure 1: Number of Antenatal visit of the Respondents

Women of both the groups were assessed at the time of delivery. Women having preterm delivery, early rupture of membrane, need for an assisted vaginal delivery (vacuum and forceps) and caesarean delivery were significantly higher in cases than controls (Table 3).

Table 3: Maternal outcome of respondents (n = 150: cases -75, controls -75)

Maternal outcome	Cases n (%)	Controls n (%)	P value
Abruption placenta:			
Present	2 (2.6)	0	>0 .05
Absent	73 (97.3)	75(100.0)	
Preterm delivery:			
Present	21 (28.0)	3 (4.0)	<0 .001
Absent	54 (72.0)	73 (97.0)	
Rupture of membrane:			
Before 12 hours	6 (8.0)	2 (3.0)	<0 .001
During labour pain	69 (92.0)	73 (97.0)	
Mode of delivery:			
Spontaneous vaginal delivery	50 (67.0)	70 (93.0)	<0 .001
Assisted vaginal delivery (vacuum, forceps)	10 (13.0)	3 (4.0)	
Caesarean section	15 (20.0)	2 (3.0)	
Duration of labour:			
Less than 12 hours	63(84.0)	65 (86.6)	>0 .05
More than 12hours	12 (16.0)	10 (13.3)	
Postpartum hemorrhage:			
Yes	2 (3.0)	0	>0.05
No	73 (93.0)	75(100.0)	

Abnormal range of fetal heart rate, still birth, intrauterine fetal death, birth asphyxia, need for resuscitation, low birth weight and intrauterine growth retardation were found higher in cases than controls .Neonatal death was not found within 24 hours of admission in both the groups (Table- 4).

Table 4: Fetal and newborn outcome of respondents

(n = 150: cases -75, controls -75)

Fetal/Newborn Outcome	Cases n(%)	Controls n(%)	P value
Fetal heart rate:			
Normal range (120-140 beats /mins)	48(64.0)	70 (93.3)	< 0.001
Abnormal range (less than 120 & more than 160 beats /mins)	17(22.6)	5 (6.6)	
Absent	10(13.3)	0	
New born:			
Alive	60(80.0)	74(98.6)	
Still birth	5 (6.6)	1 (1.3)	<0 .001
Intrauterine death	10(13.3)	0	
Apgar score:			
Normal range	32(53.3)	66 (89.1)	
Mild asphyxia	19(31.6)	8 (10.8)	<0 .001
Severe asphyxia	9(15.0)	0	
Resuscitation Required:**	60(100.0)	74(100.0)	
Suction	5(8.3)	42 (56.7)	<0.001
Suction & oxygen	53 (88.3)	32 (43.2)	
E-T tube intubations	2 (3.3)	0	
Birth weight:			
Below 2.5 kg	25 (33.3)	9 (12.0)	<0 .001
Above 2.5 kg	50 (66.6)	66 (88.0)	
Clinical signs of intrauterine growth retardation:			<0. 001
Present	13 (17.3)	2 (2.6)	
Absent	62 (82.6)	73 (97.3)	
Need for admission in nursery/ neonatal intensive care unit:			<0 .05
Yes	10 (13)	3 (4)	
No	65 (87)	72 (96)	
Newborn death within 24 hours:			-
Yes	0	0	
No	75 (100)	75(100)	

** n =60 in cases & 74 in controls

Discussion

Preeclampsia is a major cause of maternal and fetal mortality and morbidity. Its incident is 2-10 worldwide depending on population studied and definition of preeclampsia used.[6] Pre-eclampsia is a multisystem disorder of unknown etiology, unique to pregnancy. Women with pre-eclampsia usually develop raised blood pressure and proteinuria, but the condition is also associated with abnormalities of the coagulation system, disturbed liver function, renal failure and cerebral ischaemia. It complicates an estimated 2–8% of pregnancies and is a major cause of maternal morbidity, perinatal death and premature delivery, although outcome for most women is good.[7]

Maternal outcome in many studies showed that there is association of pereclampsia in abruptio placenta varied from 10-50%. In this study also, it is found that abruption placenta had occurred in 2.6% of cases, where as it was not found in controls.

One of the risk factor of preeclampsia is history of previous preeclampsia, which was also found in both the cases and the controls in this study. Therefore, health education is very important particularly in those women who are affected by preeclampsia, so that they can prevent life threatening condition in next pregnancy by reporting early.

It is a reproductive health right that all pregnant women should have access for antenatal care to ensure their health and baby's health as well. But in Nepal, not all pregnant women have got that opportunity. It is estimated that only 67% pregnant women went for ANC first visit.[5] This study also revealed that 60% in cases was found less than four antenatal visit during their pregnancy. There should be more provision of awareness programme to the pregnant women for antenatal care and early identification of the problems and to manage accordingly.

Preterm delivery was found in 28% of cases and in 4% of controls, which was statistically significant ($p > 0.001$). This result is consistent with the findings of the study conducted by demography health survey of Nepal.[8]

Delivery remains the definitive treatment for pregnancies that are complicated by preeclampsia/eclampsia. Cesarean delivery is more likely in women with preeclampsia, despite the preference for vaginal delivery to minimize maternal and perinatal morbidity and mortality rates that are associated with the condition.[9] In this study, it was found that assisted vaginal delivery (vacuum and forceps) and caesarean section were significantly more in cases (13.0%, 20.0% respectively) than controls (4.0%, 3.0% respectively) .

A population based study conducted in Canadian province of nova Scotia, showed that women with any hypertension in pregnancy were 1.6 times more likely to have a live birth with SGA (small for gestational age) and 1.4 times more likely to have a stillbirth as compared with normotensive women.[10] This study also revealed that still birth and intrauterine fetal death were significantly more (6.6%) in cases than controls (1.3%).

Like in other study , mild asphyxia and severe asphyxia were seen more in cases than controls which is similar with the finding of the study conducted by Attiya et al. they reported that severe asphyxia was seen in 42.46% cases as compared to controls 4.10%.[6]

Regarding the need of resuscitation, suction and oxygen it was required for more number of newborns born to cases (88.3%), than controls (43.2%) which was statistically significant ($p < .001$). Need of the endotracheal tube intubations were found only in 3.3% and cases not required in controls.

In a study conducted by Ministry of Health and population of Nepal, reported that a child's birth weight is an important determinant of its survival chances.[8] This is consistent with the result of present study (Table -4).

The study done to assess neonatal outcome of preeclampsia in obstetric and gynecology unit ayub of teaching hospital in Pakistan, out of 73 cases, (26.2%) in cases compared to controls (9.5%) high need for admission to NICU.[6] This study also revealed need for admission in nursery and neonate intensive care unit were significantly more in cases (13.0%) than controls (4.0%). Many studies have suggested that there is a risk of preterm delivery in preeclampsia and eclampsia and major threat to the fetus and may require care in a tertiary care centre.[8]

Conclusion

This study reveals that maternal outcome such as need for an assisted vaginal delivery (vacuum and forceps) caesarean delivery, early rupture of membrane, preterm delivery, were significantly higher in cases than controls ($P < 0.001$). Regarding the fetus/newborn outcome that abnormal fetal heart rate, still birth,/ intrauterine fetal death, birth asphyxia, need for resuscitation, low birth weight and intrauterine growth retardation were significantly higher in cases than control ($P < 0.001$). Therefore, there is need of patient's education in recognizing the warning symptoms of preeclampsia/eclampsia before the women develop one of the grave complications. Most of this death could be avoided if preventive measures were taken and adequate cares were available to them.

Reference

1. Safe Motherhood Programme in Nepal, Making safe motherhood work and programmatic element and challenges, Family Health Division, Department of Health Services, Ministry of Health Nepal 1993.
2. Tuladhar H, Khanal R, Kayastha S. Complication of home delivery. Nepal Med Coll J (NMCJ) 2009;11(3):164-169
3. Vitamin C deficiency linked to preeclampsia. www.nutraingredients.com/Research/Vitamin-C-deficiency-Linked-to-Preeclampsia accesed on 01/01/ 2012
4. Demography Health Survey Nepal, Ministry of Health and Population Government of Nepal Kathmandu, 2006
5. Knowledge for Health. General Pre/ Eclampsia Situation in Nepal, Preliminary Report 2010. https://www.k4health.org accessed on 01/01/2012
6. Attiya A, Taj M, Shaheryar H, Sadia H. Neonatal outcome in preeclamptic patient. J Ayub Med Coll Abbottabad 2009; 21 (2): 53-55.
7. Duley L. Preeclampsia and hypertensive disorder of pregnancy. Br Med Bull 2003; 67(1): 161 – 176.
8. Demography and Health Survey, Ministry of Health and Population of Nepal 2011.
9. Coppaqe KH, Polzin WA. Severe eclampsia and delivery outcome; is immediate cesarean delivery beneficial. Am J Obstet Gynecol 2002; 186: 921-3
10. Allen VM, Joseph K, Murphy KE Magee LE, Ohlsson A. The effect of hypertensive disorder in pregnancy on small for gestational age and stillbirth, a population based study, BMC Pregnancy Childbirth 2004 ;6:17