



**Research Article**

**THE MATERNAL AND NEWBORN OUTCOMES THROUGH ASSISTED DELIVERY VERSUS NORMAL DELIVERY IN A SELECTED HOSPITAL IN SHIMLA HIMACHAL PRADESH**

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Assisted delivery, vaginal delivery, maternal outcome, newborn outcome.

**ABSTRACT**

The aim of this study is to reduce complication associated morbidity and mortality of mother and newborn having assisted delivery/normal delivery. A comparative Research design was used to compare the mother and newborn outcome. Sample size was 52 mothers and their newborns. Result revealed that 88.3% neonates had scalp injury, abrasion, bruising. 50% newborns had cephalohematoma by vacuum extraction delivery. Jaundice was found 50% in both normal and assisted delivery. Newborns on phototherapy for treatment of jaundice in assisted delivery was 50% and in normal delivery it was 36.9%. Newborns were admitted in NICU in assisted delivery was 53.8% but in normal delivery only 26.9% newborn admitted in NICU. Findings revealed that newborn outcome with assisted /normal delivery shows significant difference. Fall in hemoglobin, after delivery was statistically significant associated with assisted versus normal delivery ( $p < 0.005$ ).

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**INTRODUCTION**

The safety of the baby and woman during delivery are of utmost importance. In this context, the role of a nurse is to collaborate with obstetrician in conducting normal or assisted delivery. The goal of obstetrical care is to have safe delivery, Reede M & Koniak G (2014) assisted delivery can be of three types such as using forceps or vacuum and caesarean birth. Role of the nurse is to collaborate with obstetrician in conducting normal and assisted delivery. The goals of obstetrical care are to have safe delivery. The forceps are used to provide traction and rotation on foetal head when unaided expulsion efforts of the women are insufficient. Mother and new born are at the risk for potential complications with a forceps delivery such as injury to maternal soft tissue, vagina, cervix and uterus leading to mild to severe lacerations and bleeding

Stock (2013) in Scotland to know the delivery and to estimate the rates of early neonatal and maternal complications. Some of neonates were admitted to the neonatal unit. Some of neonates had one or more complications that could be attributable to traumatic delivery. The sample size was 1000 women in which (0.8%) had a diagnosis of neonatal encephalopathy. postpartum haemorrhage rates after rotational forceps deliveries where (11.2 %).

It was higher than ventouse delivery. Whereas the neonatal seizure and 3rd or 4th degree perineal tear were also lower in vacuum extraction delivery. The result shows that vacuum extraction is safer method to get better outcome in mother and neonate.

Shekhar S, *et al.* (2012) conducted a prospective randomized study to compare maternal and Foetal Effects of assisted delivery that is Forceps Delivery and Vacuum Extraction conducted in state hospital Shimla H.P. The sample size was 100 eligible women requiring assisted vaginal delivery in the second stage of labour were randomized to deliver by forceps or vacuum extraction. The outcome was measured all of those allocated to forceps delivery actually delivered with the allocated instrument (100 % delivery rate in forceps vs. 90 % in VE). However, maternal trauma (40 % in forceps vs. 10 % in VE,  $p < 0.001$ ), use of analgesia ( $p < 0.001$ ), and blood loss at delivery (234 ml in VE vs. 337 ml in forceps group,  $p < 0.05$ ).

**Statement of the Problem**

A Comparative Study To Assess The Maternal And Newborn Outcomes Through Assisted Delivery Versus Normal Delivery In A Selected Hospital In Shimla Himachal Pradesh

**Objectives**

1. To assess maternal outcomes in women having assisted delivery versus normal delivery.
2. To assess newborns outcomes in babies born after assisted delivery versus normal delivery.
3. To compare maternal outcomes in between women having assisted delivery versus normal delivery.

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- To compare new born outcome between assisted delivery versus normal delivery
- To associate maternal outcome having assisted delivery versus normal delivery- with selected personal health variable of mothers.

**METHODOLOGY**

**Research approach-** Quantitative research approach.

**Research design-** Comparative Research Design.

**Research settings-**Kamla Nehru Hospital Shimla, Himachal Pradesh.

**Rarget population-**Mothers through assisted delivery versus normal delivery and their newborns, age group (21-35) years.

**Sampe technique-**Purposive sampling technique

**Independent variables:** Forceps, vacuum/ normal vaginal delivery

**Dependent variables:** Maternal and newborn outcome

**Criteria for sample selection**

**Inclusion Criteria:**

- Mothers who understand English or Hindi.
- Newborn babies born with assisted versus normal delivery.

**Exclusion Criteria**

- Mothers delivered with caesarean section delivery.
- Mothers who were not willing to participate in the study.

**Description of the tool**

**Section A:** Health profile of mothers which includes age, type of delivery, height, blood pressure, level of Hb before delivery, level of Hb fall after delivery, parity, history of medical illness ,period of gestation, bad obstetrical history, indication of assisted delivery, type of forceps used, type of vacuum used and duration of hospital stay.

**Section B:** Observation check list to assess maternal outcome having assisted delivery versus normal delivery.

**Section C:** Newborns profile which contain APGAR score, birth weight, sex of newborn, term of newborns, complications and duration of hospital stay in days.

**Section D:** Observation check list to assess newborns outcome having assisted delivery versus normal delivery

**External content validity**

- 3: Nursing personnel expert in (OBG) from S.N.N.C. I.G.M.C, Shimla.
- 3: Medical personnel: expert in (OBG) from KNH, Shimla.

**Ethical consideration**

Permission was obtained from the research and ethical committee of the Eternal University, Baru Sahib. Permission was obtained from ethical committee of KNH Hospital Shimla. Permission was obtained from medical superintendent of KNH Hospital Shimla. Before the conduction of study, consent was taken from the study participants

**RESULTS AND DISCUSSION**

**To assess maternal outcome in women having assisted delivery versus normal delivery**

Episiotomy was given in all patients 52(100%). who had assisted delivery as well as normal delivery. Extension of episiotomy was given to 17 (66.7%) mothers in assisted

delivery whereas in normal delivery it was given to only 1(3.8%) mother. Perineal tear occurred in 10 (38.5%) mothers whereas 2(15.4%) mothers had perineal tear in normal delivery. Big babies were born with assisted delivery 10(38.5%) and 2 (11.5%) big babies were born through normal delivery.

**Frequency and percentage distribution of newborn outcome in babies born after assisted delivery versus normal delivery**

12(46.1%) newborns in assisted delivery had APGAR score 0-5 which showed respiratory distress in assisted delivery as compared to normal delivery in which only 4(15.38%) newborns suffered from respiratory distress. 4(15.38%) babies were born with birth weight of 4 Kgs in assisted delivery where as 2(7.6%) babies in normal delivery weighed 4 Kgs. Findings showed that maximum babies born with birth weight of less than 3 Kgs. Maximum number of newborns 11(42.3%) had neonatal asphyxia in assisted delivery after birth, but in normal delivery 6(23.15%) newborns suffered from neonatal asphyxia .

**To compare newborn outcome between assisted delivery versus normal delivery**

23 (88.3%) neonates had scalp injury, abrasion, bruising but it was zero was in normal delivery. Scalp injury, abrasion, bruising were more in assisted delivery. 13(50%) newborns had Cephalohematoma by vacuum extraction delivery and 13 (50%) newborns had Facial injury / Forceps marks, in forceps delivery. 17 (65.4%) newborns had Jaundice in normal delivery and in assisted delivery 13 (50%). Newborns had Jaundice. 13(50%) newborns were on Phototherapy for treatment of jaundice in assisted delivery and in normal delivery 9 (36.9%) newborns were on Phototherapy.

**To compare maternal outcome in between women having assisted/ normal delivery**

**Table No 1** Frequency & percentage of maternal outcome through assisted delivery versus normal delivery

No=52

sr. no	Statement	Assisted (f) (%)	Normal (f) (%)
1	Mal presentation /Mal position	4 15.4	3 11.5
2	Big baby	10 38.5	3 11.5
3	Amount of blood loss	24 92.3	24 92.3
4	Perineal tear	10 38.5	2 15.4
5	Episiotomy is given	26 100.0	26 100.0
6	Extension of Episiotomy	17 65.7	1 3.8
7	Vaginal laceration	2 7.7	7 26.9
8	Cervical tear	7 26.9	2 7.7
9	Vulvo vaginal hematoma	6 23.1	2 7.7
10	Paraurthral tear	0 0	0 0
11	Pelvic nerve palsy	0 0	4 15.4
12	Post partum haemorrhage	4 15.4	3 11.5
13	Any symptoms of shock	3 11.5	1 3.8
14	Condition of perineum is healthy	6 23.1	2 7.7
15	Infection	3 11.5	2 7.7
16	Fever	4 15.5	1 3.8
17	Condition of episiotomy wound	4 15.4	22 84.6
18	Postpartum blue/psychosis/depression	0 0	1 3.8

Table1:Episiotomy: were given in all patients assisted as well as normal delivery (100%), but extension of episiotomy occurred in assisted delivery in 17 mothers that is (66.7%), whereas in normal delivery 1 mother got extension of

episiotomy (3.8%). Perineal tear: occurred in 10 mothers in assisted delivery, (38.5%), whereas 2 Perineal tear occurred in normal delivery (15.4%). Big babies: Ten big babies were found in assisted delivery (38.5%) and 2 big babies found in normal delivery (11.5%). Cervical Tear: Seven mothers suffered from cervical tear, (26.9%) in assisted delivery as compared to normal delivery only 2 mothers suffered from cervical tear (7.7%). Vaginal hematoma : Six mothers had Vulvo vaginal hematoma in assisted delivery (23.1%) and in normal delivery it was notified that 2 mothers had same complications (7.7%). Postpartum haemorrhage: Four mothers had postpartum haemorrhage in assisted delivery as compared to normal delivery 3 mothers had Postpartum haemorrhage after delivery (11.5%). Shock: Three mothers had symptoms of shock in assisted delivery whereas 1 mother had similar complications in normal delivery (3.8%). Postpartum psychosis: One mother went into postpartum psychosis in normal delivery (3.8%). Presentation /malposition: Four mothers had mal presentation /malposition at the time of assisted delivery, that is (15.4%) and 3 mothers had similar problems in normal delivery (11.5%).

Findings revealed that extension of episiotomy shows significant difference in assisted delivery/normal delivery as 50%. H<sub>1</sub> stated earlier was accepted (p<0.001) for extension of episiotomy and for other maternal outcome, H<sub>1</sub> stated earlier was rejected.

**To compare newborn outcome after assisted/ normal delivery**

**Table no 2** Frequency & percentage of newborn outcome after assisted delivery versus normal delivery. N=52

Sr. No	Statements	Assisted		Normal	
		f	%	f	%
1	Scalp injury	3	11.5	0	0
2	Abrasion	23	88.5	0	0
3	Bruising	23	88.3	0	0
4	Cephalhematoma	13	50.0	0	0
5	Facial injury	13	50.0	0	0
6	Forceps marks	13	50.0	0	0
7	Face bone fracture	0	0	0	0
8	Nerve palsies	0	0	0	0
9	Jaundice	13	50.0	17	65.4
10	Sin of intracranial haemorrhage	0	50.0	0	0
11	Admission in newborn nursery	6	23.1	2	7.6
12	Admission in newborn NICU	14	53.8	7	26.9
13	Congenital abnormality	0	0	0	0
14	Phototherapy	13	50.0	9	36.9

**Table no 3** Comparison of maternal outcomes between women after assisted delivery versus normal delivery. N=52

Maternal outcome	Study groups	Mean	Std. Deviation	Calculated T-value	df	F ratio	'p' level
Malpresentation/ malposition	Normal delivery group	0.12	0.33				
	Assisted delivery: vacuum & forceps	0.15	0.37	-0.40	50	3.46	0.69
Big baby	Normal delivery group	0.12	0.33				
	Assisted delivery: vacuum & forceps	0.38	0.50	-2.31	50	3.46	0.02
Amount of blood loss	Normal delivery group	0.92	0.27				
	Assisted delivery: vacuum & forceps	0.92	0.27	0.00	50	3.46	1.00
Perineal tears	Normal delivery group	0.15	0.37				
	Assisted delivery: vacuum & forceps	0.38	0.50	-1.91	50	3.46	0.06
Episiotomy is given	Normal delivery group	1.00	0.00				
	Assisted delivery: vacuum & forceps	1.00	0.00	0.00	50	3.46	1.00
Extension of episiotomy	Normal delivery group	0.04	0.20				
	Assisted delivery: vacuum & forceps	0.65	0.49	-6.00	50	3.46	<0.001*
Vaginal tear	Normal delivery group	0.73	0.45				
	Assisted delivery: vacuum & forceps	0.92	0.27	-1.86	50	3.46	0.07
Cervical tear	Normal delivery group	0.08	0.27				
	Assisted delivery: vacuum & forceps	0.27	0.45	-1.86	50	3.46	0.07

T=3.46. \*\* Significant at the level of p=0.001

Table 2: scalp injury: scalp injury abrasion, brushing were more in assisted delivery, 23 neonates, that is, (88,3%) but zero were in normal delivery. Cephalohematoma: thirteen newborns had Cephalhematoma by vacuum extraction delivery, (50%), whereas 13 newborns had Facial injury / Forceps marks, in forceps delivery that is (50%). Jaundice: seventeen newborns had Jaundice in normal delivery, (65.4%) as compared to assisted delivery in which 13 newborns had Jaundice, (50%). Phototherapy: thirteen newborns were on Phototherapy for treatment of jaundice, (50%) in assisted delivery, as compared to normal delivery 9 newborns were on Phototherapy, (36.9). Admitted in NICU: fourteen newborns were admitted in NICU in assisted delivery, (53.8%) due to different complications, as compared to normal delivery in which only 7 newborns were admitted in for different complications NICU (26.9%). **Oxygenation:** six newborns were admitted in newborn nursery for oxygenation in assisted delivery and 2 newborns were also admitted in newborn nursery for oxygenation in normal delivery. Findings suggested that assisted delivery have more complication/ morbidity in comparison to normal delivery. Findings revealed that newborn outcome with assisted /normal delivery shows significant difference and hence H<sub>2</sub> stated earlier is accepted (p<0.001).

**DISCUSSION**

Various studies conducted by different researchers in the field of assisted delivery versus normal delivery, using vacuum, forceps, and caesarean has shown that the complications associated with each strategies. Current study will compare the finding of assisted deliveries to normal vaginal delivery The purpose of my study is to identify the better outcome in both the methods as to which method had less complication and which has more in assisted delivery versus normal delivery.

**The first objective of this study is maternal outcome in women having assisted delivery versus normal delivery**

Present study depicts that extension of episiotomy maximum were in assisted delivery. Seventeen mothers that is, (66.7%), in normal delivery one mother was got extension of episiotomy (3.8%). Perineal tear were occurred in ten mothers in assisted delivery (38.5%), two Perineal tear were occurred in normal delivery (15.4%).

Ten big babies were in assisted delivery (38.5%) and two big babies were found in normal delivery (11.5%). Seven mothers were suffered from cervical tear (26.9%) in assisted delivery as compared to normal delivery only two mothers were had cervical tear (7.7%) in normal delivery. six mothers were had Vulvo vaginal hematoma in assisted (23.1%) and in normal delivery it was notified in two women (7.7%). Different degree of maternal trauma occur with all instruments. That vacuum results less maternal trauma than forceps.

B. R, Johanson *et al*(1993) Supportive studies depict that maternal tissue trauma were 39 % in forceps group and 23% in vacuum extractions. Herbutya *et al* (2008) also reported higher incidence of extension of episiotomy in forceps group 24% compared to 8%in vacuum extraction.

First hypothesis **H1** is accepted that there is significant difference between maternal outcome through assisted delivery versus normal delivery.

### **Second objective deals with newborn outcomes in babies born after assisted delivery versus normal delivery**

The result depict that the Scalp injury /abrasion/bruising were more in assisted delivery 23 (88.3%) but zero was in normal delivery.13 newborns had 51 Cephalohematoma by vacuum extraction delivery (50%), Whereas Facial injury/Forceps marks were more in forceps delivery that is 13 newborns (50%). Depict that 17 newborn having Jaundice in normal delivery (65.4%) as compared to assisted delivery13 newborn having Jaundice (50%). 13 newborns were given Phototherapy for treatment of jaundice (50%) in assisted delivery as compared to normal delivery 9 newborns were got Phototherapy (36.9). 14newborns admitted in NICU in assisted delivery (53.8%) due to different complication, as compared to normal delivery only 7 newborns were admitted in NICU (26.9%). 6 newborn were admitted in newborn nursery for oxygenation in assisted delivery and 2 newborns were admitted in newborn nursery for oxygenation in normal delivery. Findings suggested that assisted delivery have more complication/ morbidity in comparison to normal delivery.

**RanaMeena.(2012)**, reported that babies born by vacuum had tissue trauma. Cephalohematoma 12%in vacuum delivery and 4% in forceps delivery. Scalp/bruising./abrasion with Vacuum delivery was 12% and in forceps delivery it was 10% .Jaundice in ventouse delivery was 10% and in forceps delivery it was 16% and mean APGAR score (1Min) ventouse delivery was 6-8, and mean APGAR (1min)in forceps delivery it was same 6-8. Hospital stay were, 56% in ventouse and 12% in forceps delivery,2 days hospital stay in all vaginal delivery was notify. Second hypothesis, **H2** is accepted there is significant difference between newborn outcome after birth through assisted delivery versus normal delivery.

### **Third objectives to compare maternal outcome between women after assisted delivery versus normal delivery**

The result depicts that, big size of babies in both study groups was not significant ( $t = -2.31, df=50, p=0.02$ ) which means big size babies were assisted delivery more than in the normal delivery. mean  $\pm$  SD ( $0.12 \pm 0.33$ ) and the mean  $\pm$ SD ( $0.38 \pm 0.58$ ) in assisted delivery. Comparing extension of episiotomy in both study groups was not significant ( $t = -6.00, df,50, p < 0.00^*$ ) means assisted delivery had extension of episiotomy more than the normal vaginal delivery, the mean  $\pm$ SD ( $0.04 \pm 0.20$ ) in normal delivery and in assisted delivery mean  $\pm$ SD ( $0.65 \pm 0.40$ ).

Comparing Perineal tears in both study groups were found not to be significant ( $t = -1.91, df=50, p=1.06$ ) which indicate that Perineal tear was more in assisted delivery 52 than in normal delivery mean  $\pm$ SD ( $0.15 \pm 0.37$ )in normal delivery, whereas in assisted delivery mean  $\pm$  SD ( $0.38 \pm 0.50$ ). Comparing Vaginal tears in both group assisted/normal delivery was found not to be significant ( $t = -1.86, df,50, p=0.07$  which indicate that vaginal tears was more in assisted delivery than in normal delivery. Mean  $\pm$ SD ( $0.73 \pm 0.45$ ) in normal delivery whereas in assisted delivery mean  $\pm$  SD was ( $0.92 \pm 0.27$ ).Comparing Cervical tears in both group assisted/normal delivery was not significant ( $t = -1.86, df,50, p=0.07$ ) which indicates that cervical tears was more in assisted delivery than in normal delivery. mean  $\pm$ SD ( $0.08 \pm 0.72$ ) in normal delivery whereas in assisted delivery was, mean  $\pm$  SD was ( $0.27 \pm 0.45$ ).

## **CONCLUSION**

The present study findings revealed that the assisted delivery had more risk and prolonged hospital stay as compared to the normal delivery. Outcome of newborns was foetal distress, skull bone fracture, ICH, facial injuries, cephalohematoma, scalp injury abrasion, bruising jaundice. Outcomes of mothers was, soft tissue trauma pelvic fracture, PPH, infection, shock, low blood pressure, anaemia due to more blood loss due to large episiotomy wounds, long hospital stay.

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