

## Accidental -out of- hospital deliveries: factors influencing delay in arrival to maternity hospital

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### Abstract

**Objective:** To find out various factors influencing delay in arrival to Shree Panch Ratna Rajya Laxmi Maternity Hospital leading to accidental – out – of hospital delivery **Methodology:** This was a hospital based cross sectional descriptive study conducted at maternity hospital, Kathmandu. Women who delivered on the way to the maternity hospital during the time period- 060/9/1 to 060/12/ 31 (4 months) were interviewed using a structured questionnaire. **Results:** The prevalence of such deliveries was 45 out of 5703 deliveries i.e. 0.78%. Majority of women (n= 37) who had accidental – out – of hospital delivery were of parity 1-2 group (82.22%), whereas 2 of them were primigravida (4.44%) and 6 of them were of group parity 3-4 (13.33%). Economic factor was not responsible for delay for majority of women as they could arrange money immediately in emergency situation (88.88%) and majority of women had personal money saved for use in emergency (71.11%). Accessibility to the hospital was difficult for few women (21.00%) only as many women lived within the ring road of Kathmandu valley (48.88%) or outside the ring road but within municipality area of Kathmandu valley (31.11%). Only 60% of women could get transport easily during daytime only. Eight of them were late due to delay in getting transport (17.77%), whereas five patients were late due to disturbed / diverted traffic (11.11%). In three cases, transport was not available due to Nepal Bundh and delay was due to time taken to arrange ambulance (6.66%). Majority of women came for antenatal visits (84.44%) and most of them came to maternity hospital for antenatal visits (73.33%). Lack of birth preparedness and inadequate counselling during antenatal visits probably contributed towards many A-O-H (65.78%). More than half of patients were not satisfied with health staff during ANC (63.15%). Many women did not have any discussion about place of birth during ANC (73.68%) and many of them had no discussion even in the family (36.84%). Seven patients had probably precipitate labour (15.55%). 4 patients were returned back home with diagnosis of false labour pain (8.88%) and later on they delivered on the way to the hospital. **Summary and conclusion:** Lack of birth preparedness that involves adequate counselling during ANC about symptoms and signs of onset of labour pain and prior decision about place of birth together with delay in getting transport or delay due to diverted traffic were important factors leading to A-O-H. In addition, unusually short duration of labour or dismissing the diagnosis of true onset of labour may have accounted for few cases of A-O-H.

**Key words:** Accidental -out of- hospital deliveries, risk factors

Accidental -out of- hospital deliveries are associated with high rates of perinatal morbidity and mortality. Availability of skilled attendant at birth is extremely crucial to protect not only the mother from life threatening complications arising during childbirth e.g. Post Partum Haemorrhage, but also for the newborn, who might need immediate resuscitation to survive. Delivery can be a planned home delivery where women decide to deliver at home or unplanned birth at home or delivery en-route to the hospital when women enter the active stage of labour rapidly, resulting in accidental out of hospital delivery. Reporting late in the hospital after the onset of labour pain poses grave risk to the mother and the baby of being unattended during delivery on the way to the hospital.

Babies born before arrival {BBA} rate of an area serves as an index of the accessibility of perinatal care<sup>1</sup>. A survey report by Duvkot et al (1994) showed that there were differences in postnatal complications - Post partum haemorrhage {16% v s 4.3%}, retained placenta {21% v s 1.3%} and puerperal sepsis {18% v s 3.4%} between accidental out of hospital deliveries and hospital deliveries. They also reported differences in stillbirth rate {10.5% v s 2.3%} and neonatal death rate {4% v s 2.5%} among A-O-H deliveries and health centre deliveries<sup>2</sup>.

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In Nepal, majority of deliveries occur at home (85%) and untrained friends and relatives conduct 55% of deliveries (NFHS, 1996). Place of birth is usually supposed to be planned beforehand during antenatal visits but only small proportion of pregnant women have regular antenatal care (11%)<sup>3</sup>. In Kathmandu valley, the health care facility is relatively well structured and transport facilities are widely available. Unfortunately, reporting late in labour is surprisingly not uncommon. In fact, many women come to hospital so late in labour that they deliver on the way to hospital either in the taxi or within the hospital premises. Access to maternity hospital is easy but there is occasional system failure e.g. strikes, Bundh etc. There could be delay in decision making by individual or the family. The ability of health staff to predict women at risk of accidental out of hospital delivery is very limited. On the other hand, there may be inadequate counselling and communication during antenatal visits regarding symptoms and signs of the onset of labour. There could be occasional abnormally fast labour called precipitate labour resulting in delivery on the way to hospital.

We conducted this study to determine the prevalence of accidental out of hospital deliveries at maternity hospital and to find out reasons behind this delay in arriving to the hospital.

### **General objective**

This study was done to find out factors influencing delay in arrival after the onset of labour resulting in delivery on the way to maternity hospital.

### **Specific objectives**

1. To find out the magnitude of the problem i.e. prevalence of accidental out of hospital deliveries.
2. To identify various factors that could be responsible for the delay in arrival to the hospital like
  - a. Demographic
  - b. Socio-cultural
  - c. Economic factors
  - d. Accessibility to hospital
  - e. Service factors
  - f. Birth preparedness and pre planning
  - g. Medical factors

### **Methodology**

This was a hospital based cross sectional descriptive study at Maternity Hospital, Kathmandu. 45 women

who delivered on the way to the maternity hospital during time period- 06/09/1 to 06/12/ 31 were interviewed using a structured questionnaire. Women referred from other health facility or women who developed complications at home birth and decided to come to the hospital were excluded from the study.

Different Variables recorded as below:

*Demographic* – Age, marital status, Education of husband and wife, Parity, area of residence, socio-economic class, religion, caste and ethnicity.

*Socio cultural* – Women empowerment, effect of harvesting season/engagement in job.

*Economic factors* - Time factor in arranging money, source of money in emergency.

*Accessibility* – home- hospital distance, travel time, availability of transport

*Service factors* – ANC use and compliance, place of ANC, counselling and information during ANC, satisfaction with hospital services

*Pre-planning and birth preparedness*- Pre-planning about place of birth during ANC, Pre-planning about place of birth with family members.

*Obstetric factors*-Onset of labour-delivery time, Returned back home with diagnosis of false labour.

Pre testing of questionnaire was done for 5 cases of accidental - out of -hospital deliveries at maternity hospital. Data analysis was done by simple manual analysis using frequency and percentage

### **Results**

The prevalence of such deliveries was 45 out of 5703 deliveries i.e. 0.78%.

### **Epidemiological factors**

There were 8 women in 19 years or less age group (17.77 %), 23 women in 20-24 years age group (51.11 %), 11 women in 25-30 years age group (24.44 %) and 3 women in 30 years age group (6.66%).

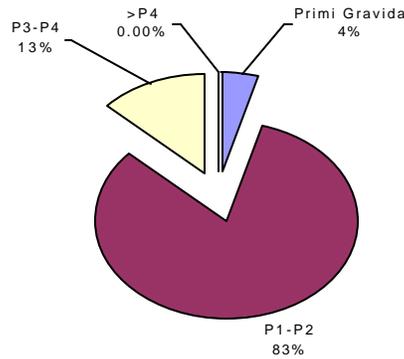
Level of education among patients themselves was as illiterate- 16 (35.55%), primary level – 15(33.33%), middle level – 11(24.44%), higher secondary- 3 (6.66%).

Majority of women (n= 37) who had accidental – out – of hospital delivery were of parity 1-2 group (82.22%), whereas 2 of them were primigravida

(4.44%) and 6 of them were of group parity 3-4 (13.33%).

**Fig. 1 Parity**

Parity



There were 27 patients from urban area (60.00%), whereas 18 patients belonged to rural area (40.00%). Majority of women (n= 29) belonged to middle class group (64.44%), whereas 16 of them were of lower class group (35.55%).

**Socio-cultural factors**

There were 28 women who said that women did play a significant role in decision making in their families (62%). There was only one woman who came late due to engagement in work in carpet factory (2.22%).

More than half of patients (n =27) were Hindus (60.00%), 13 of them were Buddhists (28.88%), whereas 5 of them belonged to other religion (11.11%)

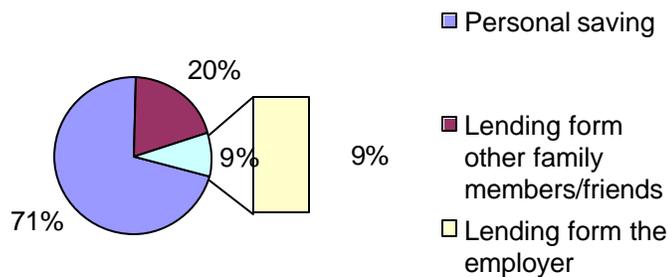
**Economic factors**

Majority of women (n=40) could arrange money immediately in emergency situation (88.88%), 4 of them could arrange within 12 hours (8.88%), whereas only one out of them could not arrange money even at the time of admission (2.22%).

Caste and ethnicity distribution of patients were- 9 Brahmin (20%), 9 Chhetri (20%), 1 Rai (2.22%), 1 Limbu (2.22%), 7 Lama (15.55%), 9 Newar (20%), and 9 others (20%).

**Fig. 2 Source of money in emergency**

Source of money in emergency



Majority of women (n=32) had personal money saved for use in emergency (71.11%), 9 of them had to borrow from friends/family members (20.00%), whereas 4 of them had to lend from the employer (8.88%).

**Accessibility to the Hospital**

Majority of women (n=22) lived within the ring road of Kathmandu valley (48.8%), 14 of them lived outside the ring road but within municipality area (31.1%), 8 of them lived outside the municipality

area but within the Kathmandu valley (17.7%) whereas one of them came all the way from Dhading district i.e. outside the Kathmandu valley (2.22%).

Half of patients (n=22) could reach hospital within 20-40 minutes (48.88%), 15 of them within 40-60 minutes (33.33%) whereas 5 of them could reach hospital within 20 minutes (11.11%). Only 3 of them would take more than one hour to reach hospital (6.66%).

**Table 1** Home – hospital distance

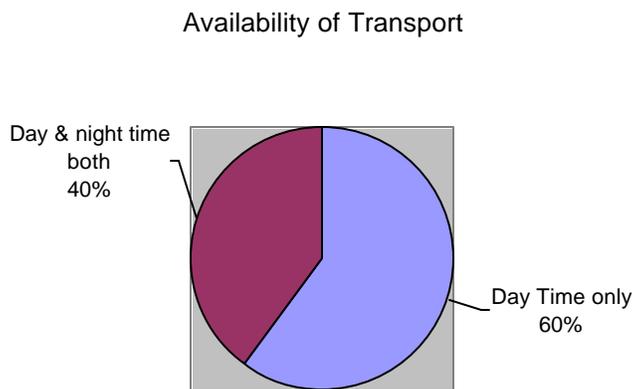
Within ring road	22	48.8 %
Outside reign road but within municipality	14	31.1 %
Outside munic ipality but within valley	8	17.7 %
Outside valley	1	2.2 %

**Transport factor**

More than half of patients (n=27) get transportation easily during day time only (60.00%) whereas 18 of them said that they get transport easily day and night time both (40.00%). 8 of them were late due to delay

in getting transport (17.77%), whereas 5 patients were late due to disturbed / diverted traffic (11.11%). 3 of them said that transport was not available due to Nepal Bundh and delay was due to arranging ambulance (6.66%).

**Fig. 3** Availability of transport



**Service factor**

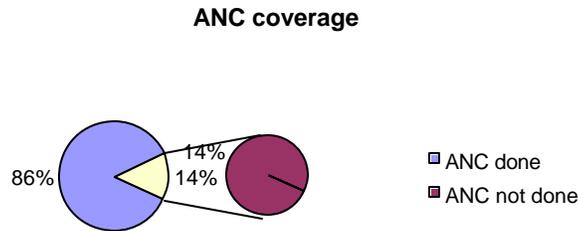
Majority of women (n=38) came for antenatal visits (84.44%), whereas 6 of them had no antenatal care (3.33%). Majority of women (n=33) came to maternity hospital for antenatal visits (73.33%). 3 of them had antenatal care at health post (6.66%), 2 of them at other hospital (4.44%) whereas 1 of them at private clinic (2.22%). Only 15 patients booked early in pregnancy i.e. > 20 weeks of gestation (39.47%)

whereas 23 of them attended first antenatal check up after 20 weeks (60.52%). 23 patients had 3-4 antenatal visits (60.52 %), 14 of them had 1-2 visits (36.84 %) whereas 1 of them came only once (2.63 %). More than half (n=25) said that they were not counselled about signs and symptoms of onset of labour pain during antenatal check up (65.78%), 12 of them said that they were told (31.57%) whereas 1

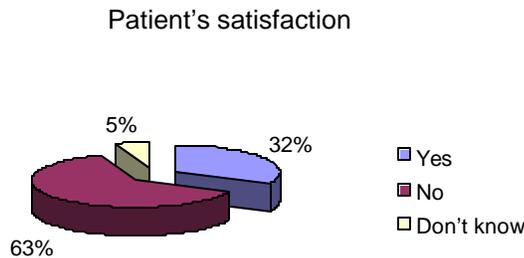
of them responded as don't know (2.63%). More than half of patients (24) responded as they were not satisfied with health staff during ANC (63.15%). 12

of them responded positively (31.57%) whereas 2 of them responded as don't know (5.26%).

**Fig. 4** ANC coverage



**Fig. 5** Patient's satisfaction



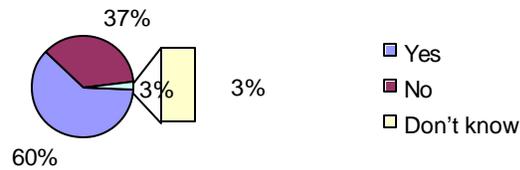
***Birth preparedness and pre planning***

Majority of women (n= 28) did not have any discussion about place of birth during ANC (73.68%). 8 of them had discussion about place of birth (47.50%) whereas 2 of them responded as don't

know (5.26%). More than half of women (n=23) had some discussion with family members regarding place of birth beforehand (60.52%) but 14 of them had no discussion even in the family (36.84%). 1 of them responded as don't know (2.63%).

**Fig. 6** Discussion with family members

Discussion with family members



**Medical factors**

7 patients had probably precipitate labour (15.55%) resulting in A-O-H.

4 patients attended hospital with? Labour pain but returned back home with diagnosis of false labour pain (8.88%) and later on they delivered on the way to the hospital.

**Discussion**

Incidence of A-O-H was found to be 0.78% in this study. In fact, this may represent only tip of the iceberg as many women may have decided to stay back at home due to delay or went back home if delivered on the way. During this study period, there were many strikes and so-called Bundh not only from Maoists but also from other political parties and it is probable that many such deliveries went unreported. Shailesh Core et al (2001) from Mumbai, India reported the incidence of such deliveries to be 0.20 %<sup>4</sup>, whereas it was reported to be as high as 5.3% from Tygerberg hospital by Bester M F et al (1994)<sup>5</sup>. Spillane H et al (1996) found a lower incidence of 0.4% but they included all babies weighing 500 Gms or more<sup>6</sup>. On the other hand, incidence of A-O-H was found to be as high as 2% by Sheiner E et al (2002)<sup>7</sup>.

Women reported to have accidental out of hospital deliveries were mostly young women of 20-24 yrs age group (n=23) but this is not surprising as majority of parturient women in maternity hospital belong to this age group anyway.

Literacy rate in Nepal is quite low and female literacy rate is even lower. Female Illiteracy rate is reported to be around 65% in Nepal (DHS, 2001). In the present study, majority of husbands had primary level of education (n=19), while wives were either illiterate (n=16 i.e.35.55%) or had primary level of education (n=15 i.e.33.33%). Education of husband and wife affects their attitude and beliefs towards health care including inclination towards regular antenatal care and preplanning for childbirth.

Most women who landed up in A-O-H were multigravida (n= 43). First labour is usually prolonged and there is enough time to come to hospital whereas subsequent labours are shorter resulting in unexpected out of hospital delivery. Multiparity is reported to be a risk factor of A-O-H by Shiener E et al (2002)<sup>7</sup>, Vanessa A Rodie et al (2001)<sup>8</sup>, Spillane H et al (1996)<sup>6</sup>, Bester M F et al (1994)<sup>5</sup>.

Present study shows that women who deliver on the way to hospital were mostly of middle socio-economic class (n=29 i.e.64.44%) and lower socio-economic class (n= 16 i.e. 35.55%) that simply reflect the usual class of patients coming to maternity hospital for confinement. King P A et al (1992) reported that low family income group and women of socially disadvantage group tend to have accidental out of hospital delivery<sup>9</sup>. On the other hand, no relationship between social class and race and risk of A-O-H was observed by Vanessa A Rodent et al (2002)<sup>8</sup>.

Socio- cultural factors affect behaviour, attitude and decision making towards seeking health care. We found that women do have role in decision making (n=28 i.e.62.22%) but mostly mother in law takes decision for daughter in law. At least 4 women admitted that delay was due to delay in decision making by family members to go to hospital. This study was not done in harvesting season, but more of such delivery is expected during harvesting period. Only one woman was late due to engagement in work in carpet factory.

Considering economic factors resulting delay in arrival to the hospital, surprisingly, most of them could arrange money immediately in case of emergency situation (n=40). There was only one woman who had no money even at the time of admission and was brought by the neighbour. Majority of them had personal savings (71.11%). These findings suggest that delay in arrival was mostly not due to financial reason and financial

preparation was made beforehand to be used for emergency.

Accessibility to the hospital contributes to determine the time of arrival to the hospital. Present study shows that almost 50% of women lived within the ring road of Kathmandu (n=22 i.e.48.88%) and would normally reach hospital within 20-40 minutes (n=22 i.e. 48.88%). Only one patient came from outside the valley (Dhading district). Many of them said that transport is available easily only during day-time (n=27 i.e.60%). These findings suggest that lack of transport and long travel time was responsible for delay in arrival for few patients. Delay in getting access to transport at night, particularly on holidays, could contribute to delay in arrival as reported by Shailesh Core et al (2001) <sup>4</sup>. Vanessa A Rodie et al (2001) did not find any relationship between A-O-H and geographical distance from the patient's home to the delivery room <sup>8</sup>. On the other hand, lack of transport was reported to be a causative factor of A-O-H by Bester M F et al (1994) <sup>5</sup>. Delay in getting transport was responsible for delay in arrival in 8 cases; Whereas 5 patients were late due to disturbed/diverted traffic. Three patients said that transport was not available due to strike/holiday. Availability of transport is one of them most important factor influencing delay in arrival to the hospital. In Nepal, so-called Bundh is so common nowadays that transport is either not available or getting transport is extremely difficult. Political parties processions results in diverted traffic causing unnecessary delay in arrival to the hospital.

Lack of prenatal care as a risk factor for A-O-H was reported by King P A et al (1992) <sup>9</sup>, Bester M F et al (1994) <sup>4</sup>, Vanessa A Rodie et al (2001) <sup>8</sup>, Mascovitz H C et al (2000) <sup>10</sup>, but surprisingly in this study, majority of women had antenatal care (n=38 i.e.84.44%) and most of them came to maternity hospital for ANC. (n=33 i.e. 73.33%). These findings suggests that coming for regular antenatal care did not avoid risk for A-O-H Probably other factors like inadequate birth preparedness despite antenatal visits played role in determining time of arrival to the hospital. Moreover, further inquiry revealed that more than 50% of patients (n=25) were not adequately counselled about symptoms and signs of onset of labour pain. To assess the quality of ANC, patients were asked whether they were satisfied with health staff during antenatal visits, but almost half of them responded by saying no (n=24 i.e.53.33%). Furthermore, inquiry about pre-planning regarding place of birth revealed that majority of women had no prior discussion with health staff (n=28 i.e.62.22%). In fact, only half of them (n=23 i.e.51.11%) had

discussion with their family members about planning for place of delivery. These findings suggest that birth preparedness was not satisfactory among women who landed up in A-O-H and birth preparedness was not given importance by health staff also during ANC.

Regarding medical factors, 7 out of 45 women (15.55%) experienced unusual short duration of labour (2 hour or less) resulting in delivery before arrival to hospital. Precipitate labour is unexpected and may not be avoidable, but history of such labour during ANC warns the clinician about possibility of A-O-H in subsequent pregnancy. Four women were returned back with the diagnosis of false labour pain within 24 hours and they were hesitant to report when true labour started and ended up in A-O-H. Careful assessment of onset of true labour and observation for few more hours may have avoided A-O-H in these women.

### Recommendations

1. Birth preparedness including plan for place of delivery should be discussed during antenatal visits.
2. Clients should be clearly explained about symptoms and signs of onset of labour and need for a check up in this situation.
3. Women and their family should be explained about need for arrangement of money in situation. Arrangement for transport should also be sorted out beforehand especially in strikes. Family should be explained and informed about ambulance facility and important telephone numbers during antenatal visits.
4. Routine history taking should be targeted to find out history of precipitate labour and proper arrangement should be made for these clients. Clinicians should be very careful in dismissing the diagnosis of onset of labour pain.
5. Clients should be made aware of A-O-H during antenatal visits and be taught about measures to avoid this.

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### References

1. Potter PC, Pelteret R, Reynolds L, Motala A, Kibel MA. Born before arrival. A

- study at the new Somerset hospital, Cape Town. *S Afr Med j.* 1984 Sept 8; 66(10): 377-80
2. Duvekot E, Winjen M. A comparison between health centre deliveries and deliveries born before arrival in the Aitape district. *P N G Med J.* 1994 Sep; 37(3): 173-7.
  3. Family health division, Ministry of Nepal (1996): making safe motherhood work in Nepal; programmatic and elements of challenges. *JNMA*, 1996 vol 34, No118, 119:180-184.
  4. Shailesh Kore, Sanjay Rao, Anita Toke, Geetika Gupta, V R Badhwar. Delivery on wheels *Journal of obst & gyn of India.* Issue nov dec 2001
  5. Bester M E, Van Rensburg MJ. Nursing study on the occurrence of unplanned home births in Tygerberg hospital *Curationis* 1994 Aug; 17(3): 20-3
  6. Spillane H, Khalil G, Turner M. Babies born before arrival at the Coombe women's hospital, Dublin. *Ir Med J* 1996 Mar – Apr; 89(2): 59-9
  7. Sheiner E, Shoha –Vardi I, Hadar A, Hershkovitz R, Sheiner EK, Mazor M. Accidental out of hospital delivery as an independent risk factor for perinatal mortality. *J Reprod Med* 2002 Aug; 47(8): 625-30
  8. Vanessa A. Rodie, Andrew J. Thomson and Jane E. Norman. Accidental out –of–hospital delivery: An obstetric and neonatal case control study *Acta Obstetrica et Gynecologia Scandinavica* january 2002 Vol 81 issue 1 page 50
  9. King PA, Duthie SJ, To W K, Ma HK. Born before arrival- uncovering the hazards. *Aust N Z J Obstet Gynecol.* 1992 Feb; 32(1): 6-9
  10. Moscovitz HC, Magriples U, Keissling M, Schriver JA. Care and outcome of out –of –Hospital deliveries. *Acad Emerg Med.* 2000 Jul; 7(7): 757-61