

4-1-1999

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Recommended Citation

Lerkhachonsul, R. and Limpongsanurak, S. (1999) "Birth on the way to King Chulalongkorn Memorial Hospital," *Chulalongkorn Medical Journal*: Vol. 43: Iss. 4, Article 6.

DOI: 10.58837/CHULA.CMJ.43.4.5

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Birth on the way to King Chulalongkorn Memorial Hospital

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Lertkhachonsuk R, Limpongsanurak S. Birth on the way to King Chulalongkorn Memorial Hospital. Chula Med J 1999 Apr; 43(4): 233-42

- Objective** : *To study the incidence of birth during transportation to King Chulalongkorn Memorial Hospital*
- Study design** : *Descriptive research, prospective and retrospective*
- Setting** : *King Chulalongkorn Memorial Hospital*
- Subjects** : *Pregnant women who delivered during transportation to King Chulalongkorn Memorial Hospital from Jan 1, 1990 to Dec 31, 1994 and from Sept 1, 1995 to Feb 29, 1996*
- Results** : *In the retrospective study during 1990 to 1994, 263 cases delivered during transportation. The incidence was 0.45% of total deliveries (95% CI=0.0036-0.0054). In 238 of the 263 (90.5%) the medical records were received. The distance from their houses to the hospital was more than 5 kms in 71.8% of cases. No antenatal care was provided in 39.9% of the cases. Duration of first and second stages of labour were less than 3 hours in 54.7% of the cases. Mean birth weight was 2,724.5 g. (range 1,010 - 3,870g., S.D.551.5g.). 1.7% were stillborn. There were 6.3% with neonatal infections. Postpartum of maternal complications were 2.5%. Most of the patients were delivered during 6:01-9:00 am (18.5%).*

In the prospective study, the incidence of birth during transportation was 0.59 % (95% CI = 0.0040-0.0078) and 18.9% had no antenatal care. Duration of first and second stages of labour was less than 3 hours in 54.1%. The average time in transportation was 75.6 mins (range 20-180 mins., S.D.42.2 mins.) Mean birth weight was 2,866.22 g. (range 1,300-3,660 g., S.D.474.16 g.) The stillbirth rate was 2.7%. Most of the patients delivered during 6:01-9:00 pm (24.3%).

Conclusions : *The incidence of birth during transportation to King Chulalongkorn Memorial Hospital was 0.45%. Most were delivered within 3 hours of labour.*

Key words : *Birth on the way to hospital, Child delivery.*

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Received for publication. January 7, 1999.

เรื่องศักดิ์ เลิศขจรสุข, สมภพ ลิ้มพงศานุรักษ์. การคลอดระหว่างเดินทางมาโรงพยาบาลจุฬาลงกรณ์. จุฬาลงกรณ์เวชสาร 2542 เม.ย; 43(4): 233-42

- วัตถุประสงค์** : ศึกษาการคลอดระหว่างเดินทางมาโรงพยาบาลจุฬาลงกรณ์
- รูปแบบการวิจัย** : การวิจัยเชิงพรรณนา เก็บข้อมูลแบบย้อนหลังและไปข้างหน้า
- สถานที่ทำการวิจัย** : โรงพยาบาลจุฬาลงกรณ์
- กลุ่มตัวอย่าง** : สตรีที่คลอดระหว่างเดินทางมาโรงพยาบาลจุฬาลงกรณ์ ในช่วงระหว่าง 1 มกราคม 2533 ถึง 31 ธันวาคม 2537 และ 1 กันยายน 2538 ถึง 29 กุมภาพันธ์ 2539
- ผลการวิจัย** : การศึกษาย้อนหลัง 5 ปี ระหว่างปี 2533 ถึง 2537 มีการคลอดระหว่างเดินทางมาโรงพยาบาล 263 ราย คิดเป็นร้อยละ 0.45 ของการคลอดทั้งหมด (95% CI=0.0036-0.0054) รวบรวมเวชระเบียนได้ 238 ราย (ร้อยละ 90.5) ร้อยละ 39.9 ไม่เคยฝากครรภ์ ร้อยละ 71.8 มีระยะทางระหว่างที่พักกับโรงพยาบาลมากกว่า 5 กม. ร้อยละ 54.7 มีช่วงระยะเวลาตั้งแต่เจ็บครรภ์จนถึงเด็กคลอด น้อยกว่า 3 ชั่วโมง น้ำหนักเด็กแรกคลอดเฉลี่ย 2724.5 กรัม (พิสัย 1,010-3,870 กรัม, S.D. 551.5 กรัม) มีเด็กตายคลอด 4 ราย (ร้อยละ 1.7) ภาวะแทรกซ้อนของเด็ก พบว่ามีภาวะติดเชื้อร้อยละ 6.3 มารดามีภาวะแทรกซ้อนหลังคลอดร้อยละ 2.5 ช่วงระยะเวลามีผู้ป่วยคลอดระหว่างเดินทางมาโรงพยาบาลมากที่สุดคือ ช่วง 6:01-9:00 น. มีร้อยละ 18.5
- ในการศึกษาแบบไปข้างหน้า 6 เดือน พบว่ามีการคลอดระหว่างเดินทางมาโรงพยาบาลจุฬาลงกรณ์ ร้อยละ 0.59 ของการคลอดทั้งหมด (95% CI= 0.0040 - 0.0078) ร้อยละ 18.9 ไม่เคยฝากครรภ์ ร้อยละ 54.1 มีช่วงระยะเวลาตั้งแต่เจ็บครรภ์จนถึงเด็กคลอด น้อยกว่า 3 ชั่วโมง ใช้เวลาเดินทางเฉลี่ย 75.6 นาที (พิสัย 20 - 180 นาที, S.D. 42.2 นาที) น้ำหนักเด็กแรกคลอด เฉลี่ย 2,866.22 กรัม (พิสัย 1,300 - 3,660 กรัม, S.D. 474.16 กรัม) มีเด็กตายคลอด 1 ราย (ร้อยละ 2.7) ช่วงระยะเวลามีผู้ป่วยคลอดระหว่างเดินทางมาโรงพยาบาลมากที่สุด คือ ช่วง 18:01-21:00 น. มีร้อยละ 24.3
- สรุป** : การคลอดระหว่างเดินทางมาโรงพยาบาลจุฬาลงกรณ์พบร้อยละ 0.45 ของการคลอดทั้งหมด ส่วนใหญ่มีระยะเวลาเจ็บครรภ์จนถึงคลอดน้อยกว่า 3 ชั่วโมง
- คำสำคัญ** : การคลอดระหว่างเดินทางมาโรงพยาบาล

The severity of traffic problem in Bangkok gets worse every year. This may relate to accidental delivery rates while on the way to the hospital, and which was the origin of this study.

A previous study, reported only the incidence of birth before arrival (BBA), which includes home birth and birth on the way to hospital. The incidence of BBA varies. Weir PE. reported an incidence of BBA of 0.14% of total delivery cases.⁽¹⁾ But Bhoopalam PS. reported an incidence of BBA of 0.44%.⁽²⁾ Thus birth on the way to the hospital varies from 18-45%.⁽²⁻¹¹⁾

Deliveries at home and deliveries on the way to the hospital have different causes. This study focuses on births on the way to hospital. We designed a descriptive study to cover the general data. But the medical records are limited hence, we conducted both a retrospective and prospective study. The data from these two sources will guide the overview of this problem and lead to further study.

Materials and Methods

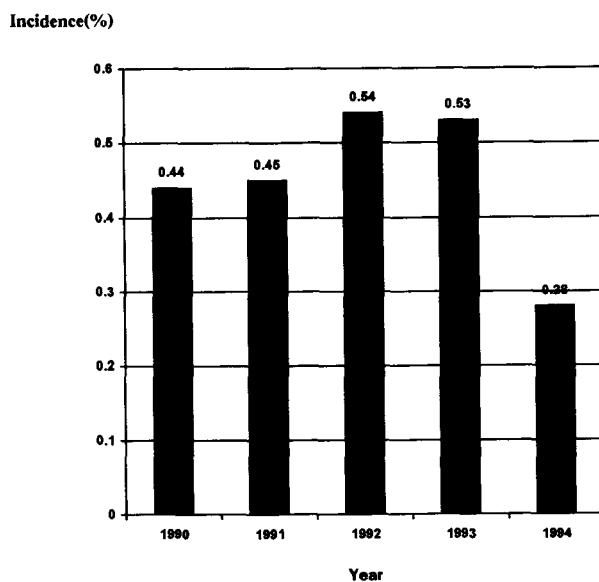
The descriptive study was done. In the

retrospective study, the medical records of women who delivered on the way to Chulalongkorn Hospital between January, 1990 and December, 1994 were reviewed. And interviews were conducted with the women who delivered on the way to Chulalongkorn Hospital from September, 1995 to February, 1996 in the prospective study. Personal, transportation, obstetrics and newborn data were collected. Descriptive statistics were carried out on the data where it was appropriate by using the SPSS V.6.1 program for Microsoft Windows.

Results

In the retrospective study, there were 263 cases of birth on the way to the hospital from total births 58,755 (0.45%), which was statistically significant, 95% CI=0.0036-0.0054. We collected 238 medical record files (90.5%). In the prospective study, there were 37 cases of birth on the way to the hospital from 6,248 total births (0.59%), 95% CI=0.0040-0.0078.

The highest incidence was 0.54% in the year 1993 and the lowest in 1996 (Diagram 1).



When we showed the incidence by month, the subjects had low income and low education the highest incidence was in November (0.62%) and levels. the lowest in September (0.33%) (Diagram 2).

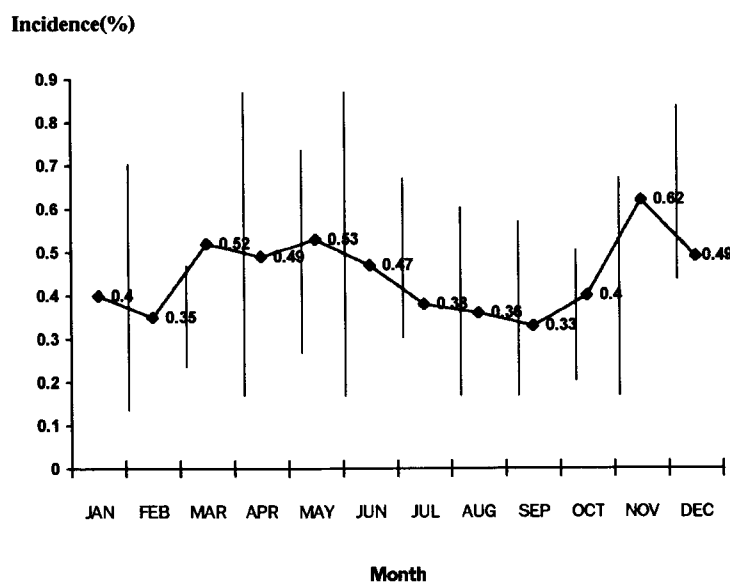


Diagram 2. The monthly incidence of birth on the way to the hospital (N = 263).

General data

In the 238 cases of the retrospective study, the mean maternal age was 25.6 years old (rang 14-40, S.D. 5.5). Most of the subjects were housewives (31.5%). In the prospective study, the mean maternal age was 25.7 years (range 18-37, S.D. 5). Most of

Transportation data

The distance from their residence to the hospital was in the range of 5-9 kms. for 32.1% in the retrospective study. The median travel time to the hospital was 70 mins. Most came to the hospital by taxi (89.2%).

Table 1. Transportation data.

| Data character | Retrospective (n = 238) | Prospective (n = 37) |
|------------------|-------------------------|----------------------|
| Distance (%) | | |
| 1-4 kilometres | 14.7 | 13.5 |
| 5-9 kilometres | 32.1 | 45.9 |
| 10-14 kilometres | 28.2 | 29.7 |
| >15 kilometres | 12.6 | 10.8 |
| Missing data | 12.4 | - |

Table 1. (Continous).

| Data character | Retrospective (n = 238) | Prospective (n = 37) |
|----------------------------|-------------------------|----------------------|
| Transportation time (mins) | | |
| Median | - | 70 |
| Range | - | 20-180 |
| S.D. | - | 42.2 |
| Companion (%) | | |
| Husband | - | 51.4 |
| Cousin | - | 13.5 |
| Neighbour | - | 29.7 |
| Patient | - | 2.7 |
| Charity | - | 2.7 |

Obstetrics data

In the retrospective study, most of the cases were multiparity (76.5%) and 39.1% never had antenatal care. The median time for first and second stages of labour was 160 mins.(range 25-860). Precipitated labour included 57.4% of all cases. 19% had prolonged third stages of labour. Vaginal injuries of at third degrees tear occurred 0.4%. The incidence of birth on the way to the hospital was highest between 6AM to 9AM (18.5%) and lowest between 12AM to 3PM (7.6%). Most of the cases had no

postpartum complication (97.9%).

In the prospective study, 75.6% were multiparity. 8.1% had repeated incidences of birth on the way to the hospital. 18.9% never had antenatal care.The median time for first and second stages of labour was 170 mins (range 30-550). 32.4% had prolonged third stages of labour. The incidence of birth on the way to the hospital was highest between 6PM to 9PM (24.3%) and lowest between 12AM to 3PM (2.7%). Most of the cases had no postpartum complication (91.9%).

Table 2. Number of parity.

| Number of parity (%) | Retrospective (n = 238) | Prospective (n = 37) |
|----------------------|-------------------------|----------------------|
| 0 | 23.5 | 24.3 |
| 1 | 42.0 | 40.5 |
| 2 | 23.9 | 35.1 |
| 3 | 8.4 | - |
| 4 | 1.7 | - |
| 5 | 0.4 | - |

Table 3. Number of ANC.

| Number of ANC | Retrospective (n = 238) | Prospective (n = 37) |
|---------------|-------------------------|----------------------|
| 0 | 39.1 | 18.9 |
| 1 | 9.2 | 16.2 |
| 2 | 7.1 | 8.1 |
| 3 | 10.1 | 13.5 |
| 4 | 9.2 | 2.7 |
| 5 | 7.1 | 13.5 |
| 6 | 5.5 | 13.5 |
| 7 | 5.0 | 8.1 |
| 8 | 2.9 | - |
| 9 | 2.1 | 2.7 |
| 10 | 0.8 | - |
| 11 | 1.3 | - |
| 12 | 0.4 | 2.7 |

Table 4. Labour data.

| Data | Retrospective (n = 238) | Prospective (n = 37) |
|------------------------------------|-------------------------|----------------------|
| Duration of first & second stage | | |
| Median (mins) | 160 | 170 |
| Range (mins) | 25-860 | 30-550 |
| Precipitated labour (< 3 hrs.) (%) | 57.4 | 54.1 |
| Duration of third stage | | |
| Median (mins) | 15 | 21 |
| Range (mins) | 2-90 | 5-80 |
| Duration less than 30 mins.(%) | 81.0 | 67.6 |

Table 5. Degree of vaginal tear.

| Degree of vaginal tear (%) | Retrospective (n = 238) | Prospective (n = 37) |
|----------------------------|-------------------------|----------------------|
| No tear | 27.7 % | 29.7% |
| First degree | 31.9% | 27.0% |
| Second degree | 39.9% | 43.2% |
| Third degree | 0.4% | - |

Table 6. Postpartum complication.

| Complication (%) | Retrospective (n = 238) | Prospective (n = 37) |
|-------------------------|-------------------------|----------------------|
| No complication | 97.9% | 91.9% |
| Anemia | 0.4% | - |
| Endometritis | 0.8% | - |
| Postpartum hemorrhage | 0.4% | - |
| Preeclampsia | 0.4% | 5.4% |
| Urinary tract infection | - | 2.7% |

Newborn data

In the retrospective study, the stillbirth rate was 17/1000 births. The mean birth weight was 2,724.5 g. (range 1,010-3,870 g., S.D. 551.5 g.). 24.4% were small for their gestational age. 11.3% were preterm by Ballard's score. Newborn complications were jaundice 18.5%, infection 6.3%, polycythemia 4.6%, respiratory distress syndrome 3.8%, hypothermia 2.1%, stillborn 1.7%, abandoned child 1.3%, neonatal death 0.8%, and subgaleal hematoma 0.4%.

In the prospective study, the stillbirth rate was 27/1000 births. The mean birth weight was 2,866.2 g. (range 1,300-3,600 g., S.D. 474.2 g.). 16.2% were small for their gestational age. 10.8% were preterm by Ballard's score. Newborn complications were jaundice 10.8%, hypothermia 10.8%, polycy-themia 5.4%, respiratory distress syndrome 5.4%, and stillborn 2.7%

Table 7. Newborn data.

| Character | Retrospective (n = 238) | Prospective (n = 37) |
|-----------------------------|-------------------------|----------------------|
| Male (%) | 48.3 | 45.9 |
| Female (%) | 51.7 | 54.1 |
| Stillbirth rate | 17 | 27 |
| Birth weight (g.) | 2,724.5 | 2,866.2 |
| Range (g.) | 1,010-3,870 | 1,300-3,600 |
| S.D. | 551.5 | 474.2 |
| Birth weight <2500 g.(%) | 24.4 | 16.2 |
| Gestation age < 37 week (%) | 11.3 | 10.8 |

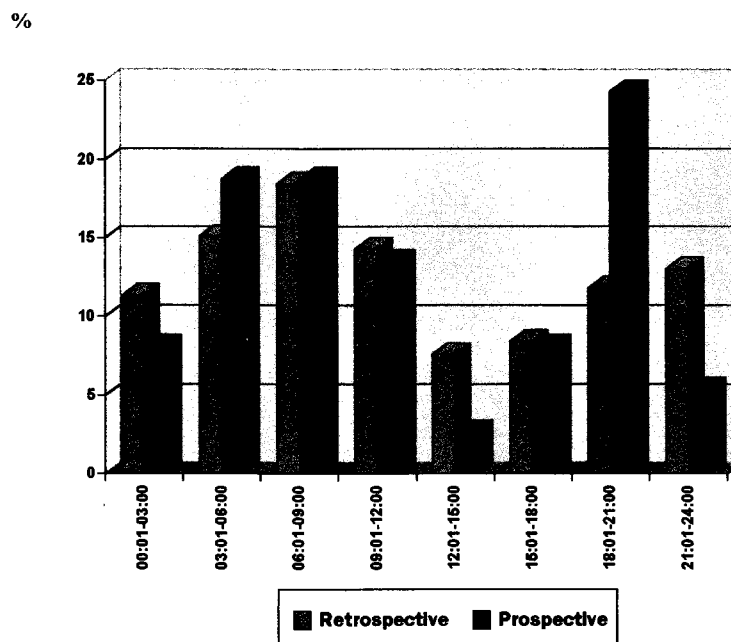


Diagram 3. Incidence describe by period of the day %

Discussion

Due to a lack of data for the birth on the way to the hospital cases, we designed this as a descriptive study by collecting retrospective hospital statistics over 5 years. The number of cases made it statistically significant but not complete in some forms of data. Therefore, we conducted a prospective study over 6 months for further information. Further study is needed to complete every aspect of this problem.

The incidence of birth on the way to Chulalongkorn Hospital was 0.45% from the retrospective study. Compared to the previous study, this incidence is rather high. Most of the cases involved distances from their residences to the hospital of about 5 to 9 kms. The median time for transportation was 70 minutes. Most of cases were multigravida and more than 50% had durations of first and second stage of less than 3 hours. It may be that short labour and precipitated labour are primary causes of birth

on the way to the hospital. The highest incidence occurred between 6 A.M. to 9 A.M. and 6 P.M. to 9 P.M. so traffic problems may also play a role in this problem.

The patients who delivered on the way to the hospital had poor antenatal care (less than 4 times), which more than 60% in the retrospective study. This may reflect educational level of these patients. About outcome of the patients, most of them had no postpartum complication.

In this study, the stillbirth rate was 17 in 1000 births in the retrospective study and 27 in 1000 in the prospective study. This compares to a 5 in 1000 stillbirth rate in Chulalongkorn Hospital in the same period.⁽¹²⁾ The stillbirth rate in this study is much higher but cannot be explained because autopsies were not conducted. Other complications were jaundice, polycythemia and hypothermia that may have been due to delayed cord clamping and

prolong exposure to the outside environment.

From the results of this study, we can expect that when the patient delivered on the way to hospital we should mainly concern on newborns. Because there's markedly increase incidence of stillbirth and perinatal complication. Clamping the umbilical cord as soon as possible can avoid polycythemia and neonatal jaundice. Keep warm to the newborns and promptly send to the new born unit may have benefit to them.

The high incidence of birth on the way to the hospital may due to⁽¹⁾: The long distance. In this study most cases had to be transported more than 5 kms.⁽²⁾ The traffic problem. The median time of transportation was 70 minutes, and the highest incidence occurred during rush hours.⁽³⁾ Poor antenatal care and lack of knowledge.⁽⁴⁾ Precipitated labour.

Conclusions

The incidence of birth during transportation to Chulalongkorn Hospital was 0.45% . Most cases delivered within 3 hours of labour. Further study may complete the data.

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