Validity of the Birth Weight and Mode of Delivery Data obtained from Questionnaire*

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ความถูกต้องของข้อมูลเกี่ยวกับน้ำหนักแรกคลอดและวิธีการคลอดที่ได้จากแบบสอบถาม

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การศึกษานี้ทำขึ้นเพื่อประเมินความถูกต้องของข้อมูล เกี่ยวกับน้ำหนักแรกคลอด และวิธีคลอดของทารกที่ได้จากการสอบถาม ได้ทำการศึกษาโดยส่งแบบสอบถาม จำนวน 345 ชุดไปยังมารดาที่มีภูมิลำเนาอยู่ในอำเภอหนองเรือ จ.ขอนแก่น และมาคลอดที่ศูนย์อนามัยแม่และเด็ก เขต 4 ขอนแก่น ระหว่างวันที่ 1 มกราคม 2527 ถึง 31 ธันวาคม 2527 ได้รับแบบสอบถามคืนมา 249 ชุด (72.17%) การวินิจฉัยภาวะทารกแรกคลอด น้ำหนักน้อย (น้อยกว่า 2,500 กรัม) มีความถูกต้องน้อยกว่า 50% แต่ข้อมูลเกี่ยวกับวิธีการคลอดถูกต้องเป็นส่วนใหญ่ ยกเว้นการคลอดด้วยคีม

The study was conducted to evaluate the validity of birth weight and mode of delivery data obtained from questionnaire. Mail questionnaire was sent out to 345 mothers from Nong Rua district, Khon Kaen province, who delivered their infants at Maternal and Child Health Center from January 1, 1984 to December 31, 1984. The response rate was 72.17% (249/345). The information obtained from questionnaire was compared with the information from delivery record. The identification of low birth weight (less than 2,500 grams) by the questionnaire was less than 50%. The questionnaire had a good agreement with regard to mode of delivery with the exception of forceps extraction. — ✕ —

INTRODUCTION

Population statistics in a country are important because they identify health problems which can be used for 1) resource allocation, 2) defining research issues and 3) defining intervention. In Thailand, morbidity and mortality statistics are limited due to several problems, particularly the registration system. An even greater problem, some vital statistics are not routinely collected or available. One of the most serious example is the information about low birth weight, where there is no standard collection procedure and the limited available data was obtained only from some hospital delivery records. This data may not be only inaccurate due to the non-standardization of collection but also is unlikely to be generalized to outside the hospital which constitutes the majority of population. Low birth weight is not a small problem. In fact, it is the single most important determinant of the chance of survival and healthy growth and development of the infants (1). The World health Organization adopted the descriptive term "low birth weight" (LBW) to designate infants with birth weight of less than 2,500 grams (2). From sample surveys and a few country reports, the WHO estimated that in the mid-1970s some 22 million LBW infants were born each year. An estimated 95 per cent of LBW infants were born in developing countries where 85 percent of births took place (3). The proportion of infants born with a low birth weight reflects the health status of the communities in to which they are born. At the Thirty Fourth World Health Assembly, the member states of the WHO adopted, LBW, as one of the global indicators with which to monitor progress. One of the practical problem is the validity of the available birth weight data.

The purpose of this study is to compare birth weight and mode of delivery information obtained from mail survey of mothers with the information recorded in the hospital record at delivery. If the data from survey is accurate, then the following applications can be made ;

1) for the community point of view, the survey information could be used to assess the low birth weight status of the community, for comparative purpose, 2) for the research point of view, the survey information could be used to define those infants with low birth weight in order to assess risk factors and prognosis of the low birth weight infants.

MATERIALS AND METHODS

The delivery summary of Maternal and Child health Center in Khon Kaen Province from January 1, 1984 to December 31, 1984 was examined. The name and address of mothers who delivered their infants during that period who, when registered, reported that their residence was in Nong Rua district, Khon Kaen province were listed. The information about birth weight and mode of delivery was extracted from this delivery summary. Mail questionnaire asking about the birth weight and mode of delivery was sent out to every mother who fulfilled the above mentioned criteria. One month after the first mail questionnaire was sent out, the same questionnaire was sent out to mothers who had not returned the first questionnaire back. The information of birth weight and mode of delivery from the two sources were compared using the information from the delivery summary as the gold standard. Kappa statistics was used for the test of agreement[4].

RESULTS

There were 345 mothers who fulfilled our criteria. The response rate to the first mail questionnaire was 66.96% (231 out of 345), which increased to 76.23% (263 out of 345) after second mail questionnaire. Of these respondents only 249 questionnaires (72.17%) could be used for comparison.

The comparison of birth weight obtained from the two sources of information is shown in Table 1. The incidence of low birth weight infant calculated from the mail question-

Table 1 Comparison of birth weight

		Birth weight (from delivery summary)		
		< 2,500	≥2,500 gm	Total
Birth weight < 2,500 gm.		20	22	42
(from questionnaire) ≥ 2,500 gm.		3	204	207
Total		23	226	249

Sensitivity	=	20/23	=	86.96 %
Specificity	=	204/226	=	90.27 %
Positive predictive value	=	20/42	=	47.62 %
Negative predictive value	=	204/207	=	98.55 %
False positive rate	=	22/226	=	9.73 %
False negative rate	=	3/23	=	13.04 %

naire was 16.87% compared to the true incidence (from the delivery summary) of 9.24%. To detect low birth weight (less than 2,500 grams) the questionnaire has sensitivity86.96%, specificity 90.27%, the positive predictive value was 47.62% and the negative predictive value was 98.55%. The false positive rate and false negative rate were 9.73% and 13.04% respectively.

The comparison of mode of delivery from the two sources of information is shown in Table 2. There was only slight discrepency between the two sources of data. Kappa statistics was used to assess the agreement between the two sets of data. The result of this statistical test is shown in Table 3. The overall agreement (K) was 0.82 which was statistically significant (P < .001). The highest degree of agreement was for Cesarean section (K = 1.0) and the least was for forceps extraction (K = .42). But the agreement for all modes of delivery was statistically significant (P < .001)

DISCUSSION

From the result of this study we can draw the following conclusions :

Table 2 Comparison of mode of delivery.

Mode of delivery	Questionnaire	Delivery summary
Normal labor	214	218
Vacuum extraction	12	14
Forceps extraction	3	1
Vaginal breech delivery	7	5
Cesarean section	11	11
Unknown	2	0
Total	249	249

Table 3 Kappa statistics for mode of delivery (agreement by questionnaire and delivery summary)

Mode of delivery	Kappa (K)	p - value
Normal labor	0.84	< .001
Vacuum extraction	0.82	< .001
Forceps extraction	0.42	< .001
Vaginal breech delivery	0.64	< .001
Cesarean section	1.00	< .001
Overall	0.82	< .001

1. When birth weight from questionnaire was compared with the hospital records, the identification of low birth weight was less than 50%

2. Agreement of other data, with regard to mode of delivery, had a good agreement with the exception of forceps extraction. But this might be due to small number of cases under this mode of delivery.

The conclusions from this study has the following implications :

1. From the community point of view of statistics regarding low birth weight, the validity is grossly inadequate.

2. From research point of view, data ragarding mode of delivery would appear to have sufficient validity. In contrast, data on historical report of birth weight from mothers would not be valid.

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