

UTILIZATION OF HEALTH FACILITIES PROVIDING CHILDBIRTH CARE IN RURAL INDONESIA: THE IMPORTANCE OF BIRTH PREPAREDNESS PLANS DURING PREGNANCY

Imran Pambudi^{1,*}, Supattra Srivanichakorn², Juttatip Sillabutra²

¹Directorate of Maternal Health, Indonesia Ministry of Health

²ASEAN Institute for Health Development (AIHD), Mahidol University, Salaya, Nakhonpathom 73170, Thailand

ABSTRACT: Utilization of maternal health care during childbirth is the best approach to reduce maternal death. Health facility based childbirth care utilization in Indonesia remains low compared to other countries in the region. This cross-sectional study was conducted to ascertain and understand factors associated with the utilization of health facilities providing childbirth care in Sampang District. The study sample were 250 mothers who lived and delivered in Camplong and Omben subdistricts in 2010 and came to the immunization centre of 6 villages in Camplong and Omben subdistricts. Respondents were interviewed in February and March 2011, by structured questionnaire, which had 74 questions and was divided in to 8 parts. Relationships between utilizing childbirth care and independent variables were analyzed using descriptive statistics, chi square tests and simple logistic regression. The survey indicated that 93.15% of the mothers had utilized health facility during childbirth, and 24.60% delivered using private health care facilities. A definite intention to deliver in a health facility had the strongest positive association with utilizing a health facility providing childbirth care (OR: 33.33, 95% CI: 10.70 to 21.27, *p-value*: <0.001). Positive associations were also observed for positive perception of safe delivery (OR : 12.19, 95% CI: 2.72 to 54.57, *p-value*:<0.000), Frequency of antenatal care (ANC) (OR: 8.45, 95% CI: 2.73 to 26.23, *p-value*:< 0.001), Place of ANC (OR: 5.88, 95% CI: 1.31 to 26.27, *p-value*: 0.009) and labelling mother's house with birth preparedness and complication readiness (BPCR) sticker by midwives (OR: 3.703, 95% CI: 1.08 to 12.33, *p-value*: 0.028). Access to health care and information were very important in encouraging mothers to utilize health facilities during childbirth. Antenatal care represents a convenient and important opportunity for pregnant mothers to gain sufficient information about danger signs and risks during pregnancy and about making good childbirth care plans.

Keywords: utilization, birth preparedness plans, antenatal care

INTRODUCTION

Maternal deaths are still a major problem in many countries, including Indonesia, and reducing the maternal mortality ratio remains a global imperative. In 2006, the World Health Organization (WHO), the United Nations Children's Fund and the United Nations Population Fund estimated that about 530,000 maternal deaths occurred annually in the world, of which 99% occurred in developing countries [1]. In addition, over 10 million women experience some form of morbidity due to pregnancy or childbirth each year [2]. Institutional delivery is the best option to prevent maternal deaths [1]. It is, therefore, important to know and understand why women choose whether to give birth in a health facility.

Indonesia's maternal mortality rate decreased from 390 per 100,000 live births in 1994 to 228 in 2007. The coverage of skilled birth attendance increased to 79% in 2007 from 40.7% in 1991, and greatly influenced both maternal and infant mortality rates.

Direct causes of maternal mortality were hemorrhage, eclampsia, prolonged/obstructed delivery, abortion complications, and infection [2]. Indonesia's infant mortality rate decreased from 30 per 1,000 live births in 2003 to 26 in 2007. This means that in the year 2007, about 10,260 mothers and 117,000 infants died during pregnancy, childbirth and the post partum period in Indonesia [3].

Most morbidity and mortality were due to direct obstetric complications occurring during labour [1]. Since most life-threatening complications occurring at this time cannot be predicted or prevented, interventions to address the global burden of maternal death and disability focus on the intrapartum period. Most interventions have aimed to ensure that deliveries occur in the presence of a skilled health provider who functions within an enabling environment of equipment, drugs and health providers during childbirth. Accordingly proper place of delivery is a very important factor in saving mothers' lives. Institutional delivery generally offers a package of medical interventions which enable treatment of major direct obstetric

* Correspondence to: Imran Pambudi
E-mail: imranpambudi@gmail.com

complications (emergency obstetric care) [4].

Approximately half of deliveries and early neonatal deaths in developing countries occur at home [5]. Home birth increases the risk of neonatal death to double or triple that of hospital birth; indeed, the risk of infection would increase three to fourfold [5]. In Indonesia, mothers who gave birth at home or at health facility might have same chance having complications, but the outcome could well be different. 50% of deliveries which were attended by health professionals would have complications, and it could endanger mothers' and babies' lives if they give birth at home [6].

Evidence shows that the health centre childbirth care strategy is likely to be the best option because even though midwives are the main providers, they work with other attendants in a team. Such care is referred to as basic, primary, routine, or basic essential obstetric care, and most recently skilled care at the first level. Other alternative options are home-based and therefore need to also be linked to strategies that remove community barriers to accessing emergency obstetric care, including recognition of danger signs by lay attendants (relatives and traditional birth attendants) and effective referral mechanisms [1].

About 70% of mothers in rural areas in Indonesia delivered at home [6]. Sampang was one "lagging behind district" in East Java province, Indonesia. Sampang is located in Madura Island, about 1.000 km east of Jakarta. This district had high maternal and infant mortality rates, there were 20 maternal and 100 neonatal deaths from 18.200 deliveries in 2010 [3]. It is an important location for study because several projects for improving maternal and neonatal health have been implemented in the last five years, but maternal and neonatal status in Sampang had not changed significantly [3]. Compared with other sub-districts in Sampang, Omben and Camplong citizens had better access to childbirth care: every village in these two sub-districts had village midwives or assisting health centres but skilled birth attendance coverage remained below 80%. These two subdistricts have similar socio economic characteristics but Omben is in a mountainous area and Camplong is in a coastal area [7].

Determinants of health care utilization providing childbirth care have been a major focus in the literature. In particular, the utilization of delivery services could be influenced by the number of children in the family and distance to health facility [2, 8] as well as the quality of service [9]. Meanwhile, high costs, together with the widespread practice of 'informal' or so-called 'under the table payment' and other indirect costs, contributed to the under-utilization of public services [10, 11]. In addition to these factors, family income and ability to mobilize resources were associated with the health service utilization

patterns of the communities [12]. Moreover, decision on the utilization of delivery services could be affected by the low socio-economic status of women in certain countries. Some women were denied access to necessary care, either because of the cultural practice of seclusion, or because decision-making was the responsibility of other members of the family, such as husbands or parents-in-law [3, 13]. However, previous studies on the utilization of services often focused on quantitative socio-economic and demographic variables [14] which did not explain the client's behaviour or suggest potential intervention measures.

In Indonesia, only a few studies have been undertaken concerning the utilization of delivery services. A study using Indonesia Demographic Health Survey 2007 data was conducted to identify socioeconomic and demographic determinants of maternal health care utilization [15]. However, application of these findings to the maternal health program in Indonesia is limited, especially about birth preparedness (BPCR) program which was launched in 2007. BPCR is a program to encourage mothers have birth plans which are: planned place of delivery, planned delivery attendant, planned blood donor, and planned vehicle for referral. Every pregnant mother's home should have BPCR sticker which contains information about her birth plans. The sticker is affixed to the home by health cadres. The present study investigated the factors influencing utilization of health facilities for childbirth in Sampang district, and emphasizes the need for proper birth preparedness plans during pregnancy.

MATERIALS AND METHODS

This cross-sectional study was conducted to ascertain and understand factors affecting utilization of health facility providing childbirth care in Sampang district (the dependent variable) with following independent variables: predisposing factors, enabling factors and need factors, based on Andersen's Behaviour Model of health care utilization [16]. Predisposing factors included: socio demographic factors, mothers' perception and knowledge on safe delivery and mothers' birth plans. Enabling factors included: availability of maternal care and mothers' accessibility to maternal care. Need factors included: mothers' risk and status of mothers' antenatal care. Utilization of health facility providing childbirth care refers to the use of a health facility by a mother for the delivery of her last child. Health facility options are hospital, health centre, midwifery clinic, or midwifery hut.

After obtaining approval from the ethics committee of Mahidol University Institutional Review Board, the questionnaire was pre-tested for reliability by selecting 30 patients from one health centre in Sampang with the result of Cronbach Alpha test of

0.751. In the full-scale study, 8 trained interviewers interviewed 250 mothers who lived and delivered in Camplong and Omben subdistricts in 2010, using a structured questionnaire; which was developed using Bahasa Indonesia. The questionnaire contained 74 questions in 8 parts, which were: basic informations, prenatal history, childbirth history, availability of childbirth care and accessibility of childbirth care, satisfaction with childbirth care, decision making and family support, maternal knowledge about safe delivery, and mothers' appreciation about the delivery process, including perception of safety, benefit and barriers about safe delivery. Data were collected during February and March 2011 on immunization days in immunization centres in six villages which were randomly selected from 31 villages in Omben and Camplong sub-districts. Proportional sampling was used to calculate sampling numbers from each village and immunization centre. In each village, 4 immunization centres were chosen randomly.

Data were analyzed using MiniTab 14 software. Chi square tests and simple logistic regression were used to assess associations between the dependent variable and independent variables. The critical level (α) was 0.05.

RESULTS

A total of 248 questionnaire were completed by respondents from 6 villages. Most of the mothers were 18 to 35 years old. The minimum age was 15 years and the maximum age was 50 years. Regarding parity, 71.7% of the mothers had less than 3 pregnancies. The median number of living children was 2. Over half of the mothers stated that no other relatives lived with them and their husbands in their homes. About 75% of the mothers had family incomes of less than IDR 750.000 per month (about \$85 US), which was the minimum wages in Sampang in 2010. More than half of mothers and their husbands had primary education and less than 10% had had no formal education. Only 28.2% of mothers were working and the rest were housewives. 76.61% of their husbands were self employed as farmers, fishermen or bussinessmen, and 23.39% of them were employees.

More than half of the mothers had negative perceptions of safe delivery. Regarding perceptions of safety, benefits and barriers to safe delivery, Table 1 shows that 90.7% of the mothers had positive perceptions about safety; 86.29% had positive perceptions about benefits, and only 28.2% had positive perceptions about barriers.

Most of mothers had antenatal care (ANC) four or more than four times during their last pregnancy and more than half chose an integrated health post in their community as the place for ANC. 95.9% mothers had received advice and suggestions about

place of delivery and 99.2% of the mothers were attended by health professionals during ANC visits. 91.1% of mothers house were labeled with BPCR sticker. More than 80% of the mothers had already saved money in preparing for delivery and potential complications of delivery.

Most of the mothers had utilized health care during their last delivery and a higher percentage of mothers utilized a health facility in Omben subdistrict than in Camplong. About a quarter of the mothers delivered in private clinics, 61.7% delivered in midwifery huts and 90.7% delivered where they had planned during pregnancy. Mothers in Camplong preferred to deliver in private clinics rather than in midwifery huts. In contrast, 90% of mothers in Omben delivered in midwifery huts (Table 2).

Mothers who had positive perceptions about safe delivery were 12 times more likely to utilize a health facility providing childbirth care than mothers who had negative perceptions about safe delivery. There was a significant association between how often mothers received ANC during their pregnancies and utilization of a health facilities providing childbirth care. Nearly all of the mothers who had ANC more than 4 times utilized a health facility for childbirth, and were 8 times more likely to utilize a health facility providing childbirth care than mothers had ANC less than 4 times.

Almost all of the mothers who had had their ANC in a health facility subsequently utilized a health facility for childbirth, and there was a significant positive association between place of ANC and utilization of a health facility providing childbirth care. Mothers who attended health facility for ANC were 5 times more likely to utilize a health facility providing childbirth care than mothers who went to Integrated Health Post (Posyandu) for ANC. The reason for this is not clear. Conceivably, the environment of the Integrated Health Post was simply not conducive to support ANC, or mothers were more familiar with health facilities as places of delivery if they had previously received ANC.

There was a significant positive association between mother's house labeled with BPCR sticker and utilization of a health facility providing childbirth care. Mothers who had BPCR sticker were 3 times more likely to utilize a health facility providing childbirth care.

An association between planned place of delivery and utilization of a health facility providing childbirth care was also found and mothers who planned to deliver in health facilities were 33 times more likely to utilize a health facility providing childbirth care. Mother's education, mother's occupation, family income, mother's accessibility to childbirth care, community support and high risk pregnancy were not significantly associated with receiving childbirth care (Table 3).

Table 1 Frequency and percentage distribution of mothers by perceptions regarding safe delivery

Variables	Number n = 248	Percentage (%)		
Perceptions regarding safe delivery				
Positive (perception score \geq mean)	145	41.5		
Negative (perception score $<$ mean)	103	58.5		
Mean=30.278	SD=2.510	Min=20	Max=37	
Sub group of perception:				
a. Perception on safety of health facility based delivery				
Positive	225	90.7		
Negative	23	9.3		
Mean=11.952	SD=1.252	Min=11	Max=15	
b. Perception of benefit of health facility based delivery				
Positive	214	86.3		
Negative	34	13.7		
Mean=9.335	SD=0.813	Min=6	Max=11	
c. Perception of barrier of health facility based delivery				
Positive	178	71.8		
Negative	70	28.2		
Mean=8.99	SD= 1.508	Min=4	Max=12	

Table 2 Frequency and percentage distribution of mothers by utilization and intention to utilize health facilities providing childbirth care

Variables	Number n = 248	Percentage %
Utilize		
Yes	231	93.2
No	17	6.8
Place of delivery		
Home	17	6.8
Midwifery hut	153	61.6
Health centre	16	6.5
Private clinic	61	24.6
Hospital	1	0.4
Same place of delivery as planned		
Yes	225	90.7
No	23	9.3

Table 3 Associations between independent variables and utilization of a health facility providing childbirth care

Variable	% utilizing	% not utilizing	Crude OR	95% C I		p-value
				Lower	Upper	
Perception of safe delivery						
Negative	14.6	85.4	1			
Positive	1.4	98.6	12.2	2.7	54.6	<0.001
ANC frequency						
<4 times	30	70	1			
\geq 4 times	4.8	95.2	8.5	2.7	26.2	<0.001
Place of ANC						
Integrated Health Post (Posyandu)*	10.4	89.6	1			
Health Care**	1.9	98.1	5.9	1.3	26.3	0.009
Labeled with BPCR sticker						
No	18.2	81.8	1			
Yes	5.7	94.3	3.7	1.1	12.3	0.028
Planned place of delivery						
Home	56.3	43.7	1			
Health facility	3.5	96.6	33.3	10.7	121.3	< 0.001

* Mobile maternal & child care in community. It provides ANC, child growth monitoring and immunization

** Include : hospital, health centre, midwifery hut, private clinic

DISCUSSION

More than half of the mothers had negative perception regarding safe delivery and this study found a significant association between mothers' perception of safe delivery and utilization of a health facility providing childbirth care. Mothers having positive perception of safe delivery were more likely to utilize a health facility providing childbirth care. This was consistent with findings from Malawi which suggested that perception regarding danger signs influenced maternal health care seeking behaviour especially during childbirth [17]. Other research in Bolivia reported that negative perception about quality of care at health facility influenced mothers not to deliver in health facilities [18]. Negative perceptions and dissatisfaction with service quality also affected health seeking behaviours and the utilization of services [19].

Mothers who had ANC more than 4 times and attended health facilities for ANC would more likely to utilize a health facility providing childbirth care. It was consistent with finding in Mali that level of antenatal care in the enumeration area was highly predictive of individual women's health facility use for delivery, even when controlling for individual ANC use [19]. A study in Haiti found that the presence of a health worker providing ANC in the community could also increase use of skilled birth attendance [20]. Also, a qualitative study in rural Tanzania showed that one important factor in institutional delivery was a good relationship between provider and client which could be gained with high intensity of ANC [21].

Deliberately planning delivery in health facility had a stronger relationship with using a health facility providing childbirth care than did other factors. Saving money was the most frequent birth preparation by the mothers. This was consistent with research about BPCR in rural Kyrgyzstan which found that saving money and identifying transport were the most common forms of preparation by mothers [22]. Since 2007, the Indonesian government has introduced BPCR either in family or community to educate mothers and their family that childbirth process should be well prepared since early pregnancy [2]. BPCR sticker was a reminder for mothers and family about the birth plans they had made during early pregnancy therefore mothers. This sticker is printed by Ministry of Health and should be filled by health provider as soon as possible during ante natal care. Our results suggest that the stickers were helpful in reminding mothers to obtain childbirth care in a health facility.

More than 90% of the mothers delivered at the same place as they planned during pregnancy and this study found a significant association between planned place of childbirth and utilization of health facility providing childbirth care. Regarding

evolution of the birth plan, Simkin highlighted that the birth plan was envisioned to help expectant parents prepare for physical and emotional aspects of the childbirth process, plan ahead for how they want in various situations, handled outside of the emotions of the moment, and provide a vehicle for referral, and health provider prior to the birth. Mothers who had birth plans tended to utilize of health facility providing childbirth care eventhough they will make proper plan if they had sufficient knowledge and adequate perception about safe delivery, in addition, mothers should consider availability of childbirth care in their area, availability of funds and support from family and community [23].

POLICY IMPLICATIONS

To improve maternal health status, ANC is a very important process which enables mothers to be as fully informed as possible about their health and then make good birth plans. Information about danger signs and risks during pregnancy can be and should be highlighted during prenatal care or even before pregnancy. Facilities in integrated health posts for ANC visits should, therefore, be improved, since most of the mothers preferred to use them for ANC. Birth Preparedness and Complication Readiness (BPCR) program should be continued and emphasize at the place of childbirth planning during ANC, since having birth plan to deliver in health facility is strongest predictor for utilizing a health facility providing childbirth care.

ACKNOWLEDGEMENTS

The authors thank most sincerely all the participants in this study. We would also like to thank mentors who have helped process the data and made this paper possible also to WHO-SEARO and Government of Indonesia who provide research fund. This project received support from the Higher Education Research Promotion and National Research University Project of Thailand, Office of Higher Education.

REFERENCES

1. Ronsmans C, Graham W. Maternal mortality: who, when, where, and why. *Lancet*. 2006; 368: 1189-200.
2. D'Ambruso L, Achadi E. Assessing quality of care provided by Indonesian village midwife with a confidential enquiry. Elsevier; 2007
3. Government of Indonesia. Directorate General of Public Health. Achieving the Millenium Development Goals 4 and 5 through health system reform in Indonesia. Jakarta: Ministry of Health; 2010.
4. World Health Organization (WHO), United Nations Children's Fund (UNICEF), United Nations Population Fund (UNFPA). Maternal mortality in 2000: estimates. Geneva: WHO; 2004.
5. Castello A, Osrin D. Reducing maternal and neonatal mortality in the poorest countries. *BMJ*. 2004; 329: 1166-8.

6. Bureu Indonesia Statistics. Indonesia demographic and household survey 2007. Jakarta: The Bureu; 2008.
7. Sampang D. MCH coverage. Sampang: Sampang District Health Office; 2010.
8. Mwaniki PK, Kabiru EW. Utilization of antenatal and maternity services by mothers seeking child welfare services in Mbeere district, Eastren province, Kenya. *East Afr Med J*. 2002; 79(4): 184-7.
9. Afsana K, Rashid SF. The challenges of meeting rual Bangladeshi women's need in delivery care. *Reprod Health Matters*. 2001; 9(18): 79-89.
10. Kowalewski M, Muijnja P. Can mothers afford maternal health care cost?: user cost of maternity service in rura Tanzania. *Afr J Reprod Health*. 2002; 6(1): 65-73.
11. White M, Dahlgreen G. Equity and health sector reform: Can low income countries escape the medical poverty trap? *Lancet*. 2001; 358: 833-6.
12. Duong DV, Binns CW. Utilization of delivery service at the primary health care level in rural Vietnam. *Soc Sci Med*. 2004; 59: 2585-95.
13. World Health Organization. Reduction of maternal mortality. Geneva: WHO; 1999.
14. Gabrysch S, Champbell OM. Still too far to walk: literature review of the determinants of delivery service use. *BMC Pregnancy Childbirth*. 2009; 9: 34.
15. Kristina S. Socio-economic and demographic determinants of maternal health care utilization in Indonesia. Faculty of Social Sciences, The Flinders University of South Australia, Adelaide; 2009.
16. Andersen RM. Revisiting the behavioral model and access to medical care: does it matter. *J Health Soc Behav*. 1995; 36: 1-10.
17. Josephine C. Patients' satisfaction with reproductive health services at Gogo Chatinkha Maternity Unit, Queen Elizabeth Central Hospital, Blantyre, Malawi. *Malawi Med J*. 2010; 22(1): 5-9.
18. Otis KE, Brett JA. Barriers to hospital births: why do many Bolivian women give birth at home? *Rev Panam Salud Publica*. 2008; 24(1): 46-53.
19. Gage AJ. Barriers to the utilization of maternal health care in rural Mali. *Soc Sci Med*. 2007; 65(8): 1666-82.
20. Gage AJ, Guirlene C. Effects of the physical accessibility of maternal health services on their use in rural Haiti. *Popul Stud (Camb)*. 2006; 60(3): 271-88.
21. Moke M, Jenifer R, Oona MR. High ANC coverage and low skilled attendance in a rural Tanzanian district: a case for implementing a birth plan intervention. *BMC Pregnancy childbirth*. 2010; 10: 13.
22. Wiegers TA, Boerma WG, de Haan O. Maternity care and birth preparedness in rural Kyrgyzstan and Tajikistan. [cited 2011 May 20]. Available from: <http://nvl002.nivel.nl/postprint/PPpp3303.pdf>
23. Kaufman T. Evolution of the birth plan. *J Perinat Educ*. 2007; 16(3): 47-52