

Factors associated with late antenatal care booking at 4 hospital centers (Mitthapap hospital, Mahosot hospital, Settathirat hospital and Mother and new born hospital) Vientiane capital, Laos

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Abstract

Objective: This aim to study the factors associated with ANC late booking in pregnant women who are receiving services at 4 centers hospital in Vientiane.

Research design and Method: A descriptive Cross-sectional study questionnaire base survey was conducted. Data were collected during 26 February to 23 March 2018 The required sample size was 217 respondents and divided to 4 group using cluster sampling.

Result: Among 217 pregnant women in this study 72 (33.18 %) of respondents started ANC service late. While teenage pregnancy 15.67 %. Moreover, 161(74.81%) of the respondents were had high educate. Half of respondents did not have awareness of ANC starting time (53.46 %). Majorly of the respondents 205(94.47%) had family support to ANC service. After adjusted for other factors, the study found that teenage pregnancy was associate with an increased (Adj. OR= 9.63, 95%CI= 3.45-26.84) chance to late ANC booking compared to adults. Women who came from Hmong and Kmu ethnic group had an increased chance to delay ANC booking (Adj. OR=3.31, 95%CI=1.08-10.18) compared to Lao Lum ethnic group. Similarly, women who did not awareness of timing of ANC booking was 6.96 times (Adj. OR=6.96, 95%CI=3.2-15.16) more likely to start ANC late than women who awareness of timing of ANC booking.

Conclusion: The finding of this study suggests that Education and information about timing of ANC booking should be wider provide among women pregnant age especially teenage and ethnic group in order to make the fully awareness regarding to the time of ANC booking.

Keyword: Antenatal care, late booking, Lao PDR

Introduction

Maternal mortality is still a problem of the world, WHO (World Health Organization) reported that estimated 358,000 maternal deaths occurred worldwide in 2008. Among developing regions, sub-Saharan Africa had the highest maternal mortality ratio (MMR) at 640 maternal deaths per 100,000 live births (1,2). Meanwhile MMR in developed countries were only 14 per 100,000 live births (2). The reduction of maternal deaths is a high priority for the international community, especially in view of the increased attention on the Millennium Development Goals (MDG5) (3). Furthermore, ANC was more likely to be effective if it was initiated early in pregnancy (4). Women who started ANC in the last trimester were more likely to have babies with health problems. Women who received no ANC were more likely to have low birth weight babies, and these babies were at greater risk of dying (5). Early ANC was important for early detection and treatment of adverse pregnancy related outcomes (6,7). Many studies (8,9). Indicated that in developing countries most women started entry to ANC lately contrast with findings in most developed countries. On the other hand, early ANC booking preferably in the first trimester of pregnancy is very important as it enables early detecting and prevention any possible complications of pregnancy for the mother and the unborn child; thus, contributing to the reduction of perinatal morbidity and mortality. Late ANC initiation may increase the total cost of caring for a pregnant woman (10). A study conducted in Hadiya zone Southern Ethiopia revealed that, concerning time of initiating care, only 8.7% of the ANC attendants initiated care during the first trimester of pregnancy while 68.1% had the first visit during the third trimester (11). Another study in Ethiopia showed that proper advice and information on timely booking from service providers and community level are very important for the effective utilization of the service (12). Women who have lower educational status, have good perception, and are urban residents are more likely to attend early for ANC compared to their counterparts (13,14). Parity and late ANC initiation are also a factor for ANC utilization (14).

In Laos, the implementation of the health development plan from 2011 to 2015 shows that there are improvements in various areas; such as better maternal mortality rates reduce from 300 to 100,000 to 260 / 100,000 people. However, it is also a challenge to achieve the Millennium Development Goals. From the Review of the Maternal and Child

Health Promotion Policy our Target in 2020 for ANC is 85%. One survey reports ANC late booking were 17% in Vientiane province 2014. Further understanding on possible factors that may be associated with late ANC booking in Laos is even more limited. We aimed to investigate factors that may be associated with late ANC booking in Laos.

Method

This study is a Descriptive Cross-sectional study to study the factors associated with ANC late booking in pregnant women who are receiving services at 4 centers hospital in Vientiane during 26 February to 23 March 2018. The sample size was calculated using Single population proportion by assuming 5% marginal and proportion for ANC late booking of 17% in 2014 at Vientiane province. The required sample size was 217 respondents and divided to 4 group using cluster sampling as shown in Table 1. The study tool is a series of open-ended inquiry forms and open-ended questionnaires, all of which comprise two parts: the general information section, the support element the information section, and the subfields. Women diagnosed with pregnancy, being a Lao, Who can get pregnant services during pregnancy, and those who are willing to participate were inclusion in criteria for the sample group. Those who have communication problems and women who come to treat other diseases were the exclusion criteria.

Data analysis

Data analysis was done using STATA software, version 12.0 SE (Stata Corporation, TX, USA). Firstly descriptive statistics were done to determine the frequencies of late antenatal care booking. This included cross tabulation to determine the overall distribution of predictor variables by early or late ANC booking. This was followed by univariate logistic regression. Significance at univariate logistic regression was set at a p-value of 0.1 and a 95 per cent confidence interval. Variables that were found to be significant at univariate logistic regression were then fitted into the multiple logistic regression to control for confounding and to come up with the final model of predictor variables. For multiple logistic regression, significance was set at a p-value of 0.05 and 95 per cent confidence interval. Variables with the largest p-values were then removed one at a time until only significant variables were left in the final model. The analyzed information was summarized using tables and graphs.

Ethical approval

Ethical approval was obtained from university of health Sciences Lao PDR Ethical Research Committee prior to the study (Reference: No: 008/18; date: 20/02/2018).

Table 1 Number of respondents by 4 hospital centers in Vientiane Capital City

Hospital	Number of respondents	Percentage
Mitthapap	55	25.35
Mahosot	54	24.88
Settathirat	54	24.88
Mother and new born	54	24.88

Result

There were 217 pregnant women participated in the study 145 (66.82 %) of them started ANC service early and 72 (33.18 %) started ANC late as shown in Table 2. Mean age was 27.18 year (SD = 4.99) ranged from 15- to 41-year-old: most of them were adults (20–29-year-old) 84.33% while teenage pregnancy 15.67 %. For the Ethnic group out of women interviewed 197 (90.78%), 18 (8.29%), 2 (0.92 %) were Lao Lum, Hmong an Kmu, respectively. Most of the women were married (99.54%). Level of education of the respondents was categorized as those who were educate upper secondary and above (highly educate) and those who were educated lower secondary and below (low educate). Accordingly, 161(74.81%) of the respondents were had highly educate and 184(84.79%) of their husband education also had highly educate. 177 (81.57%) of respondents were working. Among 177 respondents had a monthly income median 1,800,000 kip ranged from 1,000,000 kip to 15,000,000 kip. Half of them did not have awareness of ANC starting time (53.46 %). Majorly of the respondents 205(94.47%) had family support to ANC service, 129 (59.45%) were received information about ANC last six month. The most frequent reasons for ANC late attendance where they too busy 30(41.67%), they did not know they were pregnant 20 (27.78%), and they were live far from hospital 5(6.94%) as shown in Table3.

Table 2 Frequency and percentage of respondents on timing to ANC booking

Variable	Frequency	Percentage
Early or late		
Early (\leq 12 weeks gestation)	145	66.82
Late ($>$ 12 weeks gestation)	72	33.18

Table 3 Percentage of respondents by socio-demographic factors and study factors

Variables	Frequency	Percentage
Age		
Teenage (< 20 years)	34	15.67
Adult (>= 20 years)	183	84.33
Ethnic group		
Lao Lum	197	90.78
Hmong	18	8.29
Kmu	2	0.92
Marital status		
Married	216	99.54
Single/Windowed/Divorced/Separated	1	0.46
Education levels		
Upper secondary and above (high)	161	74.81
Lower secondary and below (low)	56	25.81
Occupation		
Working	177	81.57
No working	40	18.43
Awareness of timing of ANC booking		
Yes	101	46.54
No	116	53.46
Husband education		
Upper secondary and above (high)	184	84.79
Lower secondary and below (low)	33	15.21
Family support to ANC		
Yes	205	94.47
No	12	5.53
Received Information last 6 month		
Yes	129	59.45
No	88	40.55
Reason for ANC late attendance		
Too busy	30	41.67
Did not no Pregnancy	20	27.78
Live far away from hospital	5	6.94
Other	17	23.61

Table 4 shows the association between each factor and the timely initiation of ANC. There were statistically significant of age group, ethnic group, education level, awareness of ANC starting time and husband education to timely initiation of ANC within 12 weeks (p-value < 0.05).

Multiple logistic regression was performed to investigate influenced factors of timing of ANC booking. Core factor for late ANC booking found were age group, ethnic group and awareness of ANC. Teenage pregnancy were associate with an increased (Adj. OR= 9.63, 95%CI= 3.45-26.84) chance to late ANC booking compared to adults. Women who came from Hmong and Kmu ethnic group had an increased chance to delay ANC booking (Adj. OR=3.31, 95%CI=1.08-10.18) compared to Lao Lum ethnic group. Similarly, women who did not awareness of timing of ANC booking was 6.96 times (Adj. OR=6.96, 95%CI=3.2-15.16) more likely to start ANC late than women who awareness of timing of ANC booking when adjusted for other factors as shown in Table 5.

Table 4 Association of factor with timing to ANC booking,

Variables	Timing to ANC booking				Crude OR (95% CI)	P - value
	Late		Early			
	n	%	n	%		
Age						
Teenage (< 20 years)	27	79.41	7	20.59	11.83(4.82-29.00)	< 0.001**
Adult (>= 20 years)	45	24.59	138	75.41	1	
Ethnic group						
Hmong	10	55.56	8	44.44	2.79(1.05-7.41)	0.04*
Kmu	1	50	1	50	2.23(0.14-36.23)	0.573
Lao Lum	61	30.96	136	69.04	1	
Education levels						
Lower secondary and below (low)	25	44.64	31	55.36	1.96(1.05-3.66)	0.036*
Upper secondary and above (high)	47	29.19	114	70.81	1	
Occupation						
No working	18	45	22	55	1.86(0.93-3.57)	0.081
Working	54	30.51	123	69.49	1	
Awareness of timing of ANC booking						
No	60	51.72	56	48.28	7.95(3.93-16.07)	< 0.001**
Yes	12	11.88	89	88.12	1	
Husband education						
Lower secondary and below (low)	16	48.48	17	51.52	2.15(1.01-4.56)	0.046*
Upper secondary and above (high)	56	30.43	128	69.57	1	
Family support to ANC						
No	7	58.33	5	41.67	3.02(0.92-9.86)	0.068
Yes	65	31.71	140	68.29	1	
Received Information last 6 month						
No	32	36.36	56	63.64	1.27(0.72-2.25)	0.411
Yes	40	31.01	89	68.99	1	

* p-value<0.05, ** p-value<0.001, Early (≤ 12 weeks gestation), Late (>12 weeks gestation)

Table 5 Predictor variable of late ANC booking

Variables	Adj. OR	95% CI adj. OR		P-value
		Lower	Upper	
Age				
Teenage (< 20 years)	9.63	3.45	26.84	< 0.001**
Adult (>= 20 years)	1			
Ethnic group				
Hmong and Kmu	3.31	1.08	10.18	0.037*
Lao Lum	1			
Occupation				
No working	1.01	0.43	2.35	0.986
Working	1			
Education levels				
Lower secondary and below (low)	0.99	0.43	2.35	0.999
Upper secondary and above (high)	1			
Husband education				
Lower secondary and below (low)	0.7	0.22	2.25	0.549
Upper secondary and above (high)	1			
Awareness of timing of ANC booking				
No	6.96	3.2	15.16	< 0.001**
Yes	1			
Family support to ANC				
No	1.17	0.25	5.47	0.84
Yes	1			

* p-value<0.05, ** p-value<0.001

Discussion

From the analyses conducted the result of this study show that the proportion of ANC late booking was about 33.18 %. This result lower than some studied in developing countries that reported 95% in Rwanda, 81% in Zambia, 72.8% in Bangladesh, 54 % in south Africa, 49.6% in Thailand, but still higher than reporting form study in USA that shown the prevalence of ANC late booking 26.3% (15-19). The reason might be possible that developed countries had more good service for ANC booking. In contrasted this result was higher than ANC late survey reports in Vientiane province that reported 17% in 2014. The reason may be explained by the sample of our study came from 4 central hospital in capital city that more generalize.

The association between age group and the timing of ANC booking was statistically significant in this study which teenage pregnancy were associate with an increased 9.63 time to late ANC booking than adult. Which consistent to studies in South East Nigeria and United Kingdom (20, 21). The reason might be that young women 15 - 19-year-old more likely do not awareness the important of ANC booking early due to their education level. In addition, in accordance with other studies reporting that maternal care use varies across ethnic groups (22-24), women from Hmong and Kmu ethnic group had 3.31 time more likely to start ANC lately compared to Lao Lum ethnic group.

Regarding awareness about timing ANC booking, the study revealed that women who did not awareness of timing of ANC booking was 6.96 times more likely to start ANC late than women who awareness of timing of ANC booking, Consistent with studied in Ghana shown that 74 % and 22.8% in south-eastern Tanzania in respondent who lacked of sufficient knowledge on the awareness of ANC booking lately as compared to others (23,25).

The most important limitation of our study derives from study design, This study is a Descriptive Cross-sectional study as such we could only asses association and, Therefore a definite causality evaluation cannot be provided, but requires complementary post-marketing safety assessment method such as cohort study, or case-control study. Moreover, the pregnant women who attend ANC service at private clinic were not included in the study. Nevertheless, this study was the first attempt to exploring of ANC time booking in 4 central hospitals in Vientiane Capital City, so this result can be the basic of information

for future study, however to the generalization to the national level could be limited, therefore increase sample size in future study was recommended.

Conclusion

Among total respondents 33.18% made their ANC booking lately. Age group of pregnant women, ethnic group, and awareness of timing booking of ANC are the core predictors or factors of ANC late booking. Toward to improve this concern, it is essential to provide education and information to make community awareness respecting the timing of first antenatal booking.

Reference

2. World Health Organization. WHO methods and data sources for country-level causes of death 2000-2012. WHO Geneva: Department of Health Statistics and Information Systems; 2014.
3. WHO, UNICEF, UNFPA, The World Bank: Trends in maternal mortality 1990–2008: estimates developed by WHO, UNICEF, UNFPA and The World Bank. Geneva: World Health Organization; 2010 [SEP].
4. Ban K. The Global Strategy for Women’s and Children’s Health. New York: United Nations; 2010 [SEP].
5. National Center for Health Statistics. Healthy People 2010 national review. Hyattsville (MD): Public Health Service, 2012:16-14
6. Maternal and Child Health Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services.: A Healthy Start: Begin before Baby’s Born. Available from: <http://health.utah.gov/mihp/pdf/prenatal.pdf>. [Accessed September 27, 2005].
7. Mortimer G. Caring for our future: a report by the expert panel on the content of prenatal care. *Obstetrics and Gynecology*. 1991;77(5):782–787.
8. Royal college of obstetricians and Gynaecologists (RCOG), author Clinical guidelines, Antenatal care: Routine care for the healthy pregnant woman. London: RCOG Press; 2003.
9. Redshaw, M., & Heikkila, K. Delivered with care: A national survey of women's experience of maternity care. Oxford: National Perinatal Epidemiology Unit, University of Oxford. 2010
10. Child Health USA 2012. U.S. Department of Health and Human Services Health Resources and Services Administration. January 2013 : 61
11. M. King, R. Mhlanga, and H. De Pinho, The Context of Maternal and Child Health, South African Health Review Health Systems Trust, Durban, South Africa, 2006.
12. Z. Abose, M. Woldie, and S. Ololo, “Factors influencing antenatal care service utilization in Hadiya zone,” *Ethiopian Journal of Health Sciences*, vol. 20, no. 2, p.

- 78, 2010.
13. TJ A, Why pregnant women delay to attend Prenatal care?, June 2008.
 14. B. Simkhada, E. R. Van Teijlingen, M. Porter, and P. Simkhada, "Factors affecting the utilization of antenatal care in developing countries: systematic review of the literature," *Journal of Advanced Nursing*, vol. 61, no. 3, pp. 244–260, 2008.
 15. D. Nigatu, A. Gebremariam, M. Abera, T. Setegn, and K. Deribe, "Factors associated with women's autonomy regarding maternal and child health care utilization in Bale zone: a community based cross-sectional study," *BMC Women's Health*, vol. 14, no. 1, article 79, 2014.
 16. Hagey J, Rulisa S, Pérez-Escamilla R. Barriers and solutions for timely initiation of antenatal care in Kigali, Rwanda: Health facility professionals' perspective. *Midwifery J* 2014; 30(1): 96-102.
 17. Banglades 2. Rob Stephenson. Community Influences on Antenatal and Delivery Care in Bangladesh, Egypt, and Rwanda. *Public Health Rep.* 2012 Jan-Feb; 127(1): 96–106. PMID: PMC3234403 [L]
[SEP]
 18. Soontornprakasit P, Mongkolchati A, Chompikul J. Factors associated with time to start antenatal care within 12 weeks gestational age among mothers in Mahasarakham province, Thailand. *Journal of Public Health and Development.* 2016 May 31; 14(1):21-36.
 19. Sinyange N, Sitali L, Jacobs C, Musonda P, Michelo C. Factors associated with late antenatal care booking: population based observations from the 2007 Zambia demographic and health survey. *The Pan African medical journal.* 2016; 25.
 20. Muhwava LS, Morojele N, London L. Psychosocial factors associated with early initiation and frequency of antenatal care (ANC) visits in a rural and urban setting in South Africa: a cross-sectional survey. *BMC pregnancy and childbirth.* 2016 Dec;16(1):18.
 21. Baker EC, Rajasingam D. Using Trust databases to identify predictors of late booking for antenatal care within the UK. *Public Health.* 2012;126(2):112–6.
 22. Emelumadu O, et al. Socio-demographic determinants of maternal health-care service utilization among rural women in anambra state, South East Nigeria. *Ann Med Health Sci Res.* 2014;4(3):374–82

23. Magadi MA, Madise NJ, Rodrigues RN: Frequency and timing of antenatal care in Kenya: explaining the variations between women of different communities. *Soc Sci Med* 2000, 51:551-561.
24. Gross K et al. Timing of antenatal care for adolescent and adult pregnant women in south-eastern Tanzania. *BMC Pregnancy Childbirth*. 2012; 12: p 16.24.
Cresswell JA et al. Predictors of the timing of initiation of antenatal care in an ethnically diverse urban cohort in the UK. *BMC Pregnancy Childbirth*. 2013; 13: p 103.
25. Ndidi EP, Oseremen IG. Reasons given by pregnant women for late initiation of antenatal care in the niger delta, Nigeria. *Ghana medical journal*. 2010;44(2).