Socioeconomic Disparities, Pregnancy Factors and Inadequate Antenatal Care Utilization in Rural Cambodia

Keopanha Soeung[1], Wongsa Loahasiriwong[2], Kittipong Sornlom[3]

[1]Doctor of Public Health Program, Faculty of Public Health, Khon Kaen University, Thailand, [2] Associate Professor, Dr, Faculty of Public Health, Khon Kaen University, Thailand, [3] Dr, Thakhantho District Public Health Office, Kalasin Province, Thailand

Abstract

Background: Antenatal care (ANC) is widely known as the most efficient measures for reducing maternal mortality. This research aimed to describe ANC utilization pattern and identify the relationships of socioeconomic disparities, pregnancy factors and inadequate ANC among pregnant women in rural Cambodia.

Method: This cross-sectional study used the data from the Cambodia Demographic Health Survey (CDHS). The CDHS collected the data from 3,764 women who gave birth in the preceding five-year period using a structured questionnaire. The generalized linear mixed model (GLMM) was used to identify the association of socioeconomic, pregnancy factors and inadequate ANC utilization when controlling the effects of other co-variates presenting adjusted OR and 95% confidence interval.

Results: Among the total of 3,764 respondents. Almost one-third had inadequate ANC (31.59%;95%CI: 30.10-33.07%). Factors that were statistically associated with inadequate ANC were taking ANC in private sectors (adj OR. = 2.10, 95%CI: 1.47– 2.99), unwanted pregnancy (adj OR. =1.70, 95%CI: 1.44– 2.01), multiparity of three babies or higher (adj OR. = 1.66, 95%CI: 1.42– 1.94), illiteracy (adj OR. = 2.08, 95%CI: 1.41– 1.92), had spouse finished only primary education (adj OR. = 2.13, 95%CI: 1.45– 1.92) when controlling other factors including age, education, occupation, husband's age, occupation, financial status, accessing health facility.

Conclusion: Almost one-third of pregnant women in rural Cambodia had inadequate ANC. Both socioeconomic and pregnancy factors had influence on having inadequate ANC.

Keywords: *Antenatal care, Cambodia, Pregnancy, Socioeconomic*

Introduction

Maternal death is the death of women while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental causes [(1)]. More than 70% of all maternal death was due to direct obstetric causes, mostly excessive bleeding after delivery, infection after childbirth…etc.[(2, 3)]. Maternal death is preventable [(4)]. Maternal and newborn death are preventable through good quality of ANC and delivery by skilled attendance [(5-7)]. The goal of ANC is not only preparing for birth or parenthood, but also preventing, detecting, alleviating or managing on three types of health problems. These health problems are complications of pregnancy, preexisting conditions that worsen the pregnancy outcome, and unhealthy lifestyle during pregnancy [(8)]. In addition, initiation of ANC as early as possible is essential for early detection, managing and prevention many causes of maternal death and help the mother to receive the full package of ANC services.

Corresponding author:
Wongsa Loahasiriwong
Email : drwongsa@gmail.com

From 2007 to 2014, only 64% of pregnant women attended ANC globally [9]. In developed countries, 98% of women received prenatal care and 94% gave birth by skilled health practitioners [10] whereas there were only 40% in developing countries [2]. The adequate ANC, at least four visits during pregnancy, was only 50 to 75% [5, 11-13]. In addition, timely ANC visit (the first ANC visit is before 12 weeks) was only 20% to 50% [11, 14-16]. Rural women were more likely to have inadequate ANC when compare with those in urban setting [12, 17].

The Cambodia Demographic Health Survey 2010 reported 89.6% of women had at two ANC visits and only 59.6% received four or more ANC visits [18]. However, only one-third of pregnant women in rural areas completed four ANC visits as recommended [19]. Cambodia has been continuously improving not only on socioeconomic but also health service system. Accessibility to importance health services such as ANC should be improved. However, the situation in rural settings still unknown. Therefore, this study was to describe the ANC utilization of pregnant women and roles of socioeconomic and pregnancy factor on inadequate ANC utilization in rural areas of Cambodia.

Methods

Study Design and Population

The cross-sectional study used the data of the Cambodian Demographic and Health Survey which was conducted in 2014. The survey used two-stage clustering sampling methods to select the participants which represent the total population of pregnant women. The inclusion criteria were women aged between 15 and 49 years old who were pregnant and gave birth between 2009 and 2014, had completed data on ANC, and lived in rural areas. There were 3,764 individuals selected. For the analysis.

Study Outcome

Dependence factor was categorical with coding as 1 for inadequate ANC which was referred to women attend less than 4-time ANC visit and receive first ANC visit at 12 weeks or more than 12 weeks. Even they attended more than 4-time ANC visit, but they received first ANC visit at more than 12 weeks were still considered as inadequate. They received first ANC visit at least than 12 weeks but attending less than 4-time ANC visit were still classified as inadequate. Outcome is coding as 0 for adequate ANC which is refer to women attended equally or more than 4 times ANC visit, and received first ANC visit within 12-week.

Data Analysis

To describe the independent and dependent variables, descriptive statistics which included frequency and percentage were used to describe categorical data whereas mean, standard deviation, median, and maximum minimum were for continuous data. A simple logistic regression was used to identify the association of each independent variable with inadequate ANC. The independent variable that had p-value <0.25 were processed to the multivariable analysis using the generalized linear mixed model (GLMM) to identify the association between socioeconomic and pregnancy factors with inadequate ANC when controlling the effect of other covariates. Regional which included 19 provinces were used as a random effect. The magnitude of association was presented as adjusted odds ratio (adj. OR), 95% confidence interval (CI) and p-value <0.05 was used as a statistically significant level. STATA was used for analysis.

Results

Among the total of 3,764 respondents, almost of them were married with an average age of 28.44 ± 6.17 years old. Their spouse's mean age was 31.42 ± 6.98 years old. Majority of the respondents finished only primary education (54.89%) and 27.92 % were Illiterate. About quarter were from the household with less deficiency wealth category (27.31%), 43.94% were self-employed and 57.33% had spouse working in agriculture sectors. Most of them had no health insurance (82.62%). Almost all get health service from public health facilities (95.88%) and get services from midwifes. Two-third had problems on health expense (68.07%) while the permission, distance, someone accompany health facility was not a big problem. Concerning pregnancy history, the average age at delivery was 21.59 ±3.91 years old. Most of them wanted to pregnant (86.37%). About two-third had less than two years birth interval from the first delivery and nearly half of them made decision on health service utilization by themselves (43.30%)

One-third of pregnant women had inadequate ANC (31.59%;95%CI: 30.10-33.07%). The inadequate of first ANC visit and ANC visit were 18.89% and 23.75%, respectively (Table1)

Table1: Prevalence of inadequate ANC in rural Cambodia (n=3764)

Factors	Number	Percentage	95%CI
First ANC Visit			
Adequate (first visit before 12 weeks)	3,053	81.11	79.82-82.34
Inadequate (first visit at 12 weeks or higher)	711	18.89	17.63.20.14
Number of ANC visit			
Adequate (≥4 times)	2,870	76.25	74.85-77.60
Inadequate (<4 times)	894	23.75	22.39-25.11
Adequate ANC			
Adequate: first visit before 12 weeks plus≥4 times	2,575	68.41	66.89-69.89
Inadequate: first visit at 12 weeks or higher plus <4 times	1,189	31.59	30.10-33.07

Table2: Multivariable analysis of factors associated with inadequate ANC, by using GLMM; presenting odds ratios, adjusted odds ratios, 95%CI and P-value (n=3764)

Factors	Number	% inadequate ANC	Crude OR	Adj OR	95%CI	p-value
Health facility for ANC						**<0.001**
Public sectors	3,779	31.60	1	1		
Private sectors	160	46.88	1.91	2.10	1.47-2.99	
Wanted pregnancy						**<0.001**
Wanted	3,404	29.99	1	1		
Unwanted	537	46.37	2.01	1.70	1.44-2.01	
Parity (number baby)						**<0.001**
1-2	2,625	26.86	1	1		
≥ 3	1,316	42.93	2.04	1.66	1.42-1.94	
Literacy						**<0.001**
Literacy	2,858	27.40	1	1		
Illiteracy	1,111	44.01	2.08	1.64	1.41-1.92	
Spouse education						**<0.001**
≥ Secondary school	1,619	22.73	1	1		
No formal education or primary school	2,337	38.60	2.13	1.66	1.45-1.90	

The generalized linear mixed model (GLMM) indicated factors that were statistically associated with inadequate ANC were taking ANC in private sectors (adj OR. = 2.10, 95%CI:1.47– 2.99), unwanted pregnancy (adj OR. =1.70, 95%CI: 1.44– 2.01), multiparity of three babies or higher (adj OR. = 1.66, 95%CI: 1.42– 1.94), illiteracy (adj OR. = 2.08, 95%CI: 1.41– 1.92), had spouse finished only primary education (adj OR. = 2.13, 95%CI: 1.45–1.92) when controlling other factors including age, education, occupation, husband's age, occupation, financial status, accessing health facility (Table2)

Disccussion

Our study indicated 31.59% of pregnant women rural Cambodia had inadequate ANC which was lower than global recommendation. However, it was similar with findings of some previous studies reported that there were 50 to 70% of adequate ANC (4-visit of ANC during pregnancy) [5, 11-13]. The possible reasons for the lower adequate ANC might be the cutoff point of adequate ANC were difference. In Cambodia, 4-visits or higher plus received the first ANC before 12 weeks was considered as adequate ANC whereas others such as Thailand used 5 visits [20]. In addition, some countries did not consider the first ANC visit [21]

The results also indicated the association between inadequate ANC and taking ANC from private sectors. This finding was similar with a study in Ethiopia, reported accessing health service had influence on early timing ANC [11]. The possible reasons might be the expense for services in public health care facilities were lower than in private. If they must get service in private sectors, it might because of inaccessibility in term of transportation and service hours. Public health care facilities usually available at front line level such as health center which provides basic health care for 100,000 people in the catchment area, especially rural areas with very minimum expense [22]. In addition, for poor pregnancy, they received the Health Equity Fund (HEF), which is a pro-poor insurance aims to reduce financial barrier to health services. The voucher scheme which targets poor women to increase health service utilization covering delivery, family planning and safe abortion [23, 24].

Unwanted pregnancy was found associated with inadequate ANC. This finding was similar with several studies, indicated that unplanned or unintended pregnancy had influence on late ANC accessibility [11, 16]. It was well recognized that unwanted pregnancy or unplanned pregnancy could lead women to levels of careless in terms of their health care during pregnancy. In addition, the unexpected pregnancy may cause by failure of family planning practices that quite common among the low-educated couples.

Had delivered three babies or more were also found associated with inadequate ANC. This result was in line with the finding of a systematic review on the factors affected ANC in developing countries stating that women with high parity tends to use ANC less [25, 26]. Furthermore, the study conducted in the capital city in Cambodia indicated multiparity was associated with ANC attendance [27].

The problem of illiteracy was also associated with inadequate ANC. Illiterate pregnancy women were more likely to have inadequate ANC than those literates. They might not access to information or did not understand the benefit of ANC since they could not read or write. In addition, the women with low-educated spouses were likely to have inadequate ANC. Other studies also indicated education as a predictor of ANC utilization. Spouses' education was significantly associated with under ANC utilization [19, 28-31]. In the context of Cambodia, especially the rural areas, males are considered as the most powerful person in a family. In this circumstance, the spouse with higher education would understand about the essential of ANC and providing support or accompany their wife to seek these health care services.

Conclusion

Almost one-third of pregnant women in rural Cambodia had inadequate ANC. Both socioeconomic and pregnancy factors had influence on having inadequate ANC. The study indicated the needs for better coverage of ANC services in the rural areas of Cambodia. The low socioeconomic couples had more children should get more attention to get assistance to access adequate ANC. In addition, they should get proper family planning services since those with unwanted pregnancy were more likely to have inadequacy ANC. This situation might result in poor pregnancy outcomes, complication as well as life of both maternal and child.

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