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FACTORS AFFECTING THE UTILIZATION OF ANTENATAL CARE SERVICES AMONG WOMEN IN KHAM DISTRICT, XIENGKHOUANG PROVINCE, LAO PDR

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ABSTRACT

The aim of this study was to identify the socio-demographic characteristics, knowledge, attitude and accessibility factors related to the utilization of antenatal care (ANC) service among pregnant women in the Kham District, Laos. Data for this cross-sectional study were collected in July 2008, using a two-stage cluster sampling strategy from 24 selected villages in the Kham District. A total of 310 married women of reproductive age who had at least one child and had delivered the last child within two years from the date of data collection were interviewed using structured questionnaires. To examine the predictors of ANC utilization, odds ratios (OR) and 95% confidence intervals (CI) were estimated through a logistic regression model. The results showed that about 53.9% of mothers did not receive any ANC service due to the following reasons: no time (93.4%), not necessary (83.8%), feeling embarrassed (74.3%), and living far away from the ANC facility (71.3%). We found that significant predictors of ANC utilization (p-value <0.05) were: level of education (OR = 6.8, 95% CI = 2.7–16.8), income (OR = 2.6, 95% CI = 1.2–5.7), knowledge (OR = 6.5, 95% CI = 2.4–17.6), attitude (OR = 3.0, 95% CI = 1.3–7.1), distance (OR = 2.9, 95% CI = 1.1–7.6), availability of public transportation (OR = 4.5, 95% CI = 2.0–10.4), cost of transportation (OR = 2.5, 95% CI = 1.1–5.7), and cost of service (OR = 4.6, 95% CI = 2.2–9.6). Our study shows that the utilization of ANC service was very low. Among other factors, limited knowledge, and lack of a good attitude along with misconceptions about ANC services were the major constraints behind this low utilization. Future health care activities should be focusing on improving women's awareness of ANC. ANC staffs should conduct frequent visits to pregnant women until ANC services become easily accessible to them.

Key Words: Antenatal care, Knowledge, Attitude, Accessibility, Laos

INTRODUCTION

Antenatal care (ANC) among pregnant women is one of the important factors in reducing maternal morbidity and mortality. Unfortunately, many women in developing countries do not receive such care. Reports from neighboring countries[1)] show that a high utilization rate of the ANC service results in lowering the risk of maternal mortality. For example, in South East Asia

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in 2000–2006, based on the ANC coverage among five ASEAN member countries, Thailand had the highest rate at 98.0%, whereas Laos had the lowest at only 27.0%. The highest rates after Thailand were: Viet Nam (91.0%), Myanmar (76.0%), and Cambodia (69.0%). According to the 2005 statistics of Maternal Mortality in South East Asia, Laos had the highest maternal mortality rate at 660 per 100,000 live births.[2)]

In addition, within Laos, particularly in Xayabouly Province, the high rates of pregnant woman who received ANC were shown to substantially reduce the rate of maternal death.[3)] The stated goal of the Ministry of Health (MOH) in the Mother and Child Healthcare Services Department for the year 2000 was to reduce the rate of maternal mortality to 490 per 100,000 live births. However, in practice, the MOH was able to reduce that rate to only 530 per 100,000 in 2000.[4)]

The Lao health master plan states that the two primary reasons why pregnant women in Laos lack access to ANC were: living too far from healthcare services and limited transportation. Moreover, poverty also poses a major obstacle to enjoying access to healthcare services.[5)]

Only limited studies conducted in developing countries have shown that income,[6,8)] knowledge,[7,9)] attitude,[9-11)] and accessibility to ANC such as distance,[12-14)] transportation,[13,15)] and waiting time[10,15)] are also significantly associated with ANC utilization, while there are no studies so far that have focused on identifying the key factors related to accessibility to ANC services in Laos.

The Kham District is located in eastern Xiengkhouang Province (XKP), where over 66.7% of the terrain is comprised of mountains and rolling hills. That District is also the second largest in the XKP, consisting of 117 villages and classified as one of the poorer districts there. The population is approximately 47,643 including 23,655 females and 23,988 males, 72.0% of whom are farmers, while the rest are employed in commerce, civil service, etc. Approximately 5.0% of the population lives in the central Kham District. Transportation from village to village as well as ANC services is usually difficult, especially in the rainy season.

In addition, since 2005, although Kham has been designated as a concentrated district, and a Kham district hospital was established as a model facility with technical support such as medical health services, health promotion, etc., the rate of maternal morbidity and mortality remains the highest in the XKP. Moreover, the area's basic sanitary conditions are still poor, and ANC coverage is very low (28%) (Annual report of Kham District Hospital, XKP, Laos, 2005).

This District was selected because there were no previous studies conducted there to determine why the coverage of ANC among married women in the area was so very low. Therefore, this study aims to identify the socio-demographic characteristics, knowledge, attitude and accessibility factors related to the utilization of ANC service among married women in the Kham District. Study results will be analyzed and any important information gathered will be used for improving the management of health sectors in the province as well as providing an example for other provinces, especially via the Mother and Child Health Care Center.

MATERIALS AND METHODS

This is a cross-sectional study conducted from July 1–27, 2008 using two-stage cluster sampling at 24 selected villages in the Kham District. Data were collected from 310 married women of reproductive age, who had at least one child and had delivered the last child within two years from the period of data collection. Face-to-face interviews using a structured questionnaire were the data collection method. The research proposal was approved by the National Ethical Committee for Health Research (NECHR) of the Lao PDR. Researchers explained the purpose of

the study and obtained informed consent before it was conducted. The questionnaire consisted of six parts: 1) socio-demographic characteristics, 2) practice (ANC use), 3) knowledge, 4) attitude, 5) accessibility and 6) social support.

Family income denotes the total income of all family members earned from all sources per month. Based on the Prime Minister's 2007 order about creating new villages and developing cluster villages for families living in remote locations, income was classified into two main categories: 1) families with an income below 250.000 kips/month (US$25), and 2) wealthy families with an income equal to or more than 250.000 kips/month (US$25).

The knowledge part of the questionnaire consisted of 15 questions divided into two components: 1) complications that occurred during pregnancy, and 2) benefits of ANC. The complication-during-pregnancy component had five questions and the benefits-of-ANC component had 10. The interviewee's scores were combined to generate the overall score. If the answer was "Yes", a score of one was given for a correct answer, and if the answer was "No", zero was marked for a wrong answer, so that the 15 questions had a maximum of 15 points or a minimum of zero. The total score of each subject was converted into a percentage. Those who scored more than 80% were treated as "knowledgeable" (good knowledge), while those with equal or less than 80.0% were treated as "not knowledgeable" (poor knowledge).[10)]

The attitude component of ANC consisted of 10 questions. The answers were divided into three choices: if the answer was "Agree" 1 score was denoted as an incorrect answer; if the answer was "Uncertain" 2 scores were given; if the answer was "Disagree" 3 were given as correct answers. Therefore, 10 questions yielded a maximum of 30 scores or a minimum of 10. The total score obtained by each subject was converted into a percentage. Those scores were classified into the following 2 categories[10)]: those who scored more than 75.0% were denoted as "positive attitude," while those with equal or less than 75.0% were scored as "negative attitude."

Descriptive statistical tests were used to measure socio-demographic characteristics of the respondents, with continuous variables presented as mean and standard deviations (SD); categorical data were presented as numbers, and percentages. Binary logistic regression analysis was done to estimate the odds ratios (OR) and 95% confidence intervals (CI) that would reveal the associations between predictors and outcome variables. All tests were two-tailed with a p-value of <0.05 considered significant. The data were analyzed using the statistical package for social sciences (SPSS) Windows version 13.0 (SPSS Chicago, IL., USA).

RESULTS

Socio-demographic characteristics of respondents

Table 1 shows that the average age of the respondents was 28.6 years, with a majority of 225 (72.6%) belonging to the 17–35 year-old age group. Most of the respondents (212) were farmers (68.4%), 105 of whom (33.9%) had no schooling. Family incomes of all respondents ranged from US$5 to US$300 with the mean income being US$40.5. 134 (43.2%) of the respondents were from poor families. The majority of respondents, 202 (65.2%), had one or two children, while only 108 (34.8%) had three or more.

Practice of antenatal care

Table 2 shows 167 (53.9%) of the respondents who had received no ANC service. Among the others, 156 (93.4%) mentioned that they had no time to visit the ANC, 140 (83.8%) reported that they felt they were in sufficiently good health, 124 (74.3%) said that they were embarrassed, while 119 (71.3%) reported that they lived too far away from an ANC service. Among women

who visited an ANC, the highest number of respondents, 92 (64.3%), had visited less than four times during their previous pregnancies, whereas only 51 (35.7%) had visited four times or more. The majority of respondents, 84 (58.7%) started visiting ANC during their second trimester followed by those in their first, 57 (39.9%) and third trimester, 2 (1.4%).

Level of knowledge and attitude

Table 3 shows that most of the respondents, 229 (73.9%), lacked sufficient knowledge, while 192 (61.9%) harbored a negative attitude towards the ANC.

Table 1 Socio-demographic characteristics of respondents

Characteristics	ANC not received n=167 Number (%)	ANC received n=143 Number (%)	Total n=310 Number (%)
Age (years)			
<17	11 (6.6)	1 (0.7)	12 (3.9)
17–35	124 (74.3)	101 (70.6)	225 (72.6)
>35	32 (19.2)	41 (28.7)	73 (23.5)
Mean=28.6 SD=7.2 Min=16.0 Max=47.0			
Occupation			
Housewife	15 (9.0)	19 (13.3)	34 (11.0)
Farmer	139 (83.2)	73 (51.0)	212 (68.4)
Merchant	7 (4.2)	25 (17.5)	32 (10.3)
Government official/worker	6 (3.6)	26 (18.2)	32 (10.3)
Ethnic groups			
Lao Lum	32 (19.2)	90 (62.9)	122 (39.4)
Lao Soung (Hmong)	75 (44.9)	24 (16.8)	99 (31.9)
Lao ther (kmu)	60 (35.9)	29 (20.3)	89 (28.7)
Educational level			
No schooling	93 (55.7)	12 (8.4)	105 (33.9)
Primary school (1–5 grade)	61 (36.5)	52 (36.4)	113 (36.4)
Secondary school/higher (6+ grade)	13 (7.8)	79 (55.2)	92 (29.7)
Average monthly income (in U.S. dollars[a])			
<25	111 (66.5)	23 (16.1)	134 (43.2)
≥25	56 (33.5)	120 (83.9)	176 (56.8)
Mean=40.5 SD=33.6 Min=5.0 Max=300.0			
Number of pregnancies			
1–2	56 (33.5)	43 (30.1)	99 (31.9)
≥3	111 (66.5)	100 (69.9)	211 (68.1)
Mean=3.2 SD=1.3 Min=1.0 Max=9.0			
Number of children			
1–2	121 (72.5)	81 (56.6)	202 (65.2)
≥3	46 (27.5)	62 (43.4)	108 (34.8)
Mean=2.4 SD=1.4 Min=1.0 Max=9.0			

[a]1 USD=10,000 kips (2007)

Table 2 Antenatal care (ANC) practices

Characteristics	Number	Percentage (%)
ANC visit for previous pregnancy		
No	167	53.9
Yes	143	46.1
Reason for no ANC[a]		
Too busy	156	93.4
Healthy, not necessary	140	83.8
Feel embarrassed	124	74.3
Live far away from ANC service	119	71.3
Pregnancy is ordinary issue	108	64.7
Poor	98	58.7
Other	98	58.7
Number of visits		
<4	92	64.3
≥4	51	35.7
Time of visit		
1st trimester	57	39.9
2nd trimester	84	58.7
3rd trimester	2	1.4
ANC sites visit[a]		
Provincial hospital	2	1.4
District hospital	112	78.3
Health center	44	28.0
ANC service providers[a]		
Doctor	1	0.7
Medical assistant	76	53.1
Midwife	31	21.7
Nurses	122	85.3

[a] Multiple answers were invited from the respondents for every question. Therefore, percentage was calculated based on multiple answers by responding subjects.

Table 3 Level of knowledge and attitude of respondents

Characteristics	ANC not received n=167 Number (%)	ANC received n=143 Number (%)	Total n=310 Number (%)
Overall knowledge			
Poor (≤80.0%)	151 (90.4)	78 (54.5)	229 (73.9)
Good (>80.0%)	16 (9.6)	65 (45.5)	81 (26.1)
Overall attitude			
Negative (≤75.0%)	138 (82.6)	54 (37.8)	192 (61.9)
Positive (>75.0%)	29 (17.4)	89 (62.2)	118 (38.1)

Table 4 Accessibility to antenatal care (ANC) services and social support

Characteristics	ANC not received n=167 Number (%)	ANC received n=143 Number (%)	Total n=310 Number (%)
Distance to nearest ANC service (in km)			
<4	12 (7.2)	64 (44.8)	76 (24.5)
4–7	59 (35.3)	42 (29.4)	101 (32.6)
≥8	96 (57.5)	37 (25.9)	133 (42.9)
Mean=7.9 SD=3.9 Min=3.0 Max=16.0			
Status of roads to nearest ANC service			
Inconvenient	107 (64.1)	64 (44.8)	171 (55.2)
Convenient	60 (35.9)	79 (55.2)	139 (44.8)
Public transportation to nearest ANC service			
Sometimes	85 (50.9)	39 (27.3)	124 (40.0)
Every day	82 (49.1)	104 (72.7)	186 (60.0)
Cost of transportation			
Expensive	115 (68.9)	39 (27.3)	154 (49.7)
Not expensive	52 (31.1)	104 (72.7)	156 (50.3)
Cost of service			
Expensive	116 (69.5)	47 (32.9)	163 (52.6)
Not expensive	51 (30.5)	96 (67.1)	147 (47.4)
Waiting time for ANC service (minutes)			
≥30	60 (35.9)	29 (20.3)	89 (28.7)
<30	107 (64.1)	114 (79.7)	221 (71.3)
Social support			
No	121 (72.5)	2 (1.4)	123 (39.7)
Yes	46 (27.5)	141 (98.6)	187 (60.3)
Source of encouragement[a]			
Village health volunteers (VHVs)/ Traditional birth attendants (TBAs)	10 (6.0)	141 (98.6)	151 (80.7)
Friend	30 (18.0)	113 (79.0)	143 (76.5)
Husband	7 (4.2)	123 (86.0)	130 (69.5)
Mother	15 (9.0)	93 (65.0)	108 (57.8)
Community leader	17 (10.2)	82 (57.3)	99 (52.9)
Health personnel	11 (6.6)	24 (16.8)	35 (18.7)
Source of information[a]			
VHVs/TBAs	57 (34.1)	142 (99.3)	200 (76.6)
Health personnel	46 (27.5)	81 (56.6)	126 (48.6)
Friend	36 (21.6)	76 (53.1)	112 (42.9)
Community leader	29 (17.4)	65 (45.5)	94 (36.0)
Mass media (radio, TV, poster, brochure)	26 (15.6)	62 (43.4)	88 (33.7)
Mother	9 (5.4)	18 (12.6)	27 (10.3)
Husband	4 (2.4)	15 (10.5)	19 (7.3)

[a] Multiple answers were invited from the respondents for every question. Therefore, percentage was calculated based on multiple answers by responding subjects.

Table 5 Characteristics of sample population by antenatal care (ANC) visit status and relationship predictors of ANC visit based on binary logistic regression analysis

Predictors	ANC not received n = 167 Number (%)	ANC received n = 143 Number (%)	OR[a]	95% CI[b]	P-value
Age (years)					
< 17 and > 35	43 (25.7)	42 (29.4)			
17–35	124 (74.3)	101 (70.6)	0.5	0.2–1.1	0.073
Education level					
No schooling	93 (55.7)	12 (8.4)			
Some schooling	74 (43.3)	131 (91.6)	6.8	2.7–16.8	<0.001
Income (in U.S. dollars[c])					
< 25	111 (66.5)	23 (16.1)			
≥ 25	56 (33.5)	120 (83.9)	2.6	1.2–5.7	0.015
Knowledge					
Poor	151 (90.4)	78 (54.5)			
Good	16 (9.6)	65 (45.5)	6.5	2.4–17.6	<0.001
Attitude					
Negative	138 (82.6)	54 (37.8)			
Positive	29 (17.4)	89 (62.2)	3.0	1.3–7.1	0.011
Distance (in km)					
≥ 4	155 (92.8)	79 (55.2)			
< 4	12 (7.2)	64 (44.8)	2.9	1.1–7.6	0.032
Condition of roads					
Inconvenient	107 (64.1)	64 (44.8)			
Convenient	60 (35.9)	79 (55.2)	1.0	0.4–2.1	0.927
Public transportation					
Sometimes	85 (50.9)	39 (27.3)			
Every day	82 (49.1)	104 (72.7)	4.5	2.0–10.4	<0.001
Cost of transportation					
Expensive	115 (68.9)	39 (27.3)			
Inexpensive	52 (31.1)	104 (72.7)	2.5	1.1–5.7	0.024
Cost of service					
Expensive	116 (69.5)	47 (32.9)			
Inexpensive	51 (30.5)	96 (67.1)	4.6	2.2–9.6	<0.001
Waiting time (minutes)					
≥ 30	60 (35.9)	29 (20.3)			
< 30	107 (64.1)	114 (79.7)	2.1	0.9–4.7	0.087

[a]OR: Odds ratio
[b]CI: Confidence interval
[c]1 USD = 10,000 kips (2007)

Accessibility of antenatal care

Table 4 shows that the majority of respondents, 133 (42.9%), said that they lived about 8 km or more from the nearest ANC service, while more than half, 171 (55.2%), complained that travel conditions made it inconvenient for them to visit the ANC. In contrast, 186 (60.0%) said that they had daily access to public transportation to the nearest ANC service. Surprisingly, 221 (71.3%) women said they did not have a long wait in their visit to the ANC service, while 89 (28.7%) complained that they were kept waiting for a long time.

Concerning the cost of transportation, 154 (49.7%) said that it was expensive to visit the nearest ANC service, while 163 (52.6%) also complained about the cost of the ANC service.

Social support

Table 4 also revealed the status of social support for ANC visits among women. Among the sources of encouragement, 151 (80.7%) felt that they were encouraged by the village health volunteers (VHVs) and traditional birth attendants (TBAs), while 35 (18.7%) indicated that the health personnel were encouraging. Among the 261 people who had information about ANC, 200 (76.6%) received that information from the TBAs/VHVs, while 19 (7.3%) were informed by their husbands.

Association between ANC visits and related factors

Table 5 shows significant associations of ANC visits with most of the associated factors. Among several such factors, education, income, knowledge, attitude, distance to the ANC service, availability of public transportation, the cost of transportation, as well as the cost of service were revealed to be positive and significant predictors of ANC service with a <0.05 p-value.

It also confirmed that the levels of education and knowledge were the most important predictors of ANC utilization in the Kham District. Educated women were 6.8 times (95% CI = 2.7–16.8) more likely to receive ANC services than those who had no education, and women who were highly knowledgeable were 6.5 times (95% CI = 2.4–17.6) more likely to do so than those who were deficient in knowledge. Moreover, family income proved to be one of the most significant predictors of ANC service utilization. Women who had high incomes were 2.6 times (95% CI = 1.2–5.7) more likely to have obtained ANC services than women with low incomes. It is interesting to note that the results of this study also revealed that women who felt that the service was not burdensome were 4.6 times (95% CI = 2.2–9.6) more likely to receive it than women who objected to the high cost, while those who had daily access to public transportation to the nearest ANC service were 4.5 times (95% CI = 2.0–10.4) more likely to visit the ANC than women without such frequent access to public transportation. In addition, the results of this study also revealed that women who had a positive attitude were 3.0 times (95% CI = 1.3–7.1) more likely to receive ANC services than those who had a negative attitude, and women who lived nearby were 2.9 times (95% CI = 1.1–7.6) more likely to frequent an ANC than those who lived far away.

DISCUSSION

In this study, only half of the respondents had received any ANC services. These findings are in agreement with another study which reported that, in 2007, the rate of pregnant women who visited the ANC in the Kham District was the lowest compared with that in the Ad District of Huaphan Province.[9)]

This study confirmed that the utilization of ANC among women with sufficient knowledge

about the benefits of ANC and the complications occurring during pregnancy was higher than among women lacking such knowledge; other studies have supported our findings.[7,9] Therefore, each respondent's knowledge has played a very important role in the utilization of ANC, encouraging pregnant women to seek and accept ANC services. Similarly, previous studies have emphasized the importance of raising awareness among women of reproductive age, especially among the uneducated. Improving knowledge about the benefits of ANC for pregnant women is an important element in enabling them to enrich their experiences as well as supporting their effort to better appreciate ways to protect their health and that of their children. Moreover, once they become knowledgeable about ANC, they will take better care of their own health. Healthy mothers who regularly visit ANC during pregnancy will greatly enhance their family's health. A diminishing rate of maternal and child mortality will also reduce a family's expenses and ensure their children's good health.

A good attitude is the most valuable precondition for any healthy behavior. Our study showed that women who had a positive attitude towards ANC had a higher proportion of ANC visits than those with a negative attitude. This finding was consistent with that of previous studies which reported that a respondent's attitude was a critical factor in encouraging pregnant women to receive ANC services.[9-11] Many respondents have mentioned that they are embarrassed when visiting an ANC. With improved knowledge about the benefits of ANC and the importance of a positive attitude toward it, these women will come to understand that ANC's medical procedures and interventions will do much to save their lives and improve their children's health. In this way they will be motivated enough to overcome their reluctance. In many ways, changing attitudes and behavior are the most challenging tasks, but are also the least costly. Proper educational campaigns and the improved dissemination of information are investments for the long-term.

Our findings also revealed that the use of ANC was higher among women with a high income who regarded the cost of services and transportation as no great expense. These findings are similar with those of previous studies indicating that family income and the cost of accessing care did in fact play a very important role in the utilization of ANC services and in encouraging pregnant women to visit ANC.[6,8,16] However, in order to support and encourage pregnant women to visit the ANC and thus fulfill the Millennium Development Goal on maternal and child health, the government should provide free access to ANC for pregnant women who are poor. Moreover, different districts may have different recommendations depending on the location and modes of accessibility. Such differences should be considered when developing policies.

Pregnant women who lived far from the ANC had the lowest rate of ANC visits. A similar conclusion was reached by other studies showing that long distances caused a reduction in accessibility to ANC services.[12-14] Especially in rural areas, a lack of access roads to villages poses a serious problem, indicating that alternative approaches should be developed to better protect women's health. One way to alleviate such problems is the use of mobile clinics to provide services to remote villages, and health professionals should make home-care visits to pregnant women in remote communities. Moreover, VHVs/TBAs should be better trained since they are key collaborators in community empowerment and the mobilization for health. With adequate training they may be able to provide ANC services and to encourage pregnant women to utilize ANC health facilities.

Although the author has collected as much information as possible in order to compile important results that fulfill the goal of this research, the study still has some limitations. First, since the cross-sectional survey was conducted in only one district, our results might not be representative of the whole country. Second, because of cultural barriers and social taboos, it was difficult at times to interview some respondents. Many of them were reluctant to visit ANC centers, unwilling to talk with outsiders, and most importantly, they often resisted being examined

by ANC staffs. Finally, time and budgetary constraints played a limiting role in extending this study beyond one district. However, honesty in collecting and analyzing data can overcome some of these limitations.

In conclusion, the results of this study confirmed that the utilization rate of ANC services is very low in the Kham District. The main factors influencing the utilization of ANC are the respondent's level of education, knowledge, and attitude. In addition, low income, long distance, insufficient or expensive transportation services are major obstacles to ANC access for pregnant women. Based on these findings, it is recommended that health education programs will be undertaken to improve women's awareness of ANC, and that the MOH should provide ANC services such as mobile health care and home care visits for remote villages or those difficult to reach. Moreover, the MOH should give priority to TBAs/VHVs training in order to extend the scope of ANC services and enhance the ability of pregnant women to reach them. At the same time, ANC services should be provided free of charge, especially for pregnant women who are poor.

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