

## Health care seeking behaviors regarding maternal care and the associated factors among married women in Naung Cho Township, Myanmar

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### ABSTRACT

The aim of this study was to find associated factors with maternal health care seeking behaviors in a rural area in Myanmar. Married women who had delivered during the previous 12 months in Naung Cho Township were targeted and were sampled by three-stage sampling. Face-to-face interviews were performed using a structured questionnaire. The Poisson regression was used to find adjusted risk ratios (aRR) of each of two health care seeking behaviors for each of the investigated explanatory variables. Women whose husband had secondary education or above were at less risk of not having regular antenatal care (ANC) than those whose husband had only primary school level education (aRR=0.57, 95%CI: 0.34–0.95). Compared with primigravid women, aRR of not having regular ANC for those with two to four pregnancies was 1.52 (95% CI: 1.13–2.05) and 1.62 (95% CI: 1.11–2.35) for those with five or more pregnancies. Respondents who had secondary education or above and women who had married at age 20 or older showed a significantly lower risk of giving birth without skilled birth attendant (SBA) than those less educated and those who married at a younger age; aRR=0.54 (95% CI: 0.33–0.89) and aRR=0.72 (95% CI: 0.52–0.99), respectively. Own and husband's education, the number of previous pregnancies, and marriage age were found as associated factors of maternal health seeking behaviors. Health education programs about the advantages of regular ANC and the importance of delivery with an SBA should be provided with married women, particularly targeting multigravida women, while improving access to and quality of maternal health care services.

Keywords: health care seeking behaviors, maternal health, antenatal care, birth attendant, Myanmar

#### Abbreviations:

ANC: antenatal care  
SBA: skilled birth attendant  
PNC: post-natal care  
MICS: multiple indicator cluster survey  
MDG: millennium development goal  
MMR: maternal mortality ratio

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## INTRODUCTION

Women's health care seeking behaviors impact not only the lives of women but the lives of their children. Pregnancy and childbirth are natural events for women of reproductive age. However, the lives of mothers can be threatened by unexpected complications as well as underlying risk factors such as anemia, pregnancy-induced hypertension, antepartum hemorrhage, and postpartum hemorrhage, among others. Globally, 830 women die every day due to complications of pregnancy and childbirth.<sup>1</sup> Conditions related to pregnancy and childbirth constitute the second leading cause of death among women of reproductive age in developing countries.<sup>1</sup> In the Republic of the Union of Myanmar (hereafter Myanmar), according to the "Maternal Death Review (MDR) Report" carried out by the Department of Public Health, Ministry of Health and Sports and United Nations Population Fund, between 2011 and 2015, 81% of all maternal mortalities were reported from rural areas, 27% of maternal deaths occurred at home and 17% died on the way to a health facility.<sup>2</sup> The global maternal mortality ratio (MMR) seems to have been dropping recently<sup>2</sup>; the baseline MMR in 1990 was 453 per 100000 live births and it declined to 178 per 100000 live births in 2015 in Myanmar. However, the rate of decline in MMR, at 3.7 per cent did not meet the 5.5 per cent requirement of the Millennium Development Goals (MDG5).<sup>2</sup> Moreover, the MMR in rural areas is higher than in urban areas.<sup>3</sup>

In maternal health care, including antenatal, childbirth and post-partum care, it is important to have healthy mothers and healthy babies at the end of pregnancy.<sup>4</sup> When antenatal care (ANC) is given by skilled providers, pregnant women also receive health promotion and preventive services such as health education, vitamin supplementation and tetanus toxoid immunization. Pregnant women can prepare for childbirth and avoid potential complications by sharing their medical and obstetric history with care providers and undergoing the necessary examinations.<sup>5</sup> Complications of pregnancy and childbirth accounted for severe or long-lasting illness or disabilities in 5.7 million women in every year.<sup>6</sup> Although in Myanmar overall, 81% of women who gave birth during the previous five years had received ANC at least once from skilled health providers, the proportion would become much smaller if it were restricted to women who received ANC with skilled health providers more than four times.<sup>7</sup> It has been recommended that all pregnant women are supported by a skilled birth attendant (SBA) during delivery.<sup>8</sup> According to the MDGs report, in 2014, globally, more than 71% of women who gave birth were assisted by SBAs.<sup>9</sup> However, in Myanmar, the figures for women who had been supported by SBA during their childbirth were 70.6% in 2009–2010<sup>10</sup> and 60% in 2015–2016.<sup>7</sup> Not having SBA support can increase the chance of death during childbirth and the immediate post-partum period. The Ministry of Health, Myanmar developed a National Reproductive Health Policy in 2002, calling for improvements in quality of care and physical access, and has invested in implementing maternal and child health services.<sup>3</sup> Although health promotion programs are now providing information aimed at changing mothers' behaviors,<sup>11</sup> the decision to seek health care is influenced by a variety of socio-economic variables and mothers' awareness of their own health. In Myanmar, there is limited research on such maternal care practices, particularly in rural remote areas.

This study therefore aimed to describe health care seeking behaviors regarding maternal care among married women who had delivered during the previous 12 months in Naung Cho Township, Myanmar. Associated factors with selected behaviors were then investigated.

## MATERIALS AND METHODS

### *Study design and setting*

A cross-sectional survey was carried out in Naung Cho Township, Shan State, Myanmar. Naung Cho Township is located 838.2 meters above sea level. Road conditions are generally poor there, especially during the rainy season. Most families are farmers and their economic status is not stable, sometimes depending on weather conditions. They have less access to health care and information due to financial and geographical inaccessibility. As a result, families rely more on self-treatment and traditional healers. In 2012, 29,929 of the total 128,357 residents, were women of reproductive age (15–49 years old). There is one township hospital with 25 beds, two station hospitals with 10 beds, and six rural health centers which mainly provide reproductive health services.

### *Sample size and sampling procedures*

Married women who had delivered during the 12 months before the interview were included in this study. A sample size of 245 was determined using a sample size formula for estimating a single population proportion, based on the following assumptions: the proportion of ANC attendance in 2011 in this township was 80% ( $P=0.8$ ), the significant level  $\alpha=0.05$ , and 95% confidence interval  $\pm 0.05$ . Multistage (three stages) sampling was used to select study respondents. From among six rural health centers in Naung Cho Township, two rural health centers were randomly chosen. Five villages in the catchment area in each of the selected rural health centers were randomly chosen again. In each selected village, the household nearest to the village office was chosen as a starting point. Door-to-door visits were conducted at households in which there was a married woman who met the sampling criteria, and the houses where there was no married woman who met the criteria were skipped. Considering possible non-response, it was planned to visit 255 women. Among them, 245 respondents answered completely, therefore, the response rate was 96%.

### *Data collection*

Eligible respondents were interviewed using a structured questionnaire. The main part of the questionnaire was developed with reference to MICS, Myanmar, which was a nationally representative survey that aimed to identify the overall situation of children and women in Myanmar.<sup>10</sup> Some modifications were made, such as: reasons for not attending ANC, and knowledge of danger signs during pregnancy, childbirth and post-partum period. The questionnaire included 1) socio-demographic characteristics, 2) obstetric history, 3) knowledge of danger signs during pregnancy, childbirth and post-partum period, and 4) health care seeking behaviors during pregnancy, childbirth and post-partum period of the last child. Eight interviewers (medical students from the University of Medicine, Mandalay) received training in performing face-to-face interviews in accordance with the developed training manual. All the interviewers participated in pre-tests. After interviewer training, household visits were conducted in December, 2013. Women identified as eligible by household visits were invited to participate in the study.

### *Data management and analysis*

The collected data were coded, entered, managed, and analyzed using the Statistical Package for Social Science (SPSS) software program (version 20.0). Socio-demographic characteristics, obstetric history, and knowledge and behaviors were descriptively summarized. Then, the associations between each of two selected behavior variables and other mother's characteristics were statistically analyzed. The selected behaviors were whether a respondent attended ANC less than

four times during her last pregnancy,<sup>1</sup> and whether her last delivery took place without an SBA.<sup>2</sup> In this study, SBAs included doctors, lady health visitors, and midwives.

Crude risk ratios (cRRs) and adjusted risk ratios (aRRs) of each of the selected behaviors for respondent characteristics were estimated using the Poisson regression adjusted by the other respondent characteristics. We used RRs, not odds ratios (ORs), because using ORs would cause overestimation due to the high prevalence in the outcome indicators.  $P < 0.05$  was considered statistically significant.

#### *Ethical approval*

Ethical approval for the study was obtained from the Research and Ethical Committee of the University of Medicine, Mandalay. Selected women were advised that participation would be fully voluntary and they would be at no disadvantage should they refuse to participate or leave the study at a later stage. Verbal informed consent was obtained from the study participants before data collection. Privacy was maintained during the interviews, and anonymity and confidentiality were guaranteed during the entire study.

## RESULTS

As shown in Table 1, nearly half of the study participants were in the age group 21–30 years (47.8%) with a mean age of 28.4 years. The majority of respondents (64.5%) and their husbands (69.0%) had attended primary school. Nearly two thirds of the respondents were of the Danu ethnic group and almost all (99.6%) were Buddhists. Regarding their husband's occupation, most of them worked as farmers (60.4%) and manual workers (33.5%). In this study, the majority of respondents (84.5%) reported that their monthly income was 150000 kyats (150USD) or less. Nearly half (47.3%) had married when they were 20 years old or younger. Over half of the respondents had a history of two to four pregnancies.

**Table 1** Sample characteristics (n=245)

		Frequency	%
<b><i>Socio-demographic status</i></b>			
<b>Age (years old)</b>	≤20	32	13.1
	21–30	117	47.8
	31–40	89	36.3
	≥41	7	2.9
<b>Education</b>	No education	8	3.3
	Incomplete primary school	30	12.2
	Complete primary school	158	64.5
	Complete secondary school	34	13.9
	High school and above	15	6.1
<b>Husband's education</b>	No education	6	2.4
	Incomplete primary school	25	10.2
	Complete primary school	169	69.0
	Complete secondary school	28	11.4

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	High school and above	17	6.9
<b>Ethnicity</b>	Myanmar	16	6.5
	Danu	178	72.7
	Shan	45	18.4
	Gawrakhar	6	2.4
<b>Husband's occupation</b>	Farmer	148	60.4
	Government staff	2	0.8
	Self-employed	13	5.3
	Manual worker	82	33.5
<b>Family structure</b>	Nuclear	144	58.8
	Joint or extended	101	41.2
<b>Number of family members</b>	≤5	165	67.3
	≥6	80	32.7
<b>Household monthly income (Kyats)</b>	≤150000 (150 USD)	207	84.5
	>150000 (150 USD)	38	15.5
<b>Age at marriage (years old)</b>	≤20	116	47.3
	21–30	114	46.5
	31–40	15	6.1
<i>Obstetric factors</i>			
<b>Age at first pregnancy (years old)</b>	≤20	93	38.0
	21–30	131	53.5
	31–40	21	8.6
<b>Number of pregnancies</b>	1	90	36.7
	2–4	125	51.0
	≥5	30	12.2

Commonly-suggested danger signs during pregnancy were vaginal bleeding (41.2%), swollen face/leg (27.8%) and severe abdominal pain (16.7%). Some women mistook dysentery, dysuria, and itchiness for danger signs during pregnancy. A quarter of the respondents did not know any of the danger signs during pregnancy (Table 2). In regard to danger signs during childbirth, loss of consciousness was the most common answer (34.7%) followed by convulsion (23.3%) and high fever (21.6%). The post-partum danger signs reported by respondents were foul smelling vaginal discharge (37.1%), difficulty in breathing (21.2%), uterine prolapse (18.8%) and severe bleeding (10.2%). About 28% of the respondents did not know any childbirth or post-partum danger signs (Table 2).

**Table 2** Knowledge of danger signs during pregnancy, delivery and post-partum period (n=245)

		Frequency	%
<b>Danger signs during pregnancy<sup>†</sup></b>	Vaginal Bleeding	101	41.2
	Swollen face/leg	68	27.8
	Severe abdominal pain	41	16.7
	High fever	36	14.7
	Severe headache	30	12.2
	Difficulty in breathing	15	6.1
	Loss of consciousness	15	6.1
	Blurred vision/dizziness	7	2.9
	Convulsion	7	2.9
	Hypertension	4	1.6
	Hypotension	2	0.8
	Do not know	63	25.7
	<b>Danger signs during delivery<sup>†</sup></b>	Loss of consciousness	85
Convulsion		57	23.3
High fever		53	21.6
Severe headache		45	18.4
Prolonged labor		27	11.0
Severe bleeding		21	8.6
Malposition/presentation		20	8.2
Retained placenta		14	5.7
Do not know		70	28.6
<b>Danger signs during post-partum period<sup>†</sup></b>	Foul smelling vaginal discharge	91	37.1
	Difficulty in breathing	52	21.2
	Uterine prolapse	46	18.8
	Severe bleeding	25	10.2
	Severe headache	17	6.9
	Loss of consciousness	16	6.5
	Severe weakness	14	5.7
	Convulsion	13	5.3
	Visual disturbance	10	4.1
	Swollen face/legs	9	3.7
	High fever	8	3.3
	Hypertension	4	1.6
	Do not know	69	28.2

<sup>†</sup>Multiple answers were allowed.

Table 3 shows health care seeking behaviors during pregnancy, childbirth and post-partum period of the last child. Two hundred and four respondents (83.3%) had attended ANC at least once during their last pregnancy. Among 41 respondents who did not attend ANC, the reported reasons for non-attendance included: busy with their work (34.1%), no knowledge about ANC (24.4%), absence of illness (17.1%), cannot afford (12.2%) and difficult to access (12.2%) . Only 43.3% had attended ANC four times or more (regular ANC). Most respondents (63.7%) received ANC from midwives. At the same time, it was suggested that 172 respondents (70.2%) of the women had delivered at home and 137 respondents (55.9%) had delivered their last child with traditional birth attendants, auxiliary midwives, or relatives. Nearly one fifth of respondents did not receive post-partum care from any type of health care provider. Among 200 respondents who received PNC (post-natal care) at least once, 42.5% received care from midwives and 20.0% from auxiliary midwives.

**Table 3** Health care seeking behaviors during pregnancy, childbirth and post-partum period of the last child

		Frequency	%
<i>Health care seeking behaviors during pregnancy</i>			
<b>Antenatal care (ANC) attendance (n=245)</b>	None	41	16.7
	1	7	2.9
	2	30	12.2
	3	61	24.9
	≥4	106	43.3
	<b>ANC provider (n=204)</b>	Doctor	6
Lady health visitor		20	9.8
Midwife		130	63.7
Auxiliary midwife		37	18.1
Traditional birth attendant		10	4.9
Relative		1	0.5
<i>Health care seeking behaviors during childbirth</i>			
<b>Place of delivery (n=245)</b>	Home	172	70.2
	Government hospital	52	21.2
	Government clinic	17	6.9
	Private hospital	3	1.2
	Private clinic	1	0.4
	<b>Birth attendant (n=245)</b>	Doctor	38
Lady health visitor		23	9.4
Midwife		47	19.2
Auxiliary midwife		57	23.3
Traditional birth attendant		73	29.8
Relatives		7	2.9

**Health care seeking behaviors during post-partum**

<b>Postnatal care (PNC) (n=245)</b>	None	45	18.4
	1–5	158	64.5
	≥6	42	17.1
<b>PNC provider (n=200)</b>	Doctor	22	11.0
	Lady health visitor	14	7.0
	Midwife	85	42.5
	Auxiliary midwife	40	20.0
	Traditional birth attendant	38	15.5
	Community health worker	1	0.5

Not having regular ANC was associated with husband's education and number of pregnancies. The women whose husband had secondary education or above were at less risk of not having regular ANC than those whose husband had primary school level education (aRR=0.57, 95%CI: 0.34–0.95). The risk of not having regular ANC increased as the number of pregnancies increased. Compared with primigravid women, the aRR of not having regular ANC for those with two to four pregnancies was 1.52 (95% CI: 1.13–2.05) and for those with five pregnancies or more was 1.62 (95% CI: 1.11–2.35) (Table 4).

**Table 4** Health care seeking behaviors (ANC attendance) and respondent characteristic

Variables		<u>Less than 4 times ANC attendance</u>			
		cRR	(95% CI)	aRR	(95% CI)
<b>Age (years old)</b>	≤30	1	-	1	-
	≥31	1.32*	(1.06–1.63)	1.15	(0.88–1.50)
<b>Education</b>	≤Primary school	1	-	1	-
	≥Secondary school	0.48**	(0.31–0.74)	0.72	(0.47–1.09)
<b>Husband's education</b>	≤Primary school	1	-	1	-
	≥Secondary school	0.41**	(0.25–0.69)	0.57*	(0.34–0.95)
<b>Ethnicity</b>	Shan	1	-	1	-
	Danu	1.20	(0.87–1.66)	1.21	(0.90–1.63)
	Others <sup>†</sup>	1.11	(0.68–1.81)	1.39	(0.87–2.22)
<b>Husband's occupation</b>	Manual workers	1	-	1	-
	Farmer	0.76*	(0.62–0.94)	0.82	(0.67–1.01)
	Others <sup>‡</sup>	0.28*	(0.10–0.80)	0.43	(0.16–1.18)
<b>Number of family members</b>	≥5	1	-	1	-
	≥6	1.08	(0.86–1.36)	0.09	(0.84–1.41)
<b>Type of family</b>	Nuclear	1	-	1	-
	Joint or extended	0.85	(0.67–1.07)	1.01	(0.79–1.29)



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<b>Household monthly income (Kyat)</b>	≤150000 (150 USD)	1	-	1	-
	>150000 (150 USD)	0.81	(0.56–1.15)	0.89	(0.62–1.26)
<b>Age at marriage (years old)</b>	≤20	1	-	1	-
	>20	0.76*	(0.61–0.95)	0.87	(0.63–1.19)
<b>Age at first pregnancy (years old)</b>	≤20	1	-	1	-
	>20	0.80	(0.64–1.00)	0.90	(0.68–1.20)
<b>Number of pregnancies</b>	1	1	-	1	-
	2–4	1.74**	(1.29–2.36)	1.52**	(1.13–2.05)
	≥5	2.36**	(1.74–3.21)	1.62*	(1.11–2.35)
<b>Knowledge of danger signs</b>	Do not know	1	-	1	-
	≥One danger sign	0.67**	(0.55–0.83)	0.84	(0.68–1.05)

ANC: antenatal care

cRR: crude risk ratio

aRR: adjusted risk ratio

CI: confidence interval

\*\*p<0.01

\* p<0.05

†Others = Myanmar, Gawrakhar

‡Others=Government staff, self-employed

All the respondent characteristics were mutually adjusted.

Giving birth without an SBA was significantly associated with respondent's education, age at marriage and number of pregnancies. Respondents who had secondary education or above and women who had married at 20 years of age or older showed a significantly lower risk of giving birth without an SBA than those less educated and those who had married at a young age; aRR=0.54 (95% CI: 0.33–0.89) and aRR=0.72 (95% CI: 0.52–0.99), respectively. The more pregnancies the respondent had, the more likely she was to give birth without an SBA. The respondents who had two to four previous pregnancies were 1.37 times more likely to give birth without an SBA than primigravid women (95% CI: 1.05–1.78). In this study, there was no difference in the risk of each behavior by respondent's age, ethnicity, number of family members, and type of family members, average household income, age at first pregnancy and knowledge of danger signs. (Table 5)

**Table 5** Health care seeking behaviors (deliveries without SBA) and respondent characteristic

Variables		<u>Deliveries without SBA</u>			
		cRR	(95% CI)	aRR	(95% CI)
<b>Age (years old)</b>	≤30	1	-	1	-
	≥31	0.94	(0.75–1.19)	0.97	(0.73–1.29)
<b>Education</b>	≤Primary school	1	-	1	-
	≥Secondary school	0.41**	(0.25–0.67)	0.54**	(0.33–0.89)
<b>Husband's education</b>	≤Primary school	1	-	1	-
	≥Secondary school	0.54*	(0.35–0.83)	0.75	(0.49–1.16)

<b>Ethnicity</b>	Shan	1	-	1	-
	Danu	1.28	(0.92–1.80)	1.25	(0.91–1.72)
	Others <sup>†</sup>	0.87	(0.48–1.58)	1.01	(0.58–1.76)
<b>Husband's occupation</b>	Manual workers	1	-	1	-
	Farmer	0.91	(0.73–1.15)	0.99	(0.79–1.23)
	Others <sup>‡</sup>	0.43	(0.18–1.03)	0.72	(0.31–1.71)
<b>Number of family members</b>	≥5	1	-	1	-
	≥6	0.85	(0.65–1.09)	0.91	(0.68–1.22)
<b>Type of family</b>	Nuclear	1	-	1	-
	Joint or extended	0.81	(0.64–1.03)	1.00	(0.78–1.31)
<b>Household monthly income (Kyat)</b>	≤150000 (150USD)	1	-	1	-
	>150000 (150USD)	0.87	(0.62–1.23)	0.97	(0.69–1.38)
<b>Age at marriage (years old)</b>	≤20	1	-	1	-
	>20	0.66**	(0.52–0.82)	0.72*	(0.52–0.99)
<b>Age at first pregnancy (years old)</b>	≤20	1	-	1	-
	>20	0.74*	(0.59–0.91)	1.01	(0.77–1.30)
<b>Number of pregnancies</b>	1	1	-	1	-
	2–4	1.44*	(1.09–1.89)	1.37*	(1.05–1.78)
	≥5	1.53*	(1.08–2.17)	1.29	(0.83–2.01)
<b>Knowledge of danger signs</b>	Do not know	1	-	1	-
	≥One danger sign	0.75*	(0.60–0.93)	0.96	(0.78–1.19)

SBA: skilled birth attendant

cRR: crude risk ratio

aRR: adjusted risk ratio

CI: confidence interval

\*\*p<0.01

\* p<0.05

<sup>†</sup>Others = Myanmar, Gawrakhar

<sup>‡</sup>Others=Government staff, self-employed

All the respondent characteristics were mutually adjusted.

## DISCUSSION

Although the Ministry of Health and Sports, Myanmar offers resources and strives to provide maternal and child health care services, not all women use them optimally. This study therefore assessed women's health care seeking behaviors regarding maternal care and what factors are associated with those behaviors. The coverage of at least one ANC visit (83.3%) during their last pregnancy was less than the national average of 93.1% from any type of health care provider in 2009 and higher than the average of Shan (North) (63.2%) generally.<sup>10</sup> Although WHO recommends attending ANC at least four times for a normal pregnancy by 2016, between 2006 and 2012 this was only achieved by approximately 65% of women globally and 61% in East Asia and the Pacific region.<sup>12</sup> Only 43.3% of women in the present study attended ANC at least four times.

At ANC visits, women can take advantage of interventions such as history taking, physical

examination and routine investigations for their health and that of their infants<sup>5,10,13</sup>; however, some of participants of our study did not attend ANC at all for a variety of reasons. The reasons found in this study were similar to other studies, such as being too busy, having no knowledge about ANC, being healthy, and difficulties of accessibility and affordability.<sup>14-16</sup> One qualitative study explained that the three main categories which led to not attending ANC were accessibility in terms of distance and cost, attitudes toward ANC, and interpersonal issues.<sup>17</sup> This study suggested that women's health knowledge and awareness of ANC were still inadequate and that women should be better informed.

In this study, husband's education was associated with a woman's likelihood of attending ANC. Women whose husband had secondary level education or above had a lower risk of not attending ANC regularly than women whose husband had primary level education or lower. Another study in Thingangyun Township, Yangon, also reported that women whose husband had a higher level of education had healthier behaviors such as attending their first ANC as early as possible, regular ANC attendance and tetanus toxoid immunization.<sup>18</sup> Similarly, the influence of husband's education on ANC was reported in studies in India and Uganda.<sup>19,20</sup> These tendencies may be due to the fact that husbands with more education realize the benefits of good care during pregnancy, and support their wives in seeking appropriate health care.

This study observed that only 44.1% of deliveries were assisted by SBAs, which was much lower than the national result (70.6%)<sup>10</sup> but quite similar to that in Shan (North) generally, where 42.8% of deliveries were assisted by SBAs.<sup>10</sup> The majority (70.2%) delivered at home, which was a higher proportion than the national figure (63.8%)<sup>10</sup> and a study in Paung Township in Mon State (66.1%).<sup>21</sup> The barriers to giving birth in an institution were women's belief that their pregnancy was normal, that they could not afford the cost of delivery in an institution and belief in traditional birth attendants (TBAs). MDG5 aimed to have 80% of births attended by an SBA by 2015.<sup>3</sup> Therefore, strengthening human resources, particularly posting midwives in rural health centers, is required. In addition, since some woman prefer their delivery to be assisted by a TBA, collaboration with TBAs in order to secure safe and clean delivery practices and timely referral is also needed.

SBA assistance at deliveries is one of the key factors for reducing the MMR.<sup>20</sup> However, the low proportion of births attended by SBAs is impeding progress and is a global concern.<sup>22</sup> This study revealed that women with a lower level of education were at higher risk of delivering without an SBA. This is possibly because educated women can recognize the complications and severity of any illness they have, are less influenced by traditional belief systems, and can make appropriate decisions.<sup>23</sup> The results of this study are similar to maternal health studies in other developing countries.<sup>24-26</sup> This study showed that women who married at an older age were less likely to deliver without SBA. Therefore it can be assumed that women who married in their 20's or older and their family members may have a higher awareness of safe motherhood than those who married in their teens and their family members. Moreover, one study showed that there is the possibility of poor reproductive health outcomes such as frequent childbearing and unplanned motherhood in early age marriage, especially in the adolescent period.<sup>27</sup> Therefore, this young age group should be emphasized to give health information to prevent adverse outcomes during their reproductive age.

In this study, women who were pregnant for the second (or more) time were found to be less likely to have good practices for both ANC attendance and use of SBA services. A previous study suggested that women who had experienced obstetric complication were more likely to attend ANC.<sup>28</sup> On the other hand, women who had experienced no serious complications in previous pregnancies, felt little need to seek care, and paid less attention to their health.<sup>29,30</sup> As a consequence, women might miss important information about the need to have SBA-assisted

delivery. Moreover, availability, accessibility and women's traditional beliefs may also contribute to the decision to use unskilled birth attendants.<sup>31</sup>

It was assumed that knowledge of danger signs during pregnancy and childbirth would influence women's care seeking behavior during pregnancy. Previous studies reported that women who had attended ANC during their last pregnancy and knew the critical danger signs were more likely to choose delivery with an SBA.<sup>32,33</sup> Similarly, a study in Uganda showed that there was a significant relationship between knowledge of at least one key danger sign and birth preparedness.<sup>34</sup> However, this study could not find significant associations between knowledge and behaviors. Women who did not have any complications in their previous pregnancies may be less aware of danger signs and may consider childbirth to be a normal event. It was considered that even though some women knew about danger signs, it was not enough to make them change their behavior.

There were some limitations to this study. Because a cross-sectional design was employed, causal relationship was unknown. There was a possibility of recall bias due to asking about past experiences in the cross-sectional design. Moreover, because we used a quantitative approach based on a structured questionnaire, their reasons for use or non-use of maternal health services may not have represented their in-depth perception.

In conclusion, this study suggested that current use of ANC and PNC could not be considered optimal in Naung Cho Township, a rural and remote area in Myanmar, and there was also limited use of SBA services to assist with deliveries. Own and husband's educational level, the number of pregnancies and marriage age were found as associated factor with maternal health care seeking behaviors. This study was conducted in Naung Cho Township in a mainly rural area in Shan State, where information about factors associated with health care seeking behaviors among women was lacking. In Myanmar, two thirds of the populations live in mainly rural areas and they are a vulnerable group in terms of access to health care. Therefore, the results of this study have implications not only for the targeted population but also any population with similar geographical and socioeconomic conditions.

These results reinforce the argument that maternal health care should focus on assisting women and their husbands with low educational level. Health education programs about the advantages of regular ANC and the importance of assistance from SBAs during delivery should be provided, particularly targeting women with a previous pregnancy. Access to and quality of maternal health care services in rural and remote areas should also be improved. Further research is needed to understand why the factors revealed in this study were associated with health care seeking behaviors, from both the women's side and the providers' side.

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## COMPETING INTERESTS

The authors declare that they have no competing interests.

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