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**A QUANTITATIVE CROSS SECTIONAL SURVEY OF
WOMEN'S BELIEFS AS INFLUENCING FACTORS IN
THE UTILIZATION OF ANTENATAL SERVICES IN
THREE TOWNSHIPS OF CHIN STATE, MYANMAR**

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Abstract

Purpose: The objective of this study was to determine women's beliefs as influencing factors in the utilization of antenatal services.

Methodology: The quantitative cross sectional survey was conducted in both rural and urban areas of three townships of Chin State. The multi-stage sampling method was used to recruit 350 women who had given birth within the past year. They were interviewed using structured questionnaires relating to their socio-demographic characteristics, beliefs about the utilization of antenatal services, and the situation of received antenatal care. The X^2 values and odd ratio with a 95% of CI were calculated to find out women's beliefs as influencing factors in the utilization of antenatal services.

Findings: Among the 350 participants, the number who received antenatal care at least one time and four times were 303 (86.6%) and 222 (63.4%) respectively. There were only 98 (28.0%) who received antenatal care in first trimester. The number of women who showed awareness of life threatening risks of pregnancy was 135 (38.6%) whilst positive attitudes towards the effectiveness of antenatal care and accessibility of health care staff were 170 (48.6%) and 63 (18.0%) respectively. Women's beliefs about the risks of pregnancy, effectiveness of antenatal care and accessibility of health care staff for antenatal care were statistically associated with the situation of receiving antenatal care at least four times and care in the first trimester but not associated with the situation of receiving at least one time.

Unique contribution to theory, practice and policy: Women in Chin State received late first antenatal care and lack of regular follow-up because of their beliefs about the utilization of antenatal services. Effective health education activities are needed to raise awareness about the utilization of antenatal services.

Keywords: *Chin State, Women's beliefs, Utilization of antenatal services*

1.0 INTRODUCTION

About 800 women die daily around the world due to pregnancy or child-birth related complications, of which 99% occur in developing countries¹. This is in spite of a declining maternal mortality ratio (MMR) which has fallen by 45% worldwide, from 380 to 210 maternal deaths per 100,000 live births, between 1990 and 2013². The MMR in Myanmar decreased by about 60%, from 520 to 200 per 100,000 live births, between 1990 and 2013³. However, MMR values varied widely ranging from, for example, 157 in Tanintharyi Region to 357 in Chin State⁴. This may have been the result of widespread poverty and insufficient institutional resources in the States compared to the Regions of the country⁴. As the MMR of Chin State was 361 per 100,000 live births in 1999, the maternal health status in Chin State did not significantly improve between 1999 and 2013⁵.

A number of factors may have contributed to the maternal health situation of Chin State lagging behind that of the other States. Approximately 70% of women aged 25 years and above in Chin State have attained just a primary level of education, whilst about 95% of the residents work on the crop lands for their income^{6, 7}. Most of the people have to seek alternative sources of income because of the flooded crop lands. About 73% of people in Chin State were living in poverty in terms of household expenditure in 2009-2010, representing the highest poverty incidence among all States and Regions of the country⁸. There are six main Chin ethnic groups: Asho, Cho, Khumi, Laimi, Mizo and Zomi as well as dozens of sub-groups, with people in one village often unable to understand the dialect spoken within neighboring villages. There exists a strong patriarchal social structure in all townships of Chin State with the role of married women limited in both private and public spheres⁹. The Government has been reforming the health system since the 2012 – 2013 fiscal year by upgrading the hospitals, expanding the organizational setup, increasing the allocation of health workers in remote areas as well as boosting their skills and performance³. As maternal health is regarded as a priority issue, the Government has also worked to reduce the burden of medical costs. The costs of routine investigations, medication and examination fees during antenatal visits are free for all pregnant women within the government health service. However, the upgrading and reforming of the health system has not been sufficient to improve the maternal health status within Chin State.

Most of the complications relating to maternal deaths develop during pregnancy, with the majority being treatable and preventable¹⁰. The effectiveness of antenatal care is critical in terms of reducing maternal mortality and serious morbidity, especially in developing countries¹¹. The World Health Organization (WHO) recommends that a pregnant woman should receive antenatal care on at least four occasions during pregnancy. However, only about 50% of pregnant women from low and middle income countries received antenatal care on four or more occasions in 2012¹². In Chin State, 75.6% of pregnant women received antenatal care from the health service on one or more occasions during 2009 and 2010, representing the lowest amount among all States and Regions of the country¹³. However, this poor utilization of maternal health services in Chin State was not the result of deprived health care resources since this state had the highest densities of government hospital beds, medical doctors, nurses, and midwives among all the States and Regions of the country⁵. Health care resources were more deprived in Mon State compared with Chin State yet the MMR values of Mon State were 213 in 1999 and 217 in 2013, representing much better ratios than those of Chin State^{4, 5}. Access to health care reflects how much fitness between characteristics and expectation of residents and characteristics of health service and staff¹⁴.

The new antenatal model suggests that pregnant women should increase their antenatal visits from four to eight, with the first visit undertaken in the first 12 weeks of gestation for early detection of problems, and in order to develop good relationships between the health staff and the pregnant women¹⁵. In spite of the challenges faced using antenatal services in Chin State, women would seek antenatal care as early as possible from the health services and have regular follow-ups if they were fully aware of the severity of the risks of pregnancy, the benefits of antenatal care, and the accessibility of health care staff. Before conducting this survey, twenty-five women from the study sites were in-depth interviewed using interview guides developed according to the health belief model (HBM) in order to explore their beliefs about the utilization of antenatal services^{16, 17}. Regarding the women's beliefs about the development of risks during pregnancy, they expressed three perceptions: 1) risks cannot develop; 2) if risks develop, these relate to minor illnesses; and 3) life-threatening risks can develop during pregnancy. In terms of the women's beliefs about the effectiveness of antenatal care, three perceptions were expressed: 1) antenatal care is not needed; 2) antenatal care is needed but it cannot prevent the development of risks; and 3) antenatal care is needed because it can prevent the development of risks. Regarding the women's beliefs about the accessibility of health care staff compared with that of traditional birth attendants, they expressed three perceptions: 1) they trusted health care staff more; 2) they trusted traditional birth attendants more; and 3) they had neutral views about health care staff and traditional birth attendants¹⁶.

The objectives of the present survey were: 1) to understand the current situation of received antenatal care via the frequency distribution of the participant women's beliefs about the utilization of antenatal services; 2) to find out the socio-demographic characteristics associated with the utilization of antenatal services; and 3) to determine whether the women's health beliefs were influencing factors in their utilization of antenatal services.

2.0 METHODOLOGY

Study Site

Chin State, with an area of about 360,000 km², is situated in the north western part of Myanmar and is administratively divided into three districts. It is the State with the lowest population density (13 people per km²) and with the second smallest population size among all States and Regions (approximately 480,000 people) of which about 80% resides in rural areas¹⁸. Chin State is a mountainous region and all areas are at least 3,000 feet above sea level. As the residents can use only motorcar routes, they face difficulties in emergencies because natural disasters, such as flooding and subsequent landslides, have damaged local road networks and bridges. In addition, some villages are not located alongside the roads, with some situated far away from the main district roads.

Study design and Sampling methods

This study is a quantitative cross sectional survey that was employed in both rural and urban areas of three townships of Chin State involving 350 women who had given birth within the past year. Data collection process was conducted from July 1 to November 30, 2017. The sample size for the survey was calculated by using the single population proportion formula in which a 95% confidence interval, a margin of error of 5%, and a 69% proportion of pregnant women having received antenatal care on at least four occasions in Chin State in 2014 were applied. The sample size was increased by 5% to allow for incomplete data

resulting in a required sample size for the survey of 350 women¹⁹. In proportion to the populations of the selected townships, 100 women from Mindat Township, 140 from Tedim Township, and 110 from Hakha Township were recruited using a multi-stage sampling method⁶. Given that the 2014 census indicated that about 80% of the population resided in rural areas of Chin State, 80% of the sample women of each township were from rural areas. According to the population size, a simple random sampling method was used to select one to two rural health centers, or sub-health centers for rural areas, and two to four wards for urban areas in each township. After the confirmation of the study sites, a list of households in which a woman had given birth within the past year was constructed using data from the health centers, local authorities, and senior residential people. Next, the required sample of women was selected and recruited applying a systematic sampling method. The survey consisted of structured questions that sought to show the socio-demographic characteristics of the women participants, their health beliefs relating to the utilization of antenatal services, and the current situation of their received antenatal care.

Data analysis

The socio-demographic characteristics of the women were shown in relation to their age, residential area, educational attainment (as well as that of their husbands), occupation (as well as that of their husbands), monthly family income, religion, ethnicity, parity, and time taken to reach health centers. The women's beliefs about the utilization of antenatal services were expressed in terms of their beliefs about the risks of pregnancy, the effectiveness of antenatal care, and the accessibility of health care staff for antenatal care. The participant women were classified according to their socio-demographic characteristics and their beliefs about the utilization of antenatal services. These were regarded as the independent variables in the present survey.

The current situation of received antenatal care among the participant women was expressed in terms of having received antenatal care at least one time, having received antenatal care at least four times, and having received first antenatal care in the first trimester. This was regarded as the dependent variable in the present survey. This dependent variable was explored in relation to the independent variables of the participants' socio-demographic characteristics and their beliefs about the utilization of antenatal services. The X^2 values were calculated by applying the SPSS statistic version 20 software (from Mahidol University) and analysed to determine whether there was any association between the participants' socio-demographic characteristics and their beliefs about the utilization of antenatal services with the situation of their received antenatal care. The variations of received antenatal care among the different groups of associated socio-demographic characteristics were explored by calculating the odd ratio with a 95% CI.

4.0 FINDINGS

Table (1) Situation of received antenatal care among participants (n=350)

	Frequency	Percent
Situation of received antenatal care from health care staffs		
Received at least one time	303	86.6%
Received at least four times	222	63.4%
Received first care in first trimester	98	28.0%
Received at least four times and first care in first trimester	83	23.7%
Antenatal care providers		
Only from government health staffs	46	13.1%
Only from TBAs	25	7.1%
Both from government health staffs and TBAs	257	73.4%
Did not receive from any site	22	6.3%

The situation of received antenatal care amongst the 350 participant women is illustrated in table (1). Although 303 women (86.6%) received antenatal care from health care staff on at least one occasion during their pregnancy, only 222 women (63.4%) received antenatal care on at least four occasions. Moreover, 98 women (28.0%) received their first antenatal care in the first trimester, with only 83 women (23.7%) receiving antenatal care on at least four times with their first care coming in the first trimester. Among the women who received antenatal care from health care staff, 257 women (73.4%) also received care from traditional birth attendants. However, 22 women (6.3%) did not receive antenatal care from either health care staff or traditional birth attendants.

Table (2) Women beliefs on utilization of antenatal services among participants (n=350)

Women's beliefs on utilization of AN services (n=350)	Frequency	Percent
Threats of pregnancy		
Threats cannot be developed	72	20.6%
Developed threats as minor illness	143	40.9%
Developed threats as life threatening	135	38.6%
Perception on effectiveness of antenatal care		
Not needed	57	16.3%
Needed but cannot prevent developed risks	123	35.1%
Needed and prevent developed risks.	170	48.6%
Accessibility of antenatal care providers		
More trust on traditional birth attendants	142	40.6%
Neutral	145	41.4%
More trust on health care staffs	63	18.0%

Table (2) explores the frequency distribution of the participant women's beliefs about the utilization of antenatal services. Only 135 women (38.6%) perceived that life-threatening risks can develop during pregnancy, while 170 women (48.6%) believed that antenatal care is needed in order to prevent the development of risks during pregnancy. Moreover, only 63 women (18.0%) had faith in the accessibility of health care staff for antenatal care compared with that of traditional birth attendants.

Table (3) Distribution of received antenatal care among women according to socio-demographic characteristics (n=350)

	At least one time AN care				At least four times ANC				1 st AN care in 1 st trimester			
	Yes	No	p value	X ²	Yes	No	p value	X ²	Yes	No	p value	X ²
Age			.854	.316			.186	3.363			.944	.116
18 - 19 years	23	1			15	9			6	18		
20 - 29 years	157	10			114	53			47	120		
30 years and above	148	11			93	66			45	114		
Residential area			.741	.109			.912	.012			.002*	9.953
Rural	263	17			178	102			89	191		
Urban	65	5			44	26			9	61		
Education attainment			.647	.872			.682	.764			.519	1.312
Illiterate + basic primary education	150	8			104	54			47	111		
Basic middle education	119	10			80	49			37	92		
Basic high education and above	59	4			38	25			14	49		
Education attainment of husband			.141	3.916			.178	3.451			.304	2.379
Basic primary education	54	1			40	15			17	38		
Basic middle education	172	16			120	68			57	131		
Basic high education and above	102	5			62	45			24	83		
Occupation of women			.033*	6.816			.017*	8.112			.093	4.759
Household work only	70	10			40	40			20	60		
Support their husband's work	233	11			165	79			75	169		
Not related their husband work	25	1			17	9			3	23		
Occupation of husbands			<.001*	17.163			.028*	7.142			.074	5.198
Farmer	222	14			149	87			75	161		
Manual worker	94	3			67	30			20	77		
Government, Company employee	12	5			6	11			3	14		
Monthly family income			.860	.031			.203	1.618			.617	.250
Less than 400,000 kyats	248	17			173	92			76	189		
400,000 kyats and above	80	5			49	36			22	63		
Parity			.764	.538			.005*	10.742			.098	4.636
One to three	141	10			109	42			51	100		
Four to six	168	10			104	74			43	135		
Seven and above	19	2			9	12			4	17		
Time taken to arrive health service			.317	2.297			.910	.188			.007*	10.039
Within one hour	64	6			43	27			9	61		
One to three hours	155	12			106	61			52	115		
More than three hours	109	4			73	40			37	76		

Table (3) shows the distribution of received antenatal care among the participant women according to their socio-demographic characteristics. There were statistically significant associations between 1) the occupational types of women and their husbands with the situation of receiving antenatal care at least one time and at least four times; 2) the parity of women with the situation of receiving antenatal care at least four times; and 3) the residential area and time taken to arrive at the health service with the situation of receiving first antenatal care in the first trimester (p -value < 0.05).

Table (4) Comparison of received AN care among the groups of associated socio-demographic characteristics

	Received at least one time AN care			Received at least four times AN care		
	Yes	No	OR (95% CI)	Yes	No	OR (95% CI)
Occupation of women						
Household work only	70	10	1	40	40	1
Household + husband outside work	233	11	3.03 (1.10 – 8.18)*	165	79	2.09 (1.21 – 3.60)*
Household + independent work	25	1	3.57 (0.46 – 161.07)	17	9	1.89 (0.69 – 5.39)
Occupation of husband						
Farmers	222	14	6.61 (1.58 – 23.70)*	149	87	3.12 (1.02 – 10.67)*
Manual workers	94	3	13.06 (2.14 – 91.13)*	67	30	4.09 (1.23 – 14.62)*
Government, Company employee	12	5	1	6	11	1
Parity						
One to three				109	42	3.46 (1.23 – 9.97)*
Four to six				104	74	1.87 (0.68 – 5.30)
Seven and above				9	12	1

Table (4) shows that women who support their husband's with outside work were 3.03 times (OR = 3.03, 95% CI= 1.10 – 8.18) and 2.09 times (OR = 2.09, 95% CI = 1.21 – 3.60) more likely to receive antenatal care at least one time and at least four times respectively than women with household work only. The women whose husbands were farmers were 6.61 times (OR = 6.61, 95% CI= 1.58 – 23.70) and 3.12 times (OR = 3.12, 95% CI= 1.02 – 10.67) more likely to receive antenatal care at least one time and at least four times respectively, and women whose husbands were manual workers were 13.06 times (OR = 13.06, 95% CI= 2.14 – 91.13) and 4.09 times (OR = 4.09, 95% CI= 1.23 – 14.62) more likely to receive antenatal care at least one time and at least four times respectively, than women whose husbands worked in government services or companies.

Table (5) Comparison of received 1st AN care in 1st trimester among the groups of associated socio-demographic characteristics

	Received 1 st AN care in 1 st trimester		
	Yes	No	OR (95% CI)
Residential area			
Rural	89	191	3.16 (1.47 – 7.54)*
Urban	9	61	1
Time taken to arrive health service			
Within one hour	9	61	1
One to three hours	52	115	3.06 (1.37 – 7.53)*
More than three hours	37	76	3.30 (1.42 – 8.34)*

Table (5) indicates that women from rural areas were 3.16 times (OR = 3.16, 95% CI = 1.47 – 7.54) more likely to receive their first antenatal care in the first trimester than women from urban areas. Women who took one to three hours to arrive at their health service were 3.06 times (OR = 3.06, 95% CI = 1.37 – 7.53), and the women who took more than three hours to arrive at their health service were 3.30 times (OR = 1.42, 95% CI = 1.42 – 8.34) more likely to receive their first antenatal care in the first trimester than women who took under one hour to arrive at their health service.

Table (6) Women’s beliefs on utilization of antenatal services according to the situation of received antenatal care

Women’s beliefs (n=350)	At least one time AN care				At least four times AN care				1 st AN care in 1 st trimester			
	Yes	No	p	X ²	Yes	No	p	X ²	Yes	No	p	X ²
Threats of pregnancy			.064	5.498			<.001	17.340			<.001	45.217
Threats cannot be developed	64	8			31	41			8	64		
Developed threats as minor illness	133	10			94	49			25	118		
Developed threats as life threatening	131	4			97	38			65	70		
Effectiveness of antenatal care			.118	4.272			.003	11.681			.046	6.147
Not needed	50	7			25	32			10	47		
Needed but cannot prevent risks	116	7			80	43			31	92		
Needed, prevent developed risks	162	8			117	53			57	113		
Accessibility of antenatal providers			.227	2.967			.001	13.667			<.001	89.981
More trust on TBAs	131	11			79	63			16	126		
Neutral	135	10			91	54			38	107		
More trust on health care staffs	62	1			52	11			44	19		

Table (6) indicates whether there exist any associations between the participant women’s beliefs about the utilization of antenatal services and situations of receiving antenatal care or not. The women’s beliefs about the development of risks during pregnancy, the effectiveness of antenatal care, and the accessibility of antenatal care providers were not statistically associated with the situation of receiving antenatal care at least one time. However, those

beliefs were statistically significantly associated with the situations of receiving antenatal care at least four times and receiving first antenatal care in the first trimester (p -value < 0.05).

Discussion

The antenatal coverage for the participant women within the study sites of at least one time and at least four times were found to be 86.6% and 63.4% respectively. According to 2016 Myanmar health statistics, those values at the country level were 86.1% and 72.3% respectively, whilst those of Chin State were reported as 81.1% and 65.4% respectively²⁰. The new antenatal care model recommends that the first care for pregnant women should take place within the first trimester for the early detection of risks and the promotion of good relations between the health staff and the pregnant women¹⁵. However, the coverage of first antenatal care taking place in the first trimester was only 28.0% in the study sites. So the main way in which the new antenatal care model recommendations were not met within the study sites relates to late first antenatal care.

In spite of having an antenatal coverage of 86.6% in the study sites, only 38.6% of the participant women were aware that life-threatening risks could develop during pregnancy, whilst only 48.6% believed that antenatal care provided by health services could prevent the development of risks. Hence, women may have come to their antenatal services not because of their positive perceptions of them, but due to other reasons. As a result, only 23.7% of women received antenatal care on at least four occasions with first care coming in the first trimester.

Such negative perceptions about the utilization of antenatal services may have caused reluctance on the part of the women to have frequent antenatal visits and early antenatal care if they did not suffer from illness. This was emphasized in the survey findings which identified significant associations between the women's beliefs about the development of risks during pregnancy and their beliefs about the effectiveness of antenatal care with the situations of receiving antenatal care at least four times and receiving first antenatal care in the first trimester. These beliefs were not significantly associated with the situation of receiving antenatal care at least one time, however. In addition, only 18% of the participant women had greater faith in the accessibility of health care staff for antenatal care than from traditional birth attendants. This finding may have led to the situation where 257 women (73.4%) received antenatal care from both health care staff and traditional birth attendants. Their trust in the accessibility of health care staff was significantly associated with the situation of receiving antenatal care at least four times, and also with the time of first antenatal care; but not with the situation of receiving antenatal care at least one time. These findings relating to beliefs about the utilization of antenatal services are in line with the findings from previous studies which identified the regions with high maternal deaths rates in remote parts and rural areas of neighbouring developing countries²¹⁻²⁵.

Significant associations between the occupational types of women and their husbands and the situations of receiving antenatal care at least one time and at least four times were detected, which indicate that women who work outside in addition to household work are more likely to receive antenatal care, whilst women whose husbands work in government services or companies are less likely to receive it. It could be that women with household work only do not have a sufficient social relationship with their environment resulting in a failure to receive information about antenatal care from the health services. The husband who works in government services or companies cannot support his wife to receive antenatal care. It could

also be that their negative perceptions of the utilization of antenatal services may lead them to prioritize their occupation over antenatal visits. This finding is consistent with previous research articles which identified that the occupation of residents influences their utilization of maternal health services²⁶⁻²⁸. The present study identified another significant association between the parity of women and the situation of receiving antenatal care at least four times. This is in line with the findings of previous studies^{26, 27}. Women's perceptions about the utilization of antenatal health services may develop according to their previous experiences of pregnancy and the child-birth process. As a negative attitude towards the utilization of antenatal services develops, their occupation is prioritized instead of antenatal visits.

The previous studies also pointed that utilization of antenatal services among residential women was not only determined by health delivery system but also influenced by social, economic and environmental characteristics of residential people^{26, 27, 29-31}. In this survey, monthly family income and educational attainment of women and their husband were not statistically associated with received situations of antenatal care. Although remoteness of residents and time taken of arriving to health services were associated with first antenatal care in first trimester, those kinds of associations were not similar as findings of previous studies. Women from rural areas and living away health services had more likely received first antenatal care in first trimester. It cannot be regarded as those women from those areas had had positive attitude on utilization of antenatal services because health care staffs of study sites usually provide home visits antenatal care. They may miss urban and easily access areas.

Conclusion

The late received first antenatal care and lack of regular follow up among women in Chin State, Myanmar are the main factors to meet minimum requirement of antenatal care for pregnant women. This survey found that those utilization behaviours of antenatal services were significantly associated with their beliefs on utilization of antenatal services.

Recommendation

To improve the utilization of antenatal services among women in Chin State, it is needed to change their beliefs related antenatal care. The government should have plans for health promotion activities that can raise individual health literacy among women in Chin State. As the residential people cannot neglect TBAs for maternal health care, they should be recruited to attend the auxiliary midwifery courses instead of saying not going to them. As the basic health staffs are focal persons for providing of maternal health care especially in rural areas, the refresher course of maternal health care are needed for them.

Limitations

This survey cannot represent the whole area of Chin State because it was conducted in only three townships. The sample size might be also limited in finding the association between socio-demographic characteristics and situations of received antenatal care. Since the participant women were recruited with the support of regional health care and local administrative authorities, possible bias can exist in selection of samples. Although local language translators were trained before data collection, there were some cultural differences with residents so that interpreter bias can also exist.

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Author contribution

MT, SR, DP and SCP contributed to the study concepts, the design, the drafting of the manuscript and the final data analysis. MT contributed to the data collection, the data entry, and the whole data analysis. All authors read and approved the final manuscript.

Competing interests

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