International Journal of Public Health Science (IJPHS)
Vol. 14, No. 2, June 2025, pp. 718~728
ISSN: 2252-8806, DOI: 10.11591/ijphs.v14i2.25731

Factors influencing modern contraceptive use among rural married women of reproductive age in Myanmar

Myint Moh Soe, Nithat Sirichotiratana, Seo Ah Hong, Utoomporn Wongsin, Chardsumon Prutipinyo
Department of Public Health Administration, Faculty of Public Health, Mahidol University, Bangkok, Thailand

Article Info

Article history:

Received Aug 18, 2024
Revised Nov 12, 2024
Accepted Jan 8, 2025

Keywords:

Accessibility
Availability
Modern contraceptive use
Myanmar
Rural married women

ABSTRACT

This study aimed to identify factors associated with the use of modern contraceptive service among rural married women of reproductive age in Myanmar. A cross-sectional quantitative study was conducted among 648 married women aged 18-49 years (4 townships with the lowest contraceptive prevalence (n=316) and 4 townships with the highest prevalence (n=332). This study found that women in townships with low prevalence of modern contraceptive use were more likely to be illiterate and manual workers or farmers, to have lower education and no regular income, other religions than Buddhism, and higher number of family members and children, compared to those with high prevalence. In addition, they responded negatively to the accessibility, availability, affordability and acceptability of contraceptive services, and lower satisfaction with the services. This study suggests that the Myanmar government should promote contraceptive services more aggressively for women of reproductive age in rural areas that reflect ethnic minority cultures.

Corresponding Author:

Chardsumon Prutipinyo
Department of Public Health Administration, Faculty of Public Health, Mahidol University
Bangkok, Thailand
Email: chardsumon.pru@mahidol.ac.th

1. INTRODUCTION

Many women in low- and middle-income countries (LMICs), including the Asia Pacific region [1], [2], continue to die from pregnancy complications [3]. Contraception helps prevent unwanted pregnancies, improve the health of mothers, newborns, children, and adolescents, and improve the lives of families and nations. Providing contraceptive services to all women living in LMICs [4], who want to avoid pregnancy, would reduce preventable maternal death [5], unintended pregnancies by 68% [6], unsafe abortions by 2%, and maternal mortality by 62% [7]. Family planning can also improve maternal and child health outcomes, empower women, and enhance environmental sustainability by limiting number of population [5].

Numerous factors of modern contraceptive use have been identified in previous research. For example, personal characteristics of women, such as age, were associated with access to and use of contraception [8]–[11]. An Indian study showed that younger women use contraception more than older counterparts [12]. The education level of women also associated with modern contraceptive use in Turkey [13], Sri Lanka [8], and the Asia Pacific region [1]. Women's paid employment were also associated with modern contraceptive use in East Asia countries such as Japan and South Korea [14]. The number of children a woman bears also influences modern contraceptive use [8] and method choices, as has been found among migrant workers in Thailand [15]. In addition, years since marriage, ethnicity, and partner's occupation were found to be associated with contraception use [8].

Globally, more than 214 million women of reproductive age lack access to contraception [7]. While stock shortages may contribute to these access gaps, the relationship between contraceptive availability and use is still poorly understood. Supply chain issues vary across countries, and the contexts that ultimately affect method availability and stock shortages may vary. Policy environments for family planning are also likely to contribute to differences in contraceptive stock shortages and method availability across health care services [16]. Although there was no disparity in the availability and access to services among women in Malawi [11] many studies have shown that the availability and accessibility of family planning services are limited in rural areas, which may make women in rural areas less likely to use contraceptive methods [17], [18]. To our best knowledge, however, studies on the availability, accessibility, and affordability of modern contraceptive services among rural women of reproductive age are limited [10].

In Myanmar, the majority of unintended pregnancies result in unsafe abortions, making abortion a major cause of hospital admissions. Pregnancies with abortive outcomes remain 6th leading cause of morbidity in Myanmar with 2.6% of total hospital admissions in 2012 [19]. Enhancing the prevalence of modern contraceptives can diminish unwanted pregnancies, thereby reducing abortion rates and maternal morbidity and mortality. Myanmar's contraception program is aligned with the National Population Policy (2002) which stated that "Improve health status of women and children by ensuring the availability and acceptability of birth-spacing services to all married couples voluntarily seeking such services [20]. The Myanmar government has established the Family Planning 2020 initiative to achieve up to 60% modern contraceptive coverage and reduce the unmet need for family planning to less than 10% by 2020 [21]. Although there had been gradual increase in modern contraceptive use among married couples from 13.6 percent in 1991 to 38.4% in 2007 [22], annual growth rate for modern contraceptives was 0.4% [23]. In 2019, the modern contraceptive coverage in Chin State was 34.2%, and in Yangon region it was 77.6%. However, Myanmar is far away from reaching its commitments towards sustainable development goals and family planning 2020 commitments [24]. The contraceptive use rate is lower in rural areas than in urban areas [25]. Understanding the differences between rural areas with high and low prevalence of modern contraceptive use may help design strategies to increase the use of modern contraceptive methods. The study to address this gap is warrant.

To date, there have been few studies conducted to understand modern use of contraceptives among married women in rural Myanmar [26]. However, to our best knowledge, there is no study on availability, accessibility, affordability, and acceptability of modern contraceptive methods among rual married women of reproductive age in Myanmar. Due to limited studies, this study aimed to examine factors associated with the use of modern contraceptives among rural married women of reproductive age. The findings can be utilized to develop strategies for enhancing the utilization of contemporary contraceptives and to provide policymakers with information to facilitate program enhancement.

2. METHOD

2.1. Study design and population

A cross-sectional descriptive study using quantitative data collection methods was conducted from January to April 2017 in Myanmar. This study collected primary quantitative data from married women of reproductive age (18-49 years) living in rural Myanmar using a semi-structured questionnaire. Inclusion criteria were women classified as currently married according to traditional and cultural practices, who had used modern contraception in the past and who were currently using modern contraception. Women who were not classified as currently married according to traditional and cultural practices (e.g., widowed, separated, cohabiting), women with mental disorders that prevented them from answering the questions, or women who refused to participate in the study, were not included in this study.

The sample size was calculated with the formula of $n=Z\ (1-\alpha/2)2\ \{(P1\times(1-P1)+(P2\times(1-P2)\}/(d2)$ [27], where n is the required sample size, z is the Z statistics for predetermined an error, P1 and P2 are prevalence of contraceptive use, and d is the margin of error. We used a 95% confidence interval, an acceptable error of 5%. Based on Health Management Information System data, the average prevalence of modern contraceptive use in the four rural areas with the highest prevalence was 91.4%, and the average prevalence in the four rural areas with the lowest prevalence was 15.3% [25]. This calculation determines that a sample size of 316 is required from each group, for a total of 632 women.

This study selected subjects using the multi-stage sampling method. First, among 305 rural townships in Myanmar, except Yangon, we divided the townships with high and low contraceptive use rates based on data from the District Health Information Software 2 platform of the Ministry of Health and Sports, with a contraceptive use rate of 43.5% in rural areas [28]. We purposively selected the four townships with the highest and four lowest rates of modern contraceptive use. Mogok township of Mandalay Region, Minhla township of Magway Region, Zigone township of Bago Region and Dawei township of Tanintaryi Regions were selected as townships with the highest modern contraceptive prevalence, and Matupi township, Mindat township, Tongzang township and Paletwa townships of Chin State were selected as townships with lowest

modern contraceptive prevalence. One rural health center was randomly selected from each of the selected townships, and then one village served by the selected rural health center was selected for data collection. Around 80 women of reproductive age in each township were selected for quantitative survey questionnaires. Women aged 18-49 years were invited through an invitation letter, and those who consented to participate were included in the data collection. A total of 648 married women aged 18-49 living in the township with the lowest contraceptive prevalence (n=316) and married women living in the township with the highest contraceptive prevalence (n=332) were included.

2.2. Variable measures

A semi-structured questionnaire developed by the research team. The questionnaire was pre-tested with 80 married women aged 18-49 years. Cronbach's alpha was 0.886, and 97% of respondents provided valid data. The independent variables were classified into four categories: sociodemographic variables, past contraceptive experience and reasons for method choice, availability and accessibility of service, quality, affordability, and acceptability from rural women of reproductive age.

Sociodemographic variables encompassed age (categorized into three groups: <25, 25-39, or 40+), religion (Buddhist or others), current pregnancy status (non-pregnant or pregnant), number of household members (segregated into two categories: <5 and 5+), number of children (categorized into three groups: None, 1, and 2+), ability to read Burmese (cannot read, can read), education (primary school or lower, middle school, high school or higher), income (no regular income, or regular income) and type of jobs (housewives, manual workers, farmers, vendors, government, others).

Variables related to availability of service included service delivery point (health centers or hospitals, private clinics, drug stores, or others), service provider (doctor, nurse, midwife, auxiliary midwife, other, no answer), experience of unavailability of service (yes, no or no answer), service provider can always provide service (yes, no, or no answer), experience with stock out of medicine (yes, no, or no answer). Distance from home to service delivery point (less than 1 mile, more than one mile or no answer), mode of transport (walking, bicycle, other, or no answer), duration of travel time (less than one hour, more than one hour, or no answer), easy to travel in all seasons (yes, no, or no answer) for accessibility of service, and payment for contraceptive services (yes, no, or no answer) and cost for contraceptive service (cheap, moderate, expensive, do not know, or no answer) for affordability to services.

In addition, variables related to knowledge have 3 choices: know, do not know, or no answer. These 3 choices are for the questions for knowledge on contraceptive methods and acceptability of services, knowledge on current contraceptive method, knowledge on other suitable contraceptive method, knowledge on mechanism of contraceptive method, knowledge on side effects, knowledge on follow up date, and knowledge on other suitable contraceptive method. The question on experience of side effects has 3 choices for answer: yes, no, or no answer. The opinion about health care provider's skill has 6 choices for answer: excellent, good, neither good nor bad, bad, worse, or no answer. The duration of waiting time has 4 choices: less than 30 minutes, 30-60 minutes, do not remember, or no answer. For the question on satisfaction with the services has 3 choices: yes, no, or no answer.

2.3. Statistical analysis

All statistical analysis was performed using the SPSS 16 software package owned by Mahidol University. Chi-square test and Fisher exact test were used to examine the differences in the distribution of independent variables between townships. The townships with high and low prevalence of modern contraceptive use, are dependent variables.

2.4. Ethical consideration

This study was approved by the Ethical Review Committee of the Department of Medical Research, the Ministry of Health and Sports, Republic of the Union of Myanmar (No: Ethics/2016/138). This study was also approved by the Ethical Committee of the Faculty of Public Health, Mahidol University (COA: MUPH 2016-143). After receiving clearance from both Ethical Review Committees, data collection process was conducted.

3. RESULTS AND DISCUSSION

3.1. General characteristics of respondents

As shown in Table 1, approximately 80%-90% of the women were 25 years of age or older, could read Burmese, had a secondary school education or lower, and reported not being pregnant. Approximately 70% of the subjects were Buddhists, more than 60% were housewives, had 2 or more children, and had 5 or fewer family members in their households.

3.2. Modern contraceptive use

Figure 1 shows that the most commonly used contraceptive method in both groups was the injection, followed by the pill, and implants were more common among women in low-prevalence townships ($p<0.001$). The Ministry of Health is committed to providing voluntary contraceptive services to all married couples in Myanmar in accordance with the National Population Policy (1992), and mandated free contraceptive pills in 2010, while hormonal implants have been introduced in Myanmar since 2012 in collaboration with Population Services International (PSI). Our study found that use of long-term contraceptive methods, such as implants or intrauterine devices, was generally low among Myanmar women. Interestingly, the use of implant was higher among women in townships with low contraceptive use than in townships with high use. A national data in Myanmar also revealed that the injection method is mostly common in Myanmar women, regardless of place of residence [28]. Another study among Myanmar youth using Myanmar Demographic and Health Survey (2015-2016) data [29] showed that regardless of whether they were married or not, Myanmar adolescent women were the most likely to use injectable contraceptives, followed by oral contraceptives [30]. This method is widely used because it is available in almost all private and public hospitals, is inexpensive, easily accessible, and easy to use.

Figure 2 shows the reasons for choosing the contraceptive method currently used. Women in townships with low contraceptive use were more likely to respond with "husband's recommendation" or "belief in safety," while women in townships with high contraceptive use were more likely to respond with "own will" or "health worker recommendation." These differences in contraceptive choice suggest that the use of modern contraceptives is significantly related to women's autonomy, as shown in a study from the Democratic Republic of Congo [31] and that it is important to discuss this. This suggests that limited decision-making autonomy due to unequal power dynamics between women and men in the household is a barrier to using modern contraceptives. This finding suggests that education about contraceptive methods should target both men and women.

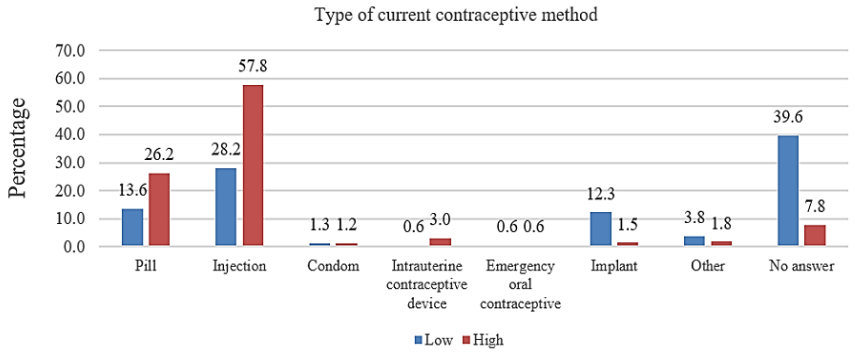

Figure 1. Type of current contraceptive method among rural married women aged 18-49 years in townships with low and high prevalence of modern contraceptive use

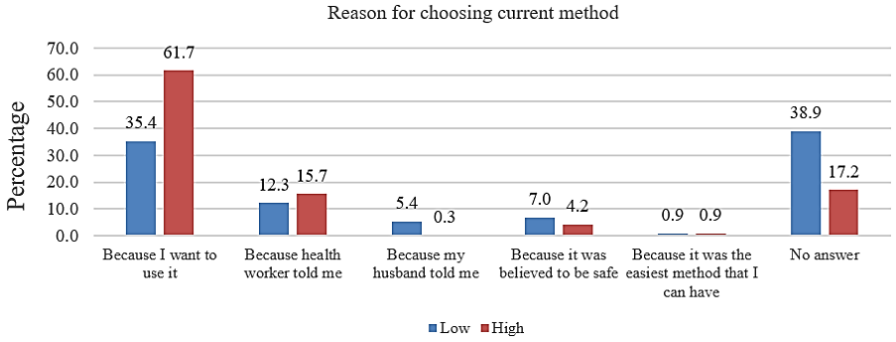

Figure 2. Reasons for choosing current method of contraception among rural married women aged 18-49 years in townships with low and high prevalence of modern contraceptive use

3.3. Factors associated with modern contraceptive use

3.3.1. General characteristics of participants

When comparing general characteristics of women between townships with low and high prevalence of modern contraceptive use as shown in Table 1, women in townships with low prevalence of modern contraceptive use were more likely to be less than 25 years of age ($p<0.01$). Although Myanmar youth reproductive health services reduced maternal and child mortality, unplanned pregnancies were more common among young women and resulted in complications possibly due to young women's lack of knowledge of appropriate contraceptive methods, and low levels of contraception use [31]. In addition, women in townships with low prevalence of modern contraceptive use were more likely to have lower education, being unemployed or being manual workers/farmers ($p<0.0001$). Women with higher education reported to use more of modern contraceptives in other LMICs [32], including the Democratic Republic of the Congo [33], Turkey [12], Ethiopia [34], [35], Uganda [36], and Burkina Faso [37]. These results were similarly observed among Myanmar migrant workers in Thailand [10]. Women living in townships with the highest prevalence of modern contraceptions had more economic opportunities than women living in townships with the lowest prevalence, located in the hilly region of northwestern Myanmar. Agriculture was the main source of income in these townships. Creating occupational opportunities at the township level would increase the use of modern contraceptions. Having regular income empowers women to make decision in their household. Women having their own income have more freedom to make decisions concerning consumption and use of services. Women with incomes are more likely to use modern contraceptions than women with financial restrictions [38]. Women's participation in the labor market and education leads to reduced gender inequality, reproductive health rights, and decision-making at national, community, and family levels [39], [40]. Similar findings were revealed in Uganda [36] and Burkina Faso [37]. Furthermore, women in townships with low prevalence of modern contraceptive use were more likely to have a religion other than Buddhism, and live-in households with five or more family members, and two or more children ($p<0.05$). Religious beliefs may have some indirect influences on contraceptive usage, which may have influence on fertility [41]. Buddhist women tended to use modern contraceptions more often than non-Buddhist women. The association between religion and modern contraceptive use has also been found in other LMICs [32], South-east Asia [41], India [42], Bangladesh [43], and Nigeria [44]. Women living in townships with the highest prevalence of modern contraceptive use tended to have fewer children than in townships with the lowest prevalence of modern contraceptive use. Similar results were found in Egypt [32], Indonesia [45], and other LMICs [3], as well as in 17 sub-Saharan African countries [46].

3.3.2. Availability of service

In Table 2, women in townships with low rates of modern contraceptive use were more likely to receive contraceptive services from non-government organization, or private clinics, and from auxiliary midwives or other workers ($p<0.001$), while they were less likely to report experiencing the inability to use services due to lack of availability, or lacking of contraceptive services ($p<0.001$). On the contrary, previous studies in rural Zambia [17], Ethiopia [10], and Indonesia [45] indicated that women in rural regions were less inclined to utilize contraceptions due to restricted availability of services. One possible reason is that NGOs or private clinics play a vital role in increasing availability of contraceptive services. Lacking of stocks and few methods availability restrict choices for contraception, forcing individuals to choose methods that may not suit their preferences and needs [16]. In terms of limiting contraceptive choices, stock shortages and method availability ultimately promote situations that are likely to inhibit the use of modern methods, and increase contraception discontinuation [47]. Interestingly, our study found that people living in high-prevalence townships reported experiencing more medication stock shortages, and experience of unavailability of service. This may be due to the higher use of contraceptions in high-prevalence townships.

3.3.3. Accessibility and affordability of services

In Table 3, most women in townships with lower prevalence of modern contraceptive use reported longer travel distances and travel times to service centers and that they were not easily accessible in all seasons ($p<0.0001$). They also had fewer opinions about the cost of services, and relatively few women (about 30%) reported that they were cheap ($p<0.0001$). Women living in hilly or coastal areas appear to have limited access to contraceptive services due to the long distance and travel time to health centers. Our study supported that by showing women in townships with low prevalence of modern contraceptive use experienced longer travel distance and travel times to service centers, and less easy access in all seasons, in consistent with a previous study in Myanmar [26]. The Ministry of Health recruited two new health inspectors in 2012 to reduce the workload of midwives, allowing them to focus more on maternal and child health. This is in line with previous studies, showing that women in rural areas are less likely to use contraceptions due to limited access to services in rural Zambia [17], Ethiopia [10] and Indonesia [45]. Consequently, it is essential to offer affordable services for women in townships where the utilization of modern contraception is low.

Table 1. Comparison of general characteristics of rural married women aged 18 to 49 years in townships with low and high prevalence of modern contraceptive use

Characteristics	Total (n=648)		Modern contraceptive use				p-value
			Low (n=316)		High (n=332)		
	n	(%)	n	(%)	n	(%)	
Age group							
<25	80	(12.3)	50	(15.8)	30	(9.0)	0.006
25-39	372	(57.4)	164	(51.9)	208	(62.7)	
40+	196	(30.2)	102	(32.3)	94	(28.3)	
Ability to read Burmese							
Cannot read	65	(10.0)	61	(19.3)	4	(1.2)	<0.0001
Can read	583	(90.0)	255	(80.7)	328	(98.8)	
Education level							
Primary school -	90	(13.9)	68	(21.5)	22	(6.6)	<0.0001
Middle school	273	(42.1)	135	(42.7)	138	(41.6)	
High school+	285	(44.0)	113	(35.8)	172	(51.8)	
Religion							
Buddhist	457	(70.5)	131	(41.5)	326	(98.2)	<0.0001
Others	191	(29.5)	185	(58.5)	6	(1.8)	
Income							
No regular income	237	(36.6)	165	(52.2)	72	(21.7)	<0.0001
Regular income	411	(63.4)	151	(47.8)	260	(78.3)	
Type of job							
Housewives	367	(56.8)	165	(52.2)	202	(60.8)	0.025
Manual workers	159	(24.6)	91	(28.8)	68	(20.5)	
Farmers	54	(8.4)	32	(10.1)	22	(6.6)	
Vendors	43	(6.7)	15	(4.7)	28	(8.4)	
Government	22	(3.4)	11	(3.5)	11	(3.3)	
Other	3	(0.5)	2	(0.6)	0	(0.3)	
Current pregnancy status							
Non-pregnant	596	(92.0)	283	(89.6)	313	(94.3)	0.027
Pregnant	52	(8.0)	33	(10.4)	19	(5.7)	
Number of Household members							
<5	418	(64.5)	148	(46.8)	270	(81.3)	<0.0001
5+	230	(35.5)	168	(53.2)	62	(18.7)	
Number of children							
None	64	(9.9)	16	(5.1)	48	(14.5)	<0.0001
1	184	(28.4)	64	(20.3)	120	(36.1)	
2+	400	(61.7)	236	(74.7)	164	(49.4)	

Table 2. Comparison of availability of service and types of contraceptive methods among rural married women aged 18 to 49 years in townships with low and high prevalence of modern contraceptive use

Characteristics	Total (n=648)		Modern contraceptive use				p-value
			Low (n=316)		High (n=332)		
	n	(%)	n	(%)	n	(%)	
Availability of services							
Service delivery point							
Health centers or hospitals	378	(56.5)	132	(41.8)	246	(74.1)	<0.0001
INGO/private clinics	94	(10.3)	65	(20.6)	29	(8.7)	
Drug store	55	(8.5)	17	(5.4)	38	(11.4)	
Other	14	(2.2)	11	(3.5)	3	(0.9)	
No answer	107	(16.5)	91	(28.8)	16	(4.8)	
Service provider							
Doctor	20	(3.1)	3	(0.9)	17	(5.1)	<0.0001
Nurse	17	(2.6)	4	(1.3)	13	(3.9)	
Midwife	437	(67.4)	163	(51.6)	274	(82.5)	
Auxiliary midwife	25	(3.9)	17	(5.4)	8	(2.4)	
Other	15	(2.3)	13	(4.1)	2	(0.6)	
No answer	134	(20.7)	116	(36.7)	18	(5.4)	
Experience of unavailability of service							
No	419	(64.7)	172	(54.4)	247	(74.4)	<0.0001
Yes	120	(18.5)	47	(14.9)	73	(22.0)	
No answer	109	(16.8)	97	(30.7)	12	(3.6)	
Service provider can always provide service							
No	51	(7.9)	35	(11.1)	16	(4.8)	<0.0001
Yes	481	(74.2)	180	(57.0)	301	(90.7)	
No answer	116	(17.9)	101	(32.0)	15	(4.5)	
Experience with stock out of medicine							
No	75	(11.6)	60	(19.0)	15	(4.5)	<0.0001
Yes	455	(70.2)	152	(48.1)	303	(91.3)	
No answer	118	(18.2)	104	(32.9)	14	(4.2)	

Table 3. Comparison of accessibility and affordability of service and types of contraceptive methods in townships with low and high prevalence of modern contraceptive use

Characteristics	Total (n=648)		Modern contraceptive use Low (n=316)		High (n=332)		p-value
	n	(%)	n	(%)	n	(%)	
Accessibility to services							
Distance from home to service delivery point							<0.0001
Less than 1 mile	398	(61.4)	180	(57.0)	218	(65.7)	
More than 1 mile	126	(19.4)	48	(15.2)	78	(23.5)	
No answer	124	(19.1)	88	(27.8)	36	(10.8)	
Mode of transport							<0.0001
Walking	422	(65.1)	204	(64.6)	218	(65.7)	
Bicycle	84	(13.0)	18	(5.7)	66	(19.9)	
Other	43	(6.6)	11	(3.5)	32	(9.6)	
No answer	99	(15.3)	83	(26.3)	16	(4.8)	
Duration of travel time							<0.0001
Less than one hour	478	(73.8)	189	(59.8)	289	(87.0)	
More than one hour	60	(9.3)	40	(12.7)	20	(6.0)	
No answer	110	(17.0)	87	(27.5)	23	(6.9)	
Easy to travel in all seasons							<0.0001
No	28	(4.3)	23	(7.3)	5	(1.5)	
Yes	506	(78.1)	205	(64.9)	301	(90.7)	
No answer	114	(17.6)	88	(27.8)	26	(7.8)	
Affordability to services							
Payment for contraceptive services							<0.0001
No	205	(31.6)	76	(24.1)	129	(38.9)	
Yes	342	(52.8)	145	(45.9)	197	(59.3)	
No answer	101	(15.6)	95	(30.1)	6	(1.8)	
Cost for contraceptive service							0.001
Don't know	3	(0.5)	3	(0.9)	0	(0.0)	
Cheap	216	(33.3)	94	(29.7)	122	(36.7)	
Moderate	89	(13.7)	32	(10.1)	57	(17.2)	
Expensive	34	(5.2)	23	(7.3)	11	(3.3)	
No answer	306	(47.2)	164	(51.9)	142	(42.8)	

3.3.4. Knowledge on contraceptive methods and acceptability to services

With regard to service acceptability as shown in Table 4, women in townships with low prevalence had relatively poor knowledge of contraceptive methods, their mechanisms, side effects, and follow-up dates, had fewer positive opinions about the skills of health care providers, and had lower levels of service satisfaction ($p<0.0001$). Factors affecting the use of modern contraceptions are women's poor knowledge about family planning methods and fear of side effects, are the unmet needs for family planning services [33]. Husband's influence, social support, family culture, social influence, and lack of education about contraception are barriers and constraints affecting married women in rural areas. Government officials should disseminate methods to create positive attitudes among rural women and provide education. Policy makers and mediators should focus on providing formal education and emphasizing the reproductive rights of rural women [28].

3.3.5. Recommendations

Based on our findings, we recommend the following policy actions: First, education activities should focus on providing women with information about the proper use and side effects of modern methods, and educational activities that promote informed decision-making. Governments should develop policies that include the diverse needs and preferences of women with different educational backgrounds. In particular, more health information activities should be conducted in areas with low Burmese language proficiency, or non-Buddhist religions, focusing on the benefits of modern contraceptive use. Information education and communication materials should be developed that reflect the culture and religion of each minority language, and more active and regular contraceptive education should be promoted. In addition, efforts should be made to improve understanding of modern contraceptive use in Myanmar beyond women's socio-economic empowerment, such as education, wealth, and employment, in rural areas where more than 70% of the Myanmar population lives, and the government should develop policies that include the diverse needs and preferences of women from different educational backgrounds, and making services more affordable, accessible, and available. Finally, training should be provided to community health workers and midwives to better understand women's views and perspectives, and encourage them to effectively promote modern contraceptive methods.

Table 4. Comparison of knowledge on contraceptive methods and acceptability to services among rural married women aged 18 to 49 years in townships with low and high prevalence of modern contraceptive use

Characteristics	Total (n=648)		Modern contraceptive use Low (n=316)		High (n=332)		p-value
	n	(%)	n	(%)	n	(%)	
Knowledge on current contraceptive method							<0.0001
Do not know	316	(48.8)	137	(43.4)	179	(53.9)	
Know	229	(33.8)	101	(32.0)	118	(35.5)	
No answer	148	(17.4)	78	(24.7)	35	(10.5)	
Knowledge on other suitable contraceptive method							<0.0001
Do not know	329	(50.8)	151	(47.8)	178	(53.6)	
Know	146	(22.5)	45	(14.2)	101	(30.4)	
No answer	173	(26.7)	120	(38.0)	53	(16.0)	
Knowledge on mechanism of contraceptive method							<0.0001
Do not know	345	(53.2)	155	(49.1)	190	(57.2)	
Know	191	(2.5)	73	(23.1)	118	(35.5)	
No answer	112	(17.3)	88	(27.8)	24	(7.2)	
Knowledge on side effects							<0.0001
Do not know	349	(53.9)	146	(46.2)	203	(61.1)	
Know	188	(29.0)	79	(25.0)	109	(32.8)	
No information	111	(17.1)	91	(28.8)	20	(6.0)	
Experience of side effects							<0.0001
No	248	(38.3)	78	(24.7)	170	(51.2)	
Yes	291	(44.9)	147	(46.5)	144	(43.4)	
No answer	109	(16.8)	91	(28.8)	18	(5.4)	
Knowledge on follow-up date							<0.0001
Do not know	141	(21.8)	82	(25.9)	59	(17.8)	
Know	366	(56.5)	116	(36.7)	250	(75.3)	
No answer	141	(21.8)	118	(37.3)	23	(6.9)	
Knowledge on other suitable contraceptive method							<0.0001
Do not know	329	(50.8)	151	(47.8)	178	(53.6)	
Know	146	(22.5)	45	(14.2)	101	(30.4)	
No answer	173	(26.7)	120	(38.0)	53	(16.0)	
Opinion on skill of health care provider							<0.0001
Excellent	168	(25.9)	58	(18.4)	110	(33.1)	
Good	296	(45.7)	128	(40.5)	168	(50.6)	
Neither good nor bad	29	(4.5)	16	(5.1)	13	(3.9)	
Bad	0	(0.0)	0	(0.0)	0	(0.0)	
Worse	7	(1.1)	7	(2.2)	0	(0.0)	
No answer	148	(22.8)	107	(33.9)	41	(12.3)	
Duration of waiting time							<0.0001
Less than 30 minutes	348	(53.7)	107	(33.9)	241	(72.6)	
30-60 minutes	56	(8.6)	46	(14.2)	11	(3.3)	
Don't remember	82	(12.7)	46	(14.6)	36	(10.8)	
No answer	162	(25.0)	118	(37.3)	44	(13.3)	
Satisfaction with the service							<0.0001
No	16	(2.5)	13	(4.1)	3	(0.9)	
Yes	523	(80.7)	210	(66.5)	313	(94.3)	
No answer	109	(16.8)	16	(29.4)	16	(4.8)	

4. CONCLUSION

Due to limited research, to our knowledge, this is the first study to identify factors such as availability, accessibility, and affordability of modern contraceptions among rural married women of reproductive age in Myanmar. When comparing the areas with the highest and lowest prevalence of modern contraceptive use, women in townships with low contraceptive use reported being socioeconomically vulnerable, having less availability and access to services, and having high costs. This study provides recommendations to enhance the uptake of modern contraceptions and provides information to policymakers to facilitate program improvement. This suggests that the Myanmar government should be more aggressive in promoting contraceptive services for women of reproductive age in rural areas that reflect ethnic minority cultures.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the Norwegian-Mahidol scholarship for Dr. P.H. international program. Myint Moh Soe would like to thank the Ministry of Health and Sports, the Union of the Republic of Myanmar, and Mahidol University, for allowing him to complete this Dr. P.H. degree, and

approval for ethical and data collection for his study. All authors would like to thank all the participants in this study without whom, this study would not have been possible.

REFERENCES

[1] W. Zaman, H. Masnin, and J. Loftus, *Family planning in Asia and the Pacific: Addressing challenges*, International Council on Management of Population Programmes (ICOMP), 2012. Accessed: January 23, 2024. [Online]. Available: https://www.academia.edu/1811987/Family_Planning_in_Asia_and_the_Pacific.

[2] R. B. Harrington, N. Harvey, S. Larkins, and M. Redman-MacLaren, "Family planning in pacific island countries and territories (PICTs): A scoping review," *Plos One*, vol. 16, no. 8, Aug. 2021, doi: 10.1371/journal.pone.0255080.

[3] C. de Vargas Nunes Coll, F. Ewerling, F. Hellwig, and A. J. D. de Barros, "Contraception in adolescence: the influence of parity and marital status on contraceptive use in 73 low-and middle-income countries," *Reproductive Health*, vol. 16, no. 1, Dec. 2019, doi: 10.1186/s12978-019-0686-9.

[4] R. K. Biswas, M. Farzana, S. Bhar, and J. Bhowmik, "Contraceptive use in South and South-East Asian region: assessment of sustainable development goal 3.7 through indicator 3.7.1," *Journal of Public Health*, vol. 45, no. 2, pp. 450–461, Jun. 2023, doi: 10.1093/pubmed/fdac105.

[5] S. Ahmed, Q. Li, L. Liu, and A. O. Tsui, "Maternal deaths averted by contraceptive use: an analysis of 172 countries," *The Lancet*, vol. 380, no. 9837, pp. 111–125, Jul. 2012, doi: 10.1016/S0140-6736(12)60478-4.

[6] World Bank's Human Development, "Fertility regulation behaviors and their costs contraception and unintended pregnancies in Africa," *World Bank's Human Development*, 2007. Accessed: March 15, 2018 [Online]. Available: http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTPRH/0,,contentMDK:21866356~menuPK:376861~pagePK:64020865~piPK:51164185~theSitePK:376855,00.html.

[7] T. Riley, E. A. Sully, N Lince-Deroche, L Firestein, R. Murro, A. Biddlecom, and J. E. Darroch. "Adding it up: investing in sexual and reproductive health 2019-methodology report," New York: Guttmacher Institute, 2020. Accessed: March 24, 2024. [Online]. Available: https://www.guttmacher.org/sites/default/files/report_pdf/adding-it-up-investing-in-sexual-reproductive-health-2019-methodology.pdf.

[8] T. Tekelab, A. S. Melka, and D. Wirtu, "Predictors of modern contraceptive methods use among married women of reproductive age groups in Western Ethiopia: a community based cross-sectional study," *BMC Women's Health*, vol. 15, no. 1, Dec. 2015, doi: 10.1186/s12905-015-0208-z.

[9] M. M. Lwin, C. Munsawaengsub, and S. Nanthamongkokchai, "Factors influencing family planning practice among reproductive age married women in Hlaing Township, Myanmar," *Journal of the Medical Association of Thailand*, vol. 96, 2013.

[10] A. Mohammed, D. Woldeyohannes, A. Feleke, and B. Megabiaw, "Determinants of modern contraceptive utilization among married women of reproductive age group in North Shoa Zone, Amhara Region, Ethiopia," *Reproductive Health*, vol. 11, no. 1, Dec. 2014, doi: 10.1186/1742-4755-11-13.

[11] C. Mandiwa, B. Namondwe, A. Makwinja, and C. Zamawe, "Factors associated with contraceptive use among young women in Malawi: analysis of the 2015-16 Malawi demographic and health survey data," *Contraception and Reproductive Medicine*, vol. 3, no. 1, Dec. 2018, doi: 10.1186/s40834-018-0065-x.

[12] P. Singh, K. K. Singh, A. Singh, and A. Pandey, "The levels and trends of contraceptive use before first birth in India (2015-16): a cross-sectional analysis," *BMC Public Health*, vol. 20, no. 1, Dec. 2020, doi: 10.1186/s12889-020-08917-w.

[13] S. Zeyneloğlu, S. Kısa, and L. DelibaŞ, "Determinants of family planning use among Turkish married men who live in South East Turkey," *American Journal of Men's Health*, vol. 7, no. 3, pp. 255–264, May 2013, doi: 10.1177/1557988312471556.

[14] G. W. Jones, "Ultra-low fertility in East Asia: policy responses and challenges," *Asian Population Studies*, vol. 15, no. 2, pp. 131–149, May 2019, doi: 10.1080/17441730.2019.1594656.

[15] M. Thawu, "Unmet reproductive health in Myanmar migrant, Thailand, Samutsakhon province.," 2013. Accessed on January 23, 2017. [Online]. Available: Available at: https://www.researchgate.net/publication/235913981_Unmet_reproductive_health_in_Myanmar_migrant_Thailand_Samutsakhon_province.

[16] P. Muhoza *et al.*, "Modern contraceptive availability and stockouts: a multi-country analysis of trends in supply and consumption," *Health Policy and Planning*, vol. 36, no. 3, pp. 273–287, Apr. 2021, doi: 10.1093/heapol/czaa197.

[17] J. Lasong *et al.*, "Determinants of modern contraceptive use among married women of reproductive age: a cross-sectional study in rural Zambia," *BMJ Open*, vol. 10, no. 3, Mar. 2020, doi: 10.1136/bmjopen-2019-030980.

[18] S. Kistiana and A. A. Baskoro, "Modern contraceptive use among urban and rural young married women in Indonesia," *Jurnal Biometrika dan Kependudukan*, vol. 12, no. 2, pp. 186–198, Nov. 2023, doi: 10.20473/jbk.v12i2.2023.186-198.

[19] Ministry of Health The Republic of the Union of Myanmar, Health in Myanmar 2014. Accessed on March 23, 2019. [Online]. Available: https://themimu.info/sites/themimu.info/files/documents/Report_Health_in_Myanmar_2014_MOH.pdf.

[20] Ministry of Health Myanmar, "Five-year strategic plan for reproductive health (2014-2018)," 2013. Accessed: Dec. 10, 2024. [Online]. Available: https://themimu.info/sites/themimu.info/files/documents/Core_Doc_Five-Year_Strategic_Plan_for_Reproductive_Health_2014-2018.pdf.

[21] Government of Myanmar, "Family Planning 2020 Commitment." 2017. Accessed on March 23, 2024. [Online]. Available: https://wordpress.fp2030.org/wp-content/uploads/2023/08/Myanmar_20Questionnaire_20201.pdf.

[22] Union of Myanmar, Ministry of Immigration and Population, Department of Population, "Country report on 2007: Fertility and Reproductive Health Survey," UNFPA Nay Pyi Taw, 2009. Accessed: May 13, 2018. [Online]. Available: https://myanmar.unfpa.org/sites/default/files/pub-pdf/2007_FRHS.pdf.

[23] A. Jirapongsuwan, K. T. Latt, S. Siri, and C. Munsawaengsub, "Family planning practice among rural reproductive-age married women in Myanmar," *Asia Pacific Journal of Public Health*, vol. 28, no. 4, pp. 303–312, May 2016, doi: 10.1177/1010539516645159.

[24] IPPF, "Sustainable development goals and family planning 2020," International Planned Parenthood Federation. Accessed: January 23, 2024. [Online]. Available: https://www.ippf.org/sites/default/files/2016-11/SDG%20and%20FP2020.pdf

[25] Ministry of Healthn "Health information system," Ministry of Health, National Unity Government, Myanmar. Accessed: January 23, 2024. [Online]. Available: https://moh.nugmyanmar.org/health-information-system/.

[26] M.-M. Mon and T. Liabsuetrakul, "Predictors of contraceptive use among married youths and their husbands in a rural area of Myanmar," *Asia Pacific Journal of Public Health*, vol. 24, no. 1, pp. 151–160, Jan. 2012, doi: 10.1177/1010539510381918.

[27] J. T. McClave and T. T. Sincich, *Statistics*. Pearson publisher, 2008.
[28] United Nations Children's Fund (UNICEF), "Myanmar multiple indicator cluster survey 2009-2010 final report. Nay Pyi Taw," 2011. Accessed: January 23, 2024. [Online]. Available: https://themimu.info/sites/themimu.info/files/documents/Report_Multiple_Indicator_Cluster_Survey_2009-2010.pdf.
[29] Ministry of Health and Sports Nay Pyi Taw "Myanmar demographic and health survey (2015–2016)," Myanmar Demographic and Health Survey, pp. 1-37, 2017.
[30] C. N. Lun, T. Aung, and K. S. Mya, "Utilization of modern contraceptive methods and its determinants among youth in Myanmar: analysis of myanmar demographic and health survey (2015-2016)," *Plos One*, vol. 16, no. 10, Oct. 2021, doi: 10.1371/journal.pone.0258142.
[31] Y. Sano, R. Antabe, K. N. Atuoye, J. A. Braimah, S. Z. Galaa, and I. Luginaah, "Married women's autonomy and post-delivery modern contraceptive use in the Democratic Republic of Congo," *BMC Women's Health*, vol. 18, no. 1, Dec. 2018, doi: 10.1186/s12905-018-0540-1.
[32] S. Bellizzi, H. L. Sobel, H. Obara, and M. Temmerman, "Underuse of modern methods of contraception: underlying causes and consequent undesired pregnancies in 35 low- and middle-income countries," *Human Reproduction*, vol. 30, no. 4, pp. 973–986, Apr. 2015, doi: 10.1093/humrep/deu348.
[33] I. M. Dissanayaka and W. S. N. Siriwardhana, "Limitations and barriers affecting rural married women in resorting to modern contraceptive methods," *Vidyodaya Journal of Humanities and Social Sciences*, vol. 8, no. 1, pp. 138–156, Jan. 2023, doi: 10.31357/fhss/vjhss.v08i01.10.
[34] B. T. Woldeamanuel, G. T. Gessese, T. G. Demie, S. Handebo, and T. D. Biratu, "Women's education, contraception use, and high-risk fertility behavior: A cross-sectional analysis of the demographic and health survey in Ethiopia," *Frontiers in Global Women's Health*, vol. 4, Mar. 2023, doi: 10.3389/fgwh.2023.1071461.
[35] S. M. Fenta and S. G. Gebremichael, "Predictors of modern contraceptive usage among sexually active rural women in Ethiopia: A multi-level analysis," *Archives of Public Health*, vol. 79, no. 1, Dec. 2021, doi: 10.1186/s13690-021-00621-4.
[36] G. Rutaremwa, A. Kabagenyi, S. O. Wandera, T. Jhamba, E. Akiror, and H. L. Nviiri, "Predictors of modern contraceptive use during the postpartum period among women in Uganda: a population-based cross-sectional study," *BMC Public Health*, vol. 15, no. 1, Dec. 2015, doi: 10.1186/s12889-015-1611-y.
[37] J. K. Wulifan *et al.*, "Factors associated with contraceptive use among women of reproductive age in Rural Districts of Burkina Faso," *Journal of Health Care for the Poor and Underserved*, vol. 28, no. 1, pp. 228–247, 2017, doi: 10.1353/hpu.2017.0019.
[38] K. Gilmore and T. A. Gebreyesus, "What will it take to eliminate preventable maternal deaths?" *The Lancet*, vol. 380, no. 9837, pp. 87–88, Jul. 2012, doi: 10.1016/S0140-6736(12)60982-9.
[39] F. Efendi, S. K. Sebayang, E. Astutik, S. Reisenhofer, and L. McKenna, "Women's empowerment and contraceptive use: Recent evidence from ASEAN countries," *Plos One*, vol. 18, no. 6, Jun. 2023, doi: 10.1371/journal.pone.0287442.
[40] K. K. C. Shiromalie, "Determinants of contraceptive use in Sri Lanka with Special Reference to Women's Education," Sri Lanka Statistical Review vol. 1, issue 1, March 2022. Accessed: March 24, 2024. [Online]. Available: https://www.statistics.gov.lk/Publication/SSR/DCSSSRVol1Issue1Article6.
[41] D. de la Croix and C. Delavallade, "Religions, fertility, and growth in Southeast Asia," *International Economic Review*, vol. 59, no. 2, pp. 907–946, 2018, doi: 10.1111/iere.12291.
[42] K. Yadav, M. Agarwal, M. Shukla, J. V. Singh, and V. K. Singh, "Unmet need for family planning services among young married women (15-24 years) living in urban slums of India," *BMC Women's Health*, vol. 20, no. 1, Dec. 2020, doi: 10.1186/s12905-020-01010-9.
[43] A. Z. Islam, "Factors affecting modern contraceptive use among fecund young women in Bangladesh: does couples' joint participation in household decision making matter?," *Reproductive Health*, vol. 15, no. 1, Dec. 2018, doi: 10.1186/s12978-018-0558-8.
[44] A. Etokidem, W. Ndifon, J. Etowa, and E. Asuquo, "Family planning practices of rural community dwellers in cross River State, Nigeria," *Nigerian Journal of Clinical Practice*, vol. 20, no. 6, 2017, doi: 10.4103/njcp.njcp_193_15.
[45] Y. Amran *et al.*, "Perceptions of contraception and patterns of switching contraceptive methods among family-planning acceptors in West Nusa Tenggara, Indonesia," *Journal of Preventive Medicine and Public Health*, vol. 52, no. 4, pp. 258–264, Jul. 2019, doi: 10.3961/jpmph.18.198.
[46] D. M. Ba, P. Ssentongo, E. Agbese, and K. H. Kjerulff, "Prevalence and predictors of contraceptive use among women of reproductive age in 17 sub-Saharan African countries: A large population-based study," *Sexual and Reproductive Healthcare*, vol. 21, pp. 26–32, Oct. 2019, doi: 10.1016/j.srhc.2019.06.002.
[47] Grindlay, Turyakira, Kyamwanga, Nickerson, and Blanchard, "The experience and impact of contraceptive stockouts among women, providers and policymakers in two districts of Uganda," *International Perspectives on Sexual and Reproductive Health*, vol. 42, no. 3, 2016, doi: 10.1363/42e2016.

BIOGRAPHIES OF AUTHORS

Myint Moe Soe is a Dr.P.H. candidate in Public Health Administration Department, Faculty of Public Health, Mahidol University. He is the Director at Office No.47, Department of Public Health, Ministry of Health and Sports. He is also the Deputy Director, at the Maternal and Reproductive Health Division. He can be contacted at email: myintmohsoe@gmail.com.

Nithat Sirichotiratana is a Professor of Pubic Health. He is also a committee member of Thailand Health Promotion Institute, National Health Foundation. His research interest is tobacco control policy. He can be contacted at email: nithat.sir@mahidol.ac.th.

Seo Ah Hong is an assistant professor at the Department of Public Health Administration, Faculty of Public Health, Mahidol University, Bangkok, Thailand. Her research interest is in health promotion policy. She can be contacted at email: seoah.hon@mahidol.ac.th.

Utoomporn Wongsin is a lecturer at the Department of Public Health Administration, Faculty of Public Health, Mahidol University, Bangkok, Thailand. Her research area covers healthcare costing, healthcare management, global health, health promotion and prevention, and older adults. She can be contacted at email: utoomporn.won@mahidol.ac.th.

Chardsumon Prutipinyo is a Professor at Department of Public Health Administration, Faculty of Public Health, Mahidol University, Bangkok, Thailand. Her research interests are public health laws and policies, international trade and commercial determinants of health, health economics and health insurance, consumer health and protection laws. She has been presenting research works at the global level, such as Global Alcohol Policy Conference (GAPA). She can be contacted at email: chardsumon.pru@mahidol.ac.th.