Examining Women's Empowerment as a Predictor of Reproductive and Maternal Health Outcomes Among Currently Married Women of Reproductive Age in Myanmar

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Abstract

Using data from the first Myanmar Demographic and Health Survey (2015-2016), we examined women's empowerment as a predictor of reproductive health outcomes, including contraceptive use, antenatal care (ANC) visits, institutional delivery, and skilled attendant at birth (SAB) among currently married women of reproductive age. Nearly two-thirds (60%) of women participated in all household decisions and had attitudes supporting wife beating, respectively. About half (54%) of women were using modern contraception, 59% attended four or more ANC visits, 41% delivered in an institutional facility, and 62% had a skilled attendant at last birth. In multivariate logistic regression models, these outcomes varied significantly by demographic factors, as well as involvement in decision making, such that women with more decision-making power had better proximate maternal health outcomes. Attitudes toward wife beating was not significantly associated with any outcome. Efforts are needed to improve women’s status and the level of involvement in family and civic decisions in Myanmar.

Background

A positive relationship between women's empowerment and reproductive health has been established in many settings (1). While the strength of the relationship varies by setting and how empowerment is conceptualized and measured, multiple studies have found relationships between women's economic participation, women's autonomy, attitudes toward abuse, and contraceptive use and maternal health service utilization (e.g., antenatal care visits, delivery at a health facility, and presence of a skilled birth attendant) (2). A 31-country analysis using Demographic and Health Survey (DHS) data found that women who were most empowered, as measured by household wealth, women's education, and women's autonomy, had significantly higher odds of contraceptive use, antenatal care attendance, and use of a skilled birth attendant at their most recent birth (3). The significant association between women's autonomy and maternal health remained even after controlling for wealth and education in multivariate analyses (3).

However, there are gaps in the literature describing the relationship between women's empowerment and reproductive and maternal health. Notably, there is no standardized way of measuring empowerment, partially because the meaning of empowerment itself varies across settings (1). Furthermore, few studies explore this relationship in settings that are characterized by political instability, such as those that are in conflict or immediately post-conflict. Understanding the relationship between women's empowerment indicators and reproductive and maternal health outcomes in conflict and post-conflict settings is important, as these countries and regions may differ substantially from otherwise comparable settings.

Myanmar is one such setting to study this relationship given its recent political transition and ongoing regional conflict in some regions. In this setting, the relationship between women's empowerment and reproductive and maternal health is largely unknown because, until recently, there were no nationally representative data available on social demographics or health status. However, with the release of the 2015-2016 Myanmar DHS, we have a new opportunity to understand the state and trajectory of reproductive and maternal health within Myanmar.

Myanmar reports some of the lowest reproductive health indicators in the region. In a 2017 multi-country comparison report using DHS data from five Southeast Asian countries, Myanmar had the lowest proportion of women attending their first antenatal care visit in the first trimester of pregnancy (47%), and nearly one-third (31%) of women in Myanmar had fewer than four antenatal care visits (4). Interestingly, this study found no significant effects of labor force participation or decision-making power on antenatal care, despite evidence from other settings that these factors exert a strong influence on reproductive health outcomes (4). This may indicate that these measures do not fully capture women's empowerment in Myanmar. It could also indicate that the relationship between women's empowerment and reproductive and maternal health outcomes have a different than expected relationship in this context. However, this requires further study focused within Myanmar.

Though Myanmar has made notable progress in reproductive health indicators, disparities and differences still exist across region and socioeconomic status. Reproductive and maternal health indicators within Myanmar are promising, but inconsistent, differing widely by region and other sociodemographic characteristics. The total fertility rate (TFR) in Myanmar is 2.3, yet there is considerable variation by education and region. In Chin state, where access to healthcare remains limited, the TFR is 4.6, the highest in the country. Women with no education have a TFR of 3.6, compared to 1.5 for women with a secondary education or higher (5). Unmet need for

contraception varies as well. Almost a quarter of women with no education have an unmet need for contraception (24%), compared to 8% of women with a secondary education or higher (5).

In 2013, the government developed the 'National Strategic Plan for the Advancement of Women' to address gender equality across 12 priority areas, including education, health care, and violence (6). The variation in these reproductive and maternal health indicators is potentially limiting to the countries' overall progress towards its goals of gender equity, highlighting the importance of understanding and addressing disparities. An examination of women's status indicators shows uneven progress across these 12 areas; for example, whereas gender parity has been achieved for primary and secondary school levels, regional and economic disparities persist. Similarly, gains in female enrollment and educational attainment have not resulted in improved employment opportunities. The proportion of women with 'vulnerable employment' (proportion of own-account and contributing family workers) has recently increased among women (6). This indicates that women's empowerment – both how it is measured and its implications for health – may be specific to Myanmar and vary within the country.

This paper uses the newly-available Myanmar DHS data to address two aims: to examine the current status of reproductive and maternal health in Myanmar, as well as to determine the relationship between women's empowerment and reproductive health indicators.

Methods

This study uses nationally representative data from the 2015-2016 Myanmar Demographic and Health Survey (MDHS). Implemented by Myanmar's Ministry of Health and Sports (MoHS), the survey used a two-stage cluster design to collect information on marital status and sexual activity, fertility, contraceptive use, maternal and child health, women's empowerment, and other population health indicators. In stage one, 442 clusters were identified based on census enumeration areas. Myanmar Housing and Population Census was completed in 2014. In the second stage, 13,260 households were selected (30 households from each cluster) across the identified clusters using equal probability systematic sampling. In selected households, all women aged 15-49 were eligible to be interviewed; half of all selected households were used to interview eligible men aged 15-49 years. The complete survey design and methodology have been described elsewhere and are publicly available (5).

A total of 12,885 women aged 15-49 years were interviewed, of whom 7,870 reported being currently married. To evaluate predictors of modern contraceptive use, the analytic sample was restricted to the 6,117 currently married women aged 15-49 with potential contraceptive need (i.e., the sample excluded women who reported being sterilized/infecund or wanting another child within the next two years). For analyses utilizing maternal health behaviors (ANC visits, institutional delivery, skilled attendant at delivery) as the dependent variable of interest, the analytic sample was restricted to include the 3,683 currently married women aged 15-49 years who had at least one live birth in the previous five years. Probability weights were applied to ensure data are representative of the total Myanmar population of currently married women aged 15-49 years.

Dependent Variables

This study includes four dependent variables of interest. First, we examine current use of a modern contraceptive method ("Yes" or "No"). Modern contraceptive methods included male and female sterilization, injectables, intrauterine devices (IUDs), contraceptive pills, implants,

and male condoms. Maternal health behavior variables included number of ANC visits attended, institutional delivery, and having a skilled attendant at delivery. Number of ANC visits for the most recent birth was recoded as a categorical variable: 0 visits, 1-3 visits, 4-7 visits, and 8+ visits. The inclusion of 4-7 visits and 8+ visits was based on World Health Organization (WHO) recommendations for reducing perinatal morbidity and mortality, which were recently redefined in 2016 to increase the recommended minimum number of ANC visits from a minimum of 4 to 8 (7). Women who responded "Do not know" to the question regarding number of ANC visits were counted as missing (less than 1%). Institutional delivery at last birth was used to capture if a woman's last birth took place in a public or private health facility (versus taking place at the respondent or someone else's home or another location; "Yes" or "No"). Finally, we measure having a skilled attendant at delivery ("Yes" or "No"); women who reported to have their last birth assisted by a doctor, nurse, midwife, or "lady health visitor" were considered to have a skilled attendant at delivery.

Independent Variables

Women's empowerment was assessed at the individual level along two dimensions of empowerment – decision-making power and attitudes toward wife beating – as used in previous studies (2,8,9). Participation in household decision-making has been conceptualized as an important aspect of women's agency and ability to exercise control over their own lives (5,9). Attitudes toward wife beating is conceptualized as indicating a woman's perception of her personal status and as reflecting on her personal sense of empowerment. Women's participation in decision-making was assessed with five questions which asked who made decisions about woman's own health care, large household purchases, visits to family or relatives, what to do with the money the husband earns, and wellbeing of children. Women's decision-making is a categorical variable representing the number of decisions in which women participated alone or jointly with their spouse (0-2 decisions, 3-4 decisions, and all 5 decisions). An investigation of the association between sole and joint participation in decision-making, where we found that both sole and joint participation in decision-making were positively associated with all outcomes of interest for each decision-making item included in our analyses, provides empirical justification for combining these responses as an indicator for participation in household decision-making.

To measure women's perception of the acceptability of violence, seven questions were asked to assess if the woman believes a man is justified in beating his wife under various scenarios (see Table 2 for a description of the scenarios). A response of "No" was considered to indicate a negative attitude toward wife beating. From these questions, a binary variable was created; women who responded "No" to all seven questions were considered to believe that wife beating was never justified, whereas if a woman responded "Yes" or "Do not know" to at least one of the seven questions, she was considered to believe that wife beating was justified in at least one scenario.

Other independent variables included several sociodemographic characteristics, including women's age, education, wealth index, place of residence (urban versus rural), exposure to print, radio, or television at least once per week, and parity. Geographic region, categorized as Delta, Coastal, Plains, or Hilly, was also included. Women were classified into one of the four regions based on the state in which they lived, as follows: Yangon and Ayeyarwaddy states were categorized as "Delta"; Rakhine, Mon, and Tanintharyi states were categorized as "Coastal"; Bago, Mandalay, Magway, Sagaing, and Naypyidaw states were categorized as "Plains"; and

Kachin, Kayah, Kayin, Chin, and Shan states were categorized as "Hilly." Geographic region, as defined in this way, is conceptualized to be an important indicator of potential access to health care services. Further, fertility preference, assessed by asking if women desire more children, and exposure to family planning messaging were included as additional variables in the multivariate model assessing predictors of modern contraceptive use.

Analysis

Data were analyzed using descriptive, bivariate, and multivariate statistics. Multiple logistic regression was used to examine women's empowerment and sociodemographic predictors of contraceptive use and institutional delivery and skilled birth attendant at last birth. Multinomial logistic regression was used to examine women's empowerment and sociodemographic predictors of antenatal care. Variance inflation factors (VIF) were assessed to confirm no issues with multicollinearity between any of the variables included in the various multivariate models. The sampling design of the MDHS was considered by weighting all analyses. All analyses were conducted in StataSE 15 (StataCorp, 2017) using complete case analysis procedures.

Results

Sociodemographic characteristics

Sociodemographic characteristics are provided in Table 1 for: a) currently married women aged 15-49 years with potential contraceptive need and b) currently married women aged 15-49 years who have had at least one live birth in the five years preceding the survey. About half of the women in both samples are between 35 and 49 years of age and reported having a primary education. More than 75% of women live in rural areas, and the largest proportion of women in both samples are from states making up the Plains regions of Myanmar (42% and 41% among women with potential contraceptive need and a recent birth, respectively). Nearly two-thirds of women in each sample were exposed to radio, print media, or television at least once a week; however, only about one-third of women in the samples said that they had ever been exposed to messages on family planning specifically.

Table 1

Empowerment, contraceptive use, and maternal health behavior characteristics

Table 2 provides a summary of participation in various decisions and their attitudes toward wife beating across several situations, along with the distribution for composite variables used in regression analyses, for women in both samples. In general, participation in household decision making is high. Participation in household decisions for women with potential contraceptive need and women with a recent birth was lowest for large household purchases (75% and 73%, respectively) and highest for the wellbeing of children (92% and 93%, respectively). Despite large percentages of women reporting involvement in each individual decision, only about 60% of women in both samples reported being involved in all decisions. In examining attitudes toward wife beating, nearly half of women in both samples said a husband would be justified in beating his wife if she were to neglect the children, and more than one-quarter said beating was justified if the wife goes out without telling the husband. Justification for wife beating was lowest for a wife arguing with her husband (15% and 16% among women with potential

contraceptive need and recent birth, respectively). Sixty percent of women in both samples reported wife beating to be justified in at least one of the situations presented.

Table 2

Contraceptive use and maternal health behavior characteristics of women are presented in Table 3. Just over half (54.3%) of currently married women aged 15-49 years with a potential contraceptive need reported using a modern form of contraception at the time of the survey. Less than 2% of women not using a modern contraceptive method reported using a traditional method (e.g., withdrawal). Among currently married women aged 15-49 with at least one birth in the last five years, 42% attended 4-7 ANC visits and 18% attended 8 or more; 13% did not receive any ANC care from a skilled provider. Further, 40% of these women delivered their most recent birth in an institutional facility and 62% said their delivery was assisted by a skilled attendant.

Table 3

Modern contraceptive use

Results of the multiple logistic regression examining empowerment and sociodemographic predictors of modern contraceptive use are shown in Table 4. Women who are involved in all decisions are significantly more likely than those involved in two or fewer decisions to use a modern contraceptive method after controlling for sociodemographic characteristics. Attitudes toward wife beating were not a significant predictor of modern contraceptive use. The results also show a statistically significant relationship between most of the sociodemographic factors included and use of a modern contraceptive method, although the direction of the associations vary. Women aged 35-49 years had lower odds of modern contraceptive use than than women aged 15-24 (aOR 0.43, 95% CL: 0.34-0.55). Compared to women with no formal education, women with a primary education and women with a secondary education or higher had higher odds of reporting use of modern contraceptive methods (aOR 1.39, 95% CL: 1.12-1.74; aOR 1.56, 95% CL: 1.23-2.08, respectively). Women residing in Coastal and Hilly regions had lower odds of reported use of a modern contraceptive method compared to women living in Delta regions (aOR 0.56, 95% CL: 0.45-0.70; aOR 0.55, 95% CL 0.43-0.69); place of residence (i.e., urban versus rural) was not found to be associated with modern contraceptive use in multivariate analysis. Exposure to print, radio, or television at least once per week was positively associated with modern contraceptive use (aOR 1.20, 95% CL: 1.03-1.40), although exposure to family planning messaging specifically was not statistically significantly associated. Compared to women with 6 or more children, women with 0-1 children, 2-3 children, and 4-5 children all had higher odds of contraceptive use (aOR 1.68, 95% CL: 1.26-2.24; aOR 2.61, 95% CL: 2.02-3.37; and aOR 1.85, 95% CL: 1.44-2.39, respectively). Wealth was not found to be a significant predictor of contraceptive use in our multivariate analysis.

Table 4

Maternal health behaviors

Table 5 depicts results of the multinomial logistic regression examining predictors of ANC visits and the multiple logistic regressions examining predictors of institutional delivery and skilled attendant at birth. Our results show that greater decision-making power was significantly associated with receiving ANC and having a skilled attendant at birth, although it was not significantly associated with institutional delivery. Compared to women who participate in two or fewer decisions, women involved in all household decisions had significantly higher odds of attending 1-3, 4-7, and 8 or more ANC visits (all compared to attending 0 ANC visits) (aOR 1.54, 95% CL: 1.03-2.32; aOR 1.97, 95% CL: 1.31-2.97; and aOR 2.05, 95% CL: 1.18-3.57, respectively), as well as higher odds of having a skilled attendant at birth (aOR 1.50, 95% CL: 1.09-2.08). Having less endorsing views toward wife beating (i.e., reporting wife beating was never justified) was not found to be a significant predictor of any of the maternal health behaviors under investigation.

Again, statistically significant relationships were found between most of the sociodemographic characteristics and each of the maternal health behaviors. Compared to women in the youngest age group, women aged 35-49 had higher odds of attending 4-7 ANC visits (aOR 2.88, 95% CL: 1.59-5.21), at least 8 ANC visits (aOR 3.59, 95% CL: 1.83-7.02), having an institutional delivery (aOR 3.24, 95% CL: 2.30-4.57), and having their delivery assisted by a skilled attendant (aOR 3.13, 95% CL: 2.16-4.53). Education was also found to be a significant predictor of maternal health behaviors, as women with a secondary education had increased odds of attending 4-7 ANC visits (aOR 6.42, 95% CL: 3.94-10.45), attending at least 8 ANC visits (aOR 10.07, 95% CL: 4.83-20.97), having an institutional delivery (aOR 2.86, 95% CL: 2.05-3.99), and having a skilled attendant at delivery (aOR 3.07, 95% CL: 2.16-4.35) compared to women with no formal education.

In the multinomial model examining predictors of attending 8 or more ANC visits versus 0 ANC visits, we found that wealth was positively associated with attending 8 or more visits, with aORs increasing with increasing wealth index. For example, compared to women in the poorest wealth index, women in the poorer index had about 2 times higher odds of attending 8 or more ANC visits (aOR 2.37, 95% CL: 1.48-3.80), and women in the richest wealth index had nearly 20 times higher odds (aOR 19.70, 95% CL: 7.90-49.16). A similar pattern was observed in models examining predictors of institutional delivery and skilled attendant at birth, in which we found that the richest women had nearly seven times higher odds of having an institutional delivery (aOR 6.74, 95% CL: 4.41-10.29) and more than ten times the odds of having a skilled attendant at birth (aOR 10.48, 95% CL: 5.77-19.02) compared to the poorest women.

Our results show that women living in urban areas had higher odds of attending 8+ visits, although place of residence was not found to be significant in models assessing predictors of attending 1-3 visits or 4-7 visits versus attending no ANC visits. Living in an urban area was also found to be positively associated with institutional delivery (aOR 2.34, 95% CL: 1.69-3.24) and having a skilled attendant at birth (aOR 2.11, 95% CL: 1.31-3.41). Further, region was not found to be a significant predictor of institutional delivery or having a delivery assisted by a skilled attendant. In the multinomial model examining predictors of attending 4-7 ANC visits versus no ANC visits, women living in Coastal, Plains, and Hilly regions all had lower odds of attending 4-

7 ANC visits compared to women living in states located in Delta regions (aOR 0.44, 95% CL: 0.20-0.97; aOR 0.39, 95% CL: 0.19-0.80; and aOR 0.27, 95% CL: 0.13-0.56, respectively).

Media exposure was only found to be significant in our multinomial model assessing predictors of 8+ ANC visits, whereby women exposed to print, radio, or television at least once per week had increased odds of attending 8 or more ANC visits (aOR 1.61, 95% CL: 1.09-2.39).

Parity was found to be significantly associated with all maternal health behaviors, whereby, in general, women with fewer children were more likely to perform favorable maternal health behaviors. Compared to women with 6+ children, women with 0-1 children had higher odds of attending 1-3, 4-7, and 8 or more ANC visits (aOR 2.37, 95% CL: 1.19-4.75; aOR 4.66, 95% CL: 2.25-9.66; and aOR 12.23, 95% CL: 4.86-30.80, respectively), and also had increased odds of institutional delivery (aOR 5.56, 95% CL: 3.35-9.25) and having a skilled attendant at last birth (aOR 5.30, 95% CL: 3.25-8.64).

Table 5

Discussion

This study found that women's empowerment is associated with a number of reproductive health outcomes, including increased modern contraceptive use, antenatal care visits, and delivery with a skilled birth attendant. In particular, women's involvement in decision-making is an important predictor of contraceptive use, ANC visits, and presence of a skilled birth attendant; however, it was not a significant predictor for institutional deliveries. One potential explanation for this is that accessibility issues may be more important for an institutional delivery because it requires a physical health facility equipped to deliver newborns. Further analyses of sociodemographic characteristics in part corroborate these findings, as our results suggest urban women are more than twice as likely to deliver in a facility compared to women living in rural areas. The urban advantage has long been a powerful predictor in institutional deliveries (10). On the other hand, in Myanmar, contraception is readily found in smaller clinics and even in pharmacies. NGOs, the private sector, and government efforts have made family planning products, including pills, condoms, and IUDs readily available in even hard-to-reach townships and through a variety of channels (11). Furthermore, the private sector also plays a significant role in healthcare in Myanmar, where informal providers and midwives provide antenatal care or serve as a birth attendant. Therefore, access to these services may be less geographically dependent than delivering in a facility.

Approximately 60% of women in our samples reported being involved in all decisions pertaining to their own health care, large household purchases, visits to family or relatives, husband's earnings, and wellbeing of children. Examining other South East Asian countries with recent Demographic and Health Survey (DHS) data, including Cambodia, Indonesia, Philippines, and Timor-Leste, we find that all countries have relatively high participation in decision-making among currently married women, ranging from about 73-88% of women reporting to participate in decisions around their own health, large household purchases, and visits with family and friends (12). Although, Myanmar has the lowest percentage of women participating in these three decisions specifically (71%) (12). This suggests that, while a majority of women are involved in decision-making, Myanmar continues to trail behind other countries in the region in

this area. Given that decision-making is a strong predictor of reproductive health outcomes, efforts are needed to improve women's status and the level of involvement in family and civic decisions.

In contrast to other studies, this study found that attitudes toward wife beating were not significantly associated with reproductive and maternal health outcomes in any model (8). Despite this, about 60% of women in our samples reported attitudes supporting wife beating in one or more situations. This is in contrast to a recent study in Bangladesh, where half as many (32%) women reported that wife beating was justified in certain situations (8). Moreover, compared to other Southeast Asian countries with recent DHS data, including Cambodia, Indonesia, Philippines, and Timor-Leste, with the exception of Timor-Leste, Myanmar has the lowest percentage of women who reported that wife beating was *never* justified (12). This suggests that women's status and role remain an important issue in Myanmar, and efforts are needed to support women's autonomy and self-perception. Taken together, one potential explanation for attitudes toward wife beating not being associated with any reproductive health outcome is that norms towards wife beating are so pervasive that it does not adequately explain these differences. According to a qualitative study that looked into the community perception of violence against women and their coping mechanisms in Myanmar, violence was reported as a common experience, rooted deeply engrained gender norms present in society (13). Wife beating was just one of the many forms of violence experienced, and women reported repeat experiences of violence throughout their life course (13).

Approximately 54% of women in Myanmar are using a modern method of family planning, one of the highest prevalence's of modern contraceptive use in the region, second only to Indonesia (12). Like Indonesia, Myanmar has implemented a robust family planning program in recent years, targeting both the private and public sectors, as part of a commitment to the Family Planning 2020 initiative. Myanmar has improved its family planning programs by strengthening supply chains, expanding the range of contraceptive methods available to women, expanding to women in the most remote, hard to reach areas, ensuring adolescent's access to sexual and reproductive health services, and establishing sustainable financing (14,15). Despite Myanmar's impressive gains in increasing contraceptive use in recent years, about 16% of currently married women have an unmet need for contraception (5). Myanmar should continue its efforts to increase contraceptive use, particularly among women with less decision-making power.

In contrast to use of modern contraceptive methods, Myanmar lags behind other countries in regard to maternal health outcomes. This includes meeting the global guidelines recommended for the number of ANC visits, institutional deliveries, and having skilled birth attendants present during delivery. Compared to other Southeast Asian countries, Myanmar reported the lowest percentage of women who had at least four ANC visits (59%) and delivered their most recent birth in a health facility (41%). Other countries in the region report that between 76-88% of women are attending at least four ANC visits and 50-83% of women are delivering in a facility (12). Additionally, with the exception of Timor-Leste, Myanmar has the lowest percentage of women who deliver with a skilled birth attendant present. While 62% of our sample reported having a skilled birth attendant present, other Southeast Asian countries, such as Cambodia, Indonesia, and Philippines, report a range of 73-89%. Because of the historical political instability in Myanmar, much of the country's population remains difficult to reach, either due to their rural location or because of ongoing conflict in the region. This leaves many women

without access to a functional health facility adequately equipped to handle complicated deliveries.

These findings highlight the importance of improving equity in women's reproductive health, particularly in Myanmar where there is significant variation in reproductive and maternal health outcomes by sociodemographic factors, such as age, education, wealth, and region. In addition to having programs and policies supporting women's empowerment, these efforts should be coordinated with programs that foster improvements in social determinants of health among women in Myanmar, including education, mobility, and economic empowerment. This is corroborated by other studies in Myanmar that have found that women's mobility for economic opportunities and marriage prospects improve reproductive outcomes (16). In our study, wealth was important for ANC, institutional delivery, and use of a skilled birth attendant, but not for contraceptive use. One potential explanation is that both the private sector and government programs have provided subsidies for low-cost or free contraceptive services through a variety of channels (17,18). Therefore, financial barriers are much lower for family planning services compared to maternal health services, which may incur costs associated with transportation to a health facility and fees for delivery-related procedures, medicines, and tests.

This study has a number of strengths and limitations worth noting. First, our study examines empowerment factors that more directly reflect the degree to which women may have control over their lives, rather than relying solely on sociodemographic characteristics (such as education or wealth) as proxies for women's status. This is an important strength as the relationship between these broader sociodemographic characteristics and health-related behaviors and outcomes are often context-specific and can vary greatly between and within countries. This study also uses the first nationally representative survey completed in Myanmar, providing the first ever (to our knowledge) nationwide examination of the status of women's empowerment and sexual and reproductive health outcomes. Unfortunately, the DHS was unable to collect data from those living in areas with ongoing conflict, particularly in the Rakhine state. We expect that reproductive health outcomes are much poorer in these regions, with much needed attention for interventions to improve women's status. Additionally, we do not include information on husband and community-level characteristics, and lack data on religion. These factors are known to be important for women's empowerment and use of reproductive health services in other contexts, and future studies should further examine these factors and their relationships with reproductive health outcomes. Finally, cross-sectional survey data limits our ability to demonstrate causality between our independent and dependent variables of interest. It is possible that access and use of reproductive and maternal health services contributes to women's empowerment.

As this was the first time the DHS was completed in Myanmar, our results provide a timely examination of the determinants of these essential reproductive and maternal health outcomes which can be used to best inform future programming, policy, and research directions. Using a nationally representative sample means our results may be more applicable for the development or revision of large-scale programs and policies as compared to previous studies which were focused on specific geographic regions or populations (i.e., migrant populations or populations in conflict areas). Additionally, by highlighting predictors of reproductive and maternal health outcomes, these results can assist Myanmar in meeting its targets related to family planning and maternal and infant mortality as outlined in the UN's Sustainable Development Goals.

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Table 1. Demographic characteristics of currently married women in Myanmar (ages 15-49) (%)

Characteristics	**Currently married women with potential contraceptive need N = 6,117**	**Currently married women who had at least 1 birth in the last 5 years N=3,683**
Age (years); mean (SD)	34.3 (8.4)	31.0 (6.8)
15-24	14.5	9.4
25-34	36.3	35.8
35-49	49.2	54.8
Education		
No formal education	16.2	16.4
Primary	48.1	48.5
Secondary or higher	35.7	35.1
Wealth Index		
Poorest	22.4	21.4
Poorer	21.1	21.2
Middle	20.0	19.8
Richer	19.5	19.2
Richest	17.1	18.5
Residence		
Rural	75.3	76.6
Urban	24.7	23.4
Region		
Delta	27.9	25.1
Coastal	11.3	12.5
Plains	42.2	41.1
Hilly	18.7	21.3
Exposed to radio, print media, or television at least once a week	63.0	60.6
Parity; mean (SD)	2.6 (1.9)	2.8 (2.0)
0-1	31.8	34.0
2-3	43.1	43.0
4-5	16.9	15.1

Characteristics	**Currently married women with potential contraceptive need N = 6,117**	**Currently married women who had at least 1 birth in the last 5 years N=3,683**
6+	8.3	7.9
Exposed to family planning messaging[1]	32.7	31.8

Percentages are weighted to be nationally representative and account for DHS survey design; may not add to 100 due to rounding.
NA = Not applicable.
[1] Missing: n=1 among sample of currently married women with potential contraceptive need

Table 2. Empowerment characteristics of currently married women in Myanmar (ages 15-49) (%)

Characteristics	**Currently married women with potential contraceptive need N = 6,117**	**Currently married women who had at least 1 birth in the last 5 years N=3,683**
Woman participates in the following decisions[1]		
Woman's own health care	83.8	83.2
Large household purchases	75.0	73.3
Visits to family or relatives	88.1	86.9
What to do with money husband earns[2]	87.4	87.1
Wellbeing of children	92.4	92.6
Decision-making power[3]		
Participates in 0-2 decisions	9.7	9.9
Participates in 3-4 decisions	28.8	30.1
Participates in all 5 decisions	61.5	60.0
A man is justified in beating his wife in the following situations		
Wife goes out without telling husband	27.1	26.9
Wife neglects the children	44.5	45.1
Wife argues with husband	14.8	15.5
Wife refuses to have sex with husband	18.3	17.6
Wife burns the food	17.0	16.8
Wife refuses to use contraception	18.3	17.6
Wife involved in too much social activity	19.9	20.2
Attitudes toward wife beating		
Wife beating never justified	40.1	40.5
Wife beating justified in at least one situation	59.9	59.5

Percentages are weighted to be nationally representative and account for DHS survey design; may not add to 100 due to rounding.

[1]Missing n=2 for all decision-making questions among currently married women with potential contraceptive need
[2]Additional missing of n=38 among currently married women with potential contraceptive need; Missing n=14 among currently married women who had at least one birth in the last five years
[3]Decision-making power has a total sample of N=6,077 among currently married women with potential contraceptive need and a total sample of N=3,669 among currently married women who had at least one birth in the last five years

Table 3. Contraceptive use and maternal health behavior characteristics of currently married women in Myanmar (ages 15-49) (%)

Characteristics	
Using modern contraceptive method[1,2]	**N=6,117**
No[3]	45.7
Yes	54.3
Number of antenatal care visits with a skilled provider[4,5]	**N=3,683**
0	12.6
1-3	28.0
4-7	41.7
8+	17.6
Last birth delivered in an institutional facility[4]	**N=3,683**
No	59.2
Yes	40.8
Skilled attendant at last birth[4]	**N=3,683**
No	38.4
Yes	61.6

Percentages are weighted to be nationally representative and account for DHS survey design; may not add to 100 due to rounding.

[1]Reported for women with potential contraceptive need

[2]Modern methods included: male and female sterilization, injectables, intrauterine devices (IUDs), contraceptive pills, implants, and male condoms

[3]Less than 2% of those not using a modern contraceptive method reported using traditional methods (e.g., withdrawal)

[4]Reported for last birth among those currently married women who had at least one birth in the last five years

[5]Missing: n=30

Table 4. Multiple logistic regression adjusted odds ratios (95% confident intervals) of modern contraceptive use by empowerment construct and demographic variables[1]

Predictor variables	**Modern contraceptive use**
Decision-making (Referent: Involved in 0-2 decisions)	
Involved in 3-4 decisions	1.21 (0.95-1.53)
Involved in all decisions	1.31 (1.04-1.64) *
Attitudes toward wife beating (Referent: Wife beating justified in at least one circumstance)	
Wife beating never justified	0.97 (0.85-1.10)
Age (Referent: 15-24)	
25-34	0.81 (0.66-0.99) *
35-49	0.43 (0.34-0.55) ‡
Education (Referent: No formal education)	
Primary	1.39 (1.12-1.74) †
Secondary or higher	1.56 (1.23-2.08) ‡
Wealth index (Referent: Poorest)	
Poorer	1.13 (0.92-1.38)
Middle	1.00 (0.81-1.22)
Richer	1.11 (0.86-1.42)
Richest	0.91 (0.65-1.26)
Place of residence (Referent: Rural)	1.09 (0.89-1.34)
Region (Referent: Delta)	
Coastal	0.56 (0.45-0.70) ‡
Plains	0.91 (0.76-1.10)
Hilly	0.55 (0.43-0.69) ‡
Exposure to print, radio, or television at least once per week (Referent: No)	1.20 (1.03-1.40) *
Exposed to family planning messaging (Referent: No)	1.07 (0.92-1.24)
Parity (Referent: 6+)	
0-1	1.68 (1.26-2.24) ‡
2-3	2.61 (2.02-3.37) ‡
4-5	1.85 (1.44-2.39) ‡

All models are weighted to be nationally representative and account for DHS survey design and were completed using complete case analysis.
aOR (95% CI)
*p < 0.05; †p < 0.01; ‡p < 0.001
[1]Analytic sample includes currently married women with potential contraceptive need (N=6,117)

Table 5. Logistic regression adjusted odds ratios (95% confident intervals) of maternal health outcomes by empowerment construct and demographic variables[1]

Predictor variables	Antenatal care visits with skilled provider[2]			Institutional delivery	Skilled attendant at birth
	1-3 visits vs. 0 visits	4-7 visits vs. 0 visits	8+ visits vs. 0 visits		
Decision-making (Referent: Involved in 0-2 decisions)					
Involved in 3-4 decisions	1.52 (0.93-2.47)	2.02 (1.28-3.20) †	2.29 (1.25-4.20) †	1.25 (0.87-1.79)	1.44 (1.01-2.04) *
Involved in all decisions	1.54 (1.03-2.32) *	1.97 (1.31-2.97) †	2.05 (1.18-3.57) *	1.15 (0.83-1.60)	1.50 (1.09-2.08) *
Attitudes toward wife beating (Referent: Wife beating justified in at least one circumstance)					
Wife beating never justified	1.21 (0.87-1.68)	1.23 (0.88-1.70)	1.33 (0.90-1.97)	1.00 (0.82-1.22)	0.99 (0.81-1.23)
Age (Referent: 15-24)					
25-34	1.21 (0.77-1.89)	1.90 (1.20-3.00) †	2.47 (1.47-4.15) †	1.75 (1.31-2.33) ‡	1.76 (1.32-2.35) ‡
35-49	1.37 (0.76-2.48)	2.88 (1.59-5.21) †	3.59 (1.83-7.02) ‡	3.24 (2.30-4.57) ‡	3.13 (2.16-4.53) ‡
Education (Referent: No formal education)					
Primary	2.34 (1.69-3.23) ‡	2.87 (1.99-4.15) ‡	4.48 (2.31-8.69) ‡	1.95 (1.45-2.62) ‡	2.16 (1.63-2.86) ‡
Secondary or higher	3.43 (2.19-5.36) ‡	6.42 (3.94-10.45) ‡	10.07 (4.83-20.97) ‡	2.86 (2.05-3.99) ‡	3.07 (2.16-4.35) ‡
Wealth index (Referent: Poorest)					
Poorer	1.32 (0.93-1.88)	1.78 (1.24-2.56) †	2.37 (1.48-3.80) ‡	1.26 (0.91-1.74)	1.21 (0.93-1.57)
Middle	1.00 (0.62-1.60)	1.49 (0.94-2.37)	2.48 (1.35-4.56) †	1.52 (1.07-2.17) *	1.50 (1.06-2.13) *
Richer	1.86 (1.09-3.17) *	2.93 (1.73-4.94) ‡	5.06 (2.58-9.91) ‡	1.94 (1.35-2.79) ‡	2.56 (1.81-3.63) ‡
Richest	2.86 (1.25-6.54) *	7.86 (3.57-17.30) ‡	19.70 (7.90-49.16) ‡	6.74 (4.41-10.29) ‡	10.48 (5.77-19.02) ‡
Place of residence (Referent: Rural)	0.83 (0.43-1.63)	1.47 (0.81-2.67)	3.08 (1.56-6.10) †	2.34 (1.69-3.24) ‡	2.11 (1.31-3.41) †
Region (Referent: Delta)					
Coastal	0.55 (0.27-1.14)	0.44 (0.20-0.97) *	1.00 (0.42-2.35)	0.78 (0.53-1.15)	0.87 (0.58-1.31)
Plains	0.57 (0.30-1.08)	0.39 (0.19-0.80) *	0.60 (0.28-1.30)	0.84 (0.59-1.20)	1.27 (0.83-1.94)
Hilly	0.39 (0.20-0.76) †	0.27 (0.13-0.56) †	0.43 (0.18-1.00)	0.68 (0.45-1.03)	0.75 (0.48-1.17)
Exposure to print, radio, or television at least once per week (Referent: No)	1.08 (0.80-1.47)	1.33 (0.97-1.82)	1.61 (1.09-2.39) *	1.09 (0.88-1.35)	1.15 (0.93-1.42)

Predictor variables	Antenatal care visits with skilled provider[2]			Institutional delivery	Skilled attendant at birth
	1-3 visits vs. 0 visits	4-7 visits vs. 0 visits	8+ visits vs. 0 visits		
Parity (Referent: 6+)					
0-1	2.37 (1.19-4.75) *	4.66 (2.25-9.66) ‡	12.23 (4.86-30.80) ‡	5.56 (3.35-9.25) ‡	5.30 (3.25-8.64) ‡
2-3	1.74 (0.98-3.08)	2.23 (1.19-4.19) *	4.91 (2.12-11.33) ‡	1.58 (1.03-2.44) *	1.95 (1.29-2.94) †
4-5	1.28 (0.81-2.04)	1.44 (0.84-2.46)	1.99 (0.87-4.58)	0.93 (0.59-1.48)	1.18 (0.80-1.73)

All models are weighted to be nationally representative and account for DHS survey design and were completed using complete case analysis.

aOR (95% CI)

*$p < 0.05$; †$p < 0.01$; ‡$p < 0.001$

[1]Analytic sample includes currently married women with at least one birth in the last five years (N=3,683)

[2]Predictors of antenatal care visits analyzed using multinomial logistic regression