

**Women's Empowerment and Modern Contraceptive Use among Young, Married Women
in South and Southeast Asia**

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Paper submitted to the Population Association of America Conference, April 27-29, 2017

INTRODUCTION

For the last two decades, women's empowerment has been increasingly recognized as a critical element to enable couples to make informed decisions in the use of reproductive health and family planning services (Bawah, Akweongo, Simmons, & Phillips, 1999; Blanc, 2001; United Nations, 1995). There is a sizable body of evidence on the associations between women's decision-making and contraceptive and condom use (Al Riyami, Afifi, & Mabry, 2004; Govindasamy & Malhotra, 1996; Harvey, Bird, De Rosa, Montgomery, & Rohrbach, 2003; Nanda, Schuler, & Lenzi, 2013; Pulerwitz, Gortmaker, & DeJong, 2000; Wang & Chiou, 2008; Wingood & DiClemente, 2000). The last few years have also seen an increasing number of studies have examined the relationships between women's empowerment and contraceptive use within couple relationships (Do & Kurimoto, 2012; Hameed et al., 2014; Palamuleni & Adebawale, 2014). However, there has been very little research on the effects of women's empowerment and choice of short-term and long-acting method use (Haile & Fantahun, 2012; Palamuleni & Adebawale, 2014). Palamuleni and Adebawale (2014) found a positive association between women's empowerment and the use of long-acting and permanent methods among married women of reproductive age in Malawi. To our knowledge, there has not been any study investigating these associations among young women (aged 15-24), yet, at least one in four of the 18 million annual adolescent pregnancies is either unintended or unplanned; married teenage girls were also less likely to use contraception than unmarried, sexually active girls (Presler-Marshall & Jones, 2012). Among young, married couples, the husband continues to be the primary, if not the sole decision-maker; young women continue to have little power to negotiate fertility and contraceptive use. This study aims to fill the gap in the literature by documenting potential associations between women's empowerment and the use of short-term and long-acting reversible contraceptives (LARC) among young, married women.

Women's empowerment is a complex concept and measuring it is challenging because of the multidimensional nature of the concept and that it operates at various levels (Alsop, Bertelsen, & Holland, 2006; Kabeer, 1999). This study employs measures of empowerment following a framework proposed by Malhotra and Schuler (2005). The framework proposes comprehensive measures of women's empowerment in six arenas: economic, sociocultural, familial and interpersonal, legal, political and psychological; the measures can be examined at the household, community and societal levels (Malhotra & Schuler, 2005). Few studies have

examined multiple measures of empowerment; evidence has shown that all dimensions of empowerment do not equally correlate with contraceptive use (Do & Kurimoto, 2012; Hameed et al., 2014).

Settings

Cambodia has a population of 14.7 million and an annual growth rate of 1.83% at the 2013 inter-censal population survey (National Institute of Statistics [Cambodia], 2013), an increase from 13.4 million and 1.54% annual growth rate estimated at the 2008 census (National Institute of Statistics [Cambodia], 2009). Four in five Cambodians live in rural areas; one in five is between the ages of 15 and 24 (National Institute of Statistics, Directorate General for Health, & ICF International, 2015). Fertility has decreased over the past decade: the total fertility rate (TFR) went from 3.4 in 2005 to 2.7 in 2014; but the median age of first time mothers is still 22.4 years, and 12% of young women aged 15-19 are already mothers or pregnant with their first child (National Institute of Statistics et al., 2015). Knowledge of at least one modern method of contraception is universal among married women, and modern methods are available at low prices through numerous outlets, but only 39% are using a modern method. Among young, married women, modern contraceptive use is 20.2% among the 15-19 age group and 34.4% among the 20-24 age group. Oral pills and injectables are the most frequently used methods among these groups (National Institute of Statistics et al., 2015). Previous studies indicated that support from husband, family, and elders were important for modern contraceptive use among Cambodian women (Samandari, Speizer, & O'Connell, 2010).

Bangladesh is a densely populated country with 158 million people at the last census and a growth rate of 1.37% yearly (National Institute of Population Research and Training (NIPORT), Mitra and Associates, & ICF International, 2016); 19% of the population are 15-24 years old. FP program was adopted in 1965 by the government, recognizing the urgency of the need to lower population growth. By mid-1970s, FP had become an integral part of development; the government adopted a multisectoral FP program. FP efforts have since been intensified with the institution of full-time local family welfare assistants, social marketing programs, and later sector-wide approach programs. The Ministry of Health and Family Welfare (MOHFW) is currently implementing the 2011-2016 Health, Population, Nutrition Sector Development Program (HPNSDP). Revitalization of FP interventions to achieve replacement-level fertility is

one of the major objectives of the HPNSDP (National Institute of Population Research and Training (NIPORT) et al., 2016). Declining TFR prior to 2010 has been attributed to contraceptive use (Islam, Islam, Rahman, Hossain, & Islam, 2015), yet between the 2011 and 2014 DHS TFR has remained at 2.3. In addition, women continued to give birth early: nearly one third of adolescents aged 15-19 are already mothers or pregnant with their first child. About half of currently married women aged 15-24 are using a modern method of contraception (46.7% of 15-19 years old and 54.5% of 20-24 years old); oral pills are predominantly used by these young women, followed by injectables (National Institute of Population Research and Training (NIPORT) et al., 2016).

Indonesia, a predominantly Muslim country, is the fourth most populous country in the world with 237.6 million people, according to the 2010 population census. Like in Bangladesh, FP has been one of the most important programs of the government since the 1950s. The National Family Planning Coordinating Board (known as BKKBN) was established in 1968, underlying the government's strong commitment to FP. Through the decades, BKKBN has been working with religious and community leaders to promote FP, contributing to significant reductions in fertility and improvements of family welfare (Statistics Indonesia (Badan Pusat Statistik—BPS), National Population and Family Planning Board (BKKBN), Kementerian Kesehatan (Kemenkes—MOH), & ICF International, 2013). In the late 1980s, village midwives were contracted by BKKBN to increase access to contraceptives throughout the country through their existing distribution network. The midwives have provided pills, condoms, and also acted as additional access points for long-term methods like implants, and to a more limited extent IUDs (Weaver et al., 2013). BKKBN's Strategic Plan for 2010-2014 set a goal of TFR of 2.1 by 2015. According to the 2012 DHS, TFR however has remained at 2.6 since 2002-2003, although young women tend to give birth later than older women did (only 10% of adolescent females are already mothers or pregnant with their first child). Women aged 15-24 account for 15% of the total population; half of currently married women aged 15-19 and two-thirds of those aged 20-24 have given birth (Statistics Indonesia (Badan Pusat Statistik—BPS) et al., 2013). Modern contraceptive use is fairly common: 47.6% of married women aged 15-19 and 59.3% of those aged 20-24 are using a modern contraceptive method; most are injectable users (Statistics Indonesia (Badan Pusat Statistik—BPS) et al., 2013).

DATA AND METHODS

Data

We used data from the most recent DHS in Cambodia (2014), Bangladesh (2014) and Indonesia (2012). Multi-stage stratified sampling was used in all DHSs. The Bangladesh DHS included ever-married women aged 15-49 in selected households, while the Cambodia and Indonesia included all women aged 15-49, regardless of their marital status, in selected households. Although there are few variations, the DHS typically includes questions related to contraceptive knowledge and use, exposure to FP messages via various channels, and socio-demographic characteristics of the women and their partners. We limited this analysis to currently married women aged 15-24 in each country, and excluded users of female and male sterilizations (3 in Cambodia, 37 in Bangladesh, and 1 in Indonesia). The final study sample is 2,206 in Cambodia, 5,037 in Bangladesh, and 4,707 in Indonesia.

Measures

The outcome of interest was current use of modern contraceptive methods and types of methods used. In all surveys, women were asked if they were using any method to prevent pregnancy and method used for current users. Responses were categorized into: non-use of modern methods, use of short-term methods (oral pills and condoms), and use of long-term methods (IUD, implants, and injectables).

Women's empowerment measures were the key independent variables. Following the framework proposed by Malhotra and Schuler (2005), we measured women's empowerment at the household level and along six dimensions that have been used in previous studies (Do & Kurimoto, 2012) (see Appendix 1). *Economic empowerment* was measured by an index of household economy decision-making, based on binary responses to several questions related to a woman's earnings, house and land ownership, and any participation in making decisions related to household purchases. These questions were combined using principal component analysis, and the continuous index was then dichotomized into low versus high decision-making power. *Sociocultural empowerment* was measured by a binary indicator using responses to a question regarding women's decision-making about visits to family and relatives. *Health care decision-making* was also a binary indicator of women's participation in decision-making about her own health care. Similarly, *spousal agreement on fertility preferences* was measured by women's

report of whether their partner preferred the same number of children as they did. A series of yes/no questions were used to assess women's ability in *negotiating sexual activity*. These questions asked if a woman felt they were able to refuse sex with her husband or negotiate condom use in different circumstances, e.g. if the husband as a sexually transmitted disease. Positive responses were summed up, and dichotomized to indicate low versus high levels of empowerment in sexual activity negotiation. Finally, women's *attitudes towards domestic violence* were measured using questions about whether they believed it was justifiable for a man to beat his wife in specific situations, e.g. if she went out without telling him. Responses were also summed up and categorized into low versus high levels of empowerment; a high level meant that domestic violence was less justifiable. All six dimensional indicators were combined into a composite index of overall empowerment using principal component analysis.

In the analysis, we controlled for several factors that may influence contraceptive use, including exposure to FP messages on mass media, personal contacts (including family, relatives, friends, etc.)—where this information is available—and whether a woman was visited by a FP worker in the last few months. Women's age and the number of living children (none vs. at least 1) were key demographic factors that may influence contraceptive use. Other socio-economic characteristics of the women and their husband were also controlled for.

Analysis

We conducted the analysis separately for the three countries. In each country, bivariate multinomial analysis was conducted first to examine variations in contraceptive use by independent variables. Percentages in the outcome and Chi-square test results were presented for categorical independent variables; unadjusted relative risk ratios were presented for continuous independent variables. Second, multivariate multinomial regression was employed to investigate associations between women's empowerment measures and contraceptive use, controlling for factors that may affect the outcome. An *svy* set of commands was used to account for the cluster sampling design of the DHS. All analysis was carried out using Stata 13 (StataCorp, 2013).

COUNTRY FINDINGS

Cambodia

The first column of Table 1 showed the study sample distribution. Modern contraceptive use was fairly frequent among young, married women in Cambodia: 15.69% of married women aged 15-24 were using a short-term modern contraceptive method, and a similar number were using a long-term reversible method. The vast majority of the sample reported having some say in social and health care decision-making, either by herself or jointly with her husband. Nine out of ten women also reported a high level of power in sexual activity negotiation. Two-thirds of the sample reported the same fertility preferences by their husband. A high level of empowerment relating to attitudes towards domestic violence was reported by 61% of the sample; and just over half of the sample reported a high level of decision-making power in the household economy. Most of the Cambodian study sample was between 20 and 24 years of age; the majority of the sample had at least one child living at the time of the survey.

The last three columns of Table 1 revealed some variations in modern contraceptive use by individual characteristics. Higher usage of short-term methods was observed with increased overall empowerment score. Household economy decision-making was the only empowerment dimension that was associated with modern contraceptive use: increased usage of both short-term and LARC methods was found among women with higher decision-making power, compared to other women. Short-term and LARC use was also higher among women who received FP messages from health or FP workers than among those who did not. Personal contacts as a source of FP messages was associated with LARC use, but not with short-term method use. Significantly increased use of both short-term and LARC methods was found among married women aged 20-24 and those with at least one child, compared to other women. Husband's education, residence, and region were also associated with variations in modern contraceptive use.

Table 2 presented adjusted relative risk ratios obtained from multinomial regression models. The overall empowerment score showed some positive associations with modern contraceptive use but they did not reach the statistical significance level (not shown). Household economy decision-making was consistently associated with increased like relative risks of contraceptive use. Compared to women with lower decision-making power in the household economy, the likelihood of using short-term methods was increased more than twofold and of using LARC was increased by at least 60% among those with high decision-making power. Having at least one living child was associated with multi-fold increases in both short-term and

LARC use among young, married women. Urban women, however, were less likely than rural women to use LARC.

Bangladesh

Table 3 indicated that modern contraceptive use was more common in Bangladesh than in Cambodia: more than half of the study sample were using a modern contraceptive method, of which the majority were using short-term methods. Perceived empowerment varied by dimension. The majority of young, married women in the sample reported spousal agreement on fertility preferences, ability to negotiate sexual activity, and high level of attitudes towards domestic violence. However, just over half of the sample reported any participation in decision-making regarding visits with family and relatives, or their own health care, or high level of household economy decision-making. Nearly two in five women in the sample were between 15 and 19 years of age; almost three-quarters of them already had at least one child.

Table 3 showed several variations in contraceptive use by empowerment dimensions. An increased overall score of empowerment was associated with increased use of both short-term and LARC methods. Three out of six dimensions of empowerment were also associated with increased modern contraceptive use; these include women's decision-making participation in the household economy, social aspect, and health care. Exposure to FP messages through mass media was associated with increased modern, short-term method use, but lower LARC use. Receipt of FP messages through FP or health workers was associated with increased use of both short-term and LARC methods. The use of modern contraceptives also varied by most of the individual's socio-demographic characteristics, except religion and region.

In the multivariate analysis (Table 4), household economy decision-making was the only empowerment dimension that showed associations with modern contraceptive use. It was associated with the use of both short-term and LARC methods in model 1, but with only short-term method use in model 2 when other factors were controlled for. The overall empowerment score was associated with a relative risk ratio of 1.09 for short-term method use ($p < .01$) and of 1.13 for LARC use ($p < .01$) (results not shown). Young women who had at least one child and those living in urban were significantly more likely to use short-term methods, as well as LARC, compared to their counterparts. Other women's characteristics were only associated with

modern, short-term method use. It's noteworthy that compared to women aged 15-19, older women were less likely to use short-term methods (RRR=.78, $p<.01$).

Indonesia

Indonesia had the highest prevalence of modern contraceptive and LARC, use among the three study countries. Nearly half of young, married women were using LARC (table 5). More than 80% of the sample reported decision-making ability in household economy, social aspects, health care, and sexual activity negotiation. Just two-thirds of married women aged 15-24 stated that their husband wanted to have the same number of children that they did; only over a half of the women had a high level of attitudes towards domestic violence, i.e. stating that wife beating was not justified in several situations. Similar to the other countries, four in five married women were between 20 and 24 years of age; 73% of them already had at least one child.

Several variations in contraceptive use by women's empowerment were observed in Table 5. Among women reporting a high level of decision-making power in the household economy, the use of short-term methods was slightly higher, but the use of LARC methods was lower than that among those with less economic decision-making power. Women whose husband had the same fertility desire reported increased use of LARC but the same level of short-term method use, compared to those whose husband wanted a different number of children. By contrast, women with ability to negotiate sexual activity reported the same level of LARC use, but a higher level of short-term method use, compared to those less able to negotiate sexual activity. No variations in modern contraceptive use were observed with the overall empowerment score. Exposure to FP messages via personal contacts and health workers both seemed to be important determinants of modern contraceptive use in the bivariate analysis. Contraceptive use also varied by most of the individual socio-demographic characteristics, except wealth and residence.

Table 6 shows several empowerment dimensions associated with modern contraceptive use in the multivariate analysis. The use of LARC methods was positively associated with health care decision-making and spousal agreement on fertility preferences ($p<.05$ and $p<.01$, respectively). However, LARC method use was significantly lower among women with high decision-making power in the household economy, compared with those with less power (RRR=.62, $p<.05$). The use of short-term methods was only associated with negotiation of sexual

activity: the likelihood of using these methods was nearly doubled among those reporting ability to negotiate sex and condom use with their husband, compared to those who did not ($p < .05$).

Similarly to the other two countries, young women with at least one child had a significantly increased probability of using either a short-term or a LARC method ($p < .001$ in both cases). Age, however, was associated with a lower likelihood of LARC use ($p < .01$). Other individual factors were not significantly associated with modern contraceptive use in Indonesia.

DISCUSSION

This study examined associations between various measures of women's empowerment and choice of modern contraceptives among young, married women in selected South and South-East Asian countries. With the exception of Cambodia, these countries have a long history of focus on FP programs by the government, employing different strategies to promote modern contraception. Yet, fertility has been stagnant above the replace level for the last decade or so. The analysis showed potential positive associations between the overall empowerment score and modern contraceptive use and choice of methods, but the evidence was not consistent across countries. Only in Bangladesh did the association reach the statistical significance level; the extent of the effect of empowerment on contraceptive use was similar between short-term and LARC methods. The finding is consistent with several previous studies showing increased contraceptive use with higher women's empowerment levels (Do & Kurimoto, 2012; Haile & Fantahun, 2012; Hameed et al., 2014; Palamuleni & Adebawale, 2014). A recent study also found little evidence to support that FP use was one component of women's empowerment in Southeast Asia (Phan, 2016).

It is important to note that women's household economy decision-making was the only empowerment dimension that showed positive associations with short-term and/or LARC method use in all three countries. Previous studies have also documented the associations between the economic dimension of women's empowerment and contraceptive use (Do & Kurimoto, 2012; Hanmer & Klugman, 2016). However, in Bangladesh, this empowerment dimension was only associated with the use of short-term methods, whereas in Indonesia, it was associated with lower LARC use. In Bangladesh, it is possible that the government's emphasis on LARC service delivery, backed with funds for client compensation and provider fees have contributed to the uptake of LARC methods (Ugaz, Chatterji, Gribble, & Banke, 2016);

consequently women's empowerment is less likely to be an important determinant. Meanwhile, the negative association between household economy decision-making and LARC use in Indonesia suggested that efforts of village midwives to provide FP methods may have been successful in reaching women with less economic resources, a finding that has been reported elsewhere (Weaver et al., 2013).

The evidence of associations between health care decision-making, fertility preference agreement and sexual activity negotiation with short-term or LARC method use was not consistent across countries. Only in Indonesia did we find some evidence of positive associations between these empowerment dimensions and modern contraceptive use, consistent with findings from some previous research (Crissman, Adanu, & Harlow, 2012). The finding suggests that a critical assessment of women's and couple's perceptions of women's ability to exercise control over their health and reproductive health may be important for the continued success of the FP program in this country. The government's efforts to increase community-based access to FP methods alone may not be sufficient to help women overcome barriers to FP practice.

Neither social decision-making nor attitudes towards domestic violence were associated with the use of modern methods – either short-term or long-acting. A possible explanation is that the questions used in the DHS do not adequately capture the extent that women's decision-making represents empowerment in these countries. Although the survey items are grounded in formative research from Asia (Kishor & Subaiya, 2008; Malhotra & Schuler, 2005), most of the questions were developed more than a decade ago and may no longer be appropriate in the current context. Previous studies have shown that family visit decision-making may lack contextual relevance and that restrictions may occur only in extreme situations (Heckert & Fabric, 2013). For instance, Schuler, Islam and Rottach (2010) suggested that mobility restriction was no longer a salient issue to women in Bangladesh, although women still avoid traveling alone for safety reason or because they prefer a companion. Mahmud, Shah and Becker (2012) also suggested that women's participation in decision-making, freedom of mobility and resource control were not necessarily correlated with empowerment. Some other studies have also suggested that it was couple's, rather than woman-only, decision-making that was important for contraceptive use in the South Asian context (Hameed et al., 2014). Couple's joint decision-making might be a better measure of women's empowerment within these countries. It is also possible that there are truly no associations between these dimensions of empowerment and

contraceptive use in the study countries. Qualitative research may be necessary to understand the meaning of social activities like family visits, as well as the justification of wife beating, with regard to empowerment within a specific cultural context. The underlying theoretical relationships between social activities and attitudes towards domestic violence with contraceptive use also need to be further studied.

Another important finding is the very strong association between having at least one child and modern contraceptive use. In all study countries, a woman's chance of using a modern contraceptive method increased by several folds among young women who were already mothers, compared to those who had not had any children. The relative risk ratio was higher for LARC use than for short-term method use in all three countries, consistent with other studies on long-acting method use among women of reproductive age (Alemayehu, Belachew, & Tilahun, 2012; Palamuleni & Adebawale, 2014). This effect was independent of and did not modify the effects of women's empowerment on contraceptive use (results not shown). The finding suggests that for young, married women in the study countries, it may be important to start childbearing soon after marriage and the use of contraceptives, particularly LARC, was more likely for spacing purposes after the women have proven that they were fertile.

An important limitation of the study is the standardized questions used in the DHS core questionnaire to assess women's empowerment, with little adaptation to each country. While the core questionnaire facilitates cross-country assessments of women's decision-making at the household level, there have been concerns that these questions do not take into account a specific cultural context and therefore may not adequately capture the level of decision-making power exercised by women in each country (Heckert & Fabric, 2013). Although Phan (2016) found that household decision-making in health, spending, and visits appeared to be a strong predictor of women's empowerment, questions about women's decision-making in their health care, sex negotiation, and domestic violence often only focus on the individual woman without taking into consideration her and her husband's family, and the community (Bhatti & Jeffery, 2012; Mason & Smith, 2003). For example, young women in South and Southeast Asia may be raised to obey their husband, a social norm that is transferred from one generation of women to the next and reinforced by their own fathers and husbands, that will prevent women from negotiating sex (Pande, Falle, Rathod, Edmeades, & Krishnan, 2011; Schuler & Rottach, 2010). Mothers, mothers-in-law, and elders are also recognized as important decision-makers with regard to a

couple's childbearing but are not often mentioned in the standard DHS questions (Samandari et al., 2010). Therefore the study is limited in terms of the robustness of the findings in each country. In addition, although we used the framework by Malhotra and Schuler (2005) to guide our analysis, the DHS is limited on several critical dimensions of empowerment, including women's participation in legal and political processes (Hanmer & Klugman, 2016). Other limitations are related to the cross-sectional nature of the data, which prevents causal inferences, and the reliance on women's report without information from men.

Despite the limitations, the study provides some evidence of the importance of women's decision-making power to modern contraceptive use among young, married girls in South and Southeast Asia. Women's empowerment remains one of critical factors that shape adolescent women's access to FP. It is important to keep in mind that within the countries studied, many of the social values and cultural norms that contribute to (the lack of) women's empowerment may be transferred from generations of women and are integral part of a young girl's upbringing environment. It is therefore important for FP programs to not only take into consideration women's empowerment issues among married couples, but also address these issues with young girls early on. FP programs that engage families and communities, as well as young couples, may be likely to succeed in the long-term.

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Table 1. Sample distribution and current use of modern contraceptives by individual's characteristics, Cambodia 2014.

	Distribution % or mean (s.e.)	Current use of modern contraceptives %		
		Non use	Short-term	LARC
Total		68.58	15.69	15.73
Women's empowerment in...				
Household economy***				
Low	43.02	76.81	10.16	13.03
High	56.98	62.37	19.87	17.76
Social decision-making				
No	4.36	67.29	13.20	19.51
Yes	95.64	68.64	15.80	15.55
Health care decision-making				
No	9.57	70.46	14.37	15.17
Yes	90.43	68.39	15.83	15.78
Agreement on fertility preferences				
No	31.91	68.35	16.59	15.06
Yes	68.09	68.69	15.69	16.04
Negotiation of sexual activity				
Low	9.92	71.16	12.97	15.86
High	90.08	68.30	15.99	15.71
Attitudes towards domestic violence				
Low	38.90	66.89	17.91	15.20
High	61.10	69.66	14.28	16.06
Overall score (RRR; s.e.)	4.62 (.03)	--	1.17 (.08)*	1.15 (.08)
Exposure to FP messages via...				
Mass media (RRR; s.e.)	1.52 (.03)	--	.97 (.05)	.92 (.05)
Personal contacts (RRR; s.e.)	.84 (.02)	--	1.20 (.11)	1.29 (.13)*
Health workers**				
No	79.54	70.75	14.82	14.44
Yes	20.46	60.18	19.09	20.74
Individual's socio-demographic characteristics				
Age group***				
15 – 19	19.73	79.84	7.88	12.27
20 – 14	80.27	65.81	17.61	16.57
Education				
No schooling	6.46	60.75	19.46	19.79
Primary	44.40	67.83	15.89	16.28
Secondary	46.55	69.28	15.66	15.06
Higher	2.59	88.51	3.47	8.02

	Distribution % or mean (s.e.)	Current use of modern contraceptives %		
		Non use	Short-term	LARC
Wealth quintile				
Poorest	20.38	63.69	20.59	15.72
Poorer	20.34	66.06	15.49	18.45
Middle	20.72	69.84	16.25	13.91
Richer	20.43	68.99	13.73	17.27
Richest	18.12	75.01	11.98	13.01
Religion				
Buddhism	94.67	68.85	15.78	15.37
Others	5.33	63.88	14.09	22.03
Number of living children***				
0	29.88	95.56	2.56	1.88
1+	70.12	57.09	21.29	21.62
Husband's age (RRR; s.e.)	25.66 (11.31)	--	1.02 (.02)	1.05 (.02)**
Husband's education**				
No schooling	6.55	56.04	20.36	23.60
Primary	42.32	67.73	17.73	14.54
Secondary	45.54	69.23	14.19	16.58
Higher	5.59	84.42	7.06	8.52
Residence***				
Rural	87.81	67.04	16.15	16.80
Urban	12.19	79.67	12.36	7.98
Region***				
Banteay mean chey	4.55	52.14	16.18	31.68
Kampong cham	12.82	74.86	12.66	12.48
Kampong chhnang	3.16	71.25	11.66	17.09
Kampong speu	7.77	72.41	19.04	8.55
Kampong thom	4.18	66.16	12.51	21.33
Kandal	6.60	76.83	13.05	10.13
Kratie	3.75	69.88	12.86	17.25
Phnom penh	7.97	84.28	10.60	5.12
Prey veng	6.81	63.92	17.16	18.92
Pursat	3.76	68.26	18.75	12.99
Siem reap	7.02	62.50	22.89	14.61
Svay rieng	3.36	68.78	19.68	11.54
Takeo	5.02	62.82	16.54	20.64
Otdar mean chey	1.79	55.51	20.11	24.38
Battambang & pailin	7.58	55.17	17.18	27.65
Kampot & kep	4.65	73.32	15.11	11.57
Preah sihanouk & kaoh kong	2.17	67.56	17.03	15.41
Preah vihear & steung treng	3.56	70.25	15.40	14.35
Mondol kiri & rattanak kiri	3.49	64.27	14.92	20.82

*p<.05; ** p<.01; *** p<.001

Table 2. Factors associated with current use of modern contraceptives among currently married women aged 15-24, Cambodia 2014.

	Model 1 RRR (s.e.)		Model 2 RRR (s.e.)	
	Short-term only	LARC	Short-term only	LARC
Women's empowerment in...				
Household economy (high vs. low)	2.42 (.39)***	1.72 (.26)***	2.22 (.40)***	1.61 (.28)**
Social decision-making	.89 (.35)	.64 (.21)	1.18 (.47)	.72 (.27)
Health care decision-making	1.01 (.25)	1.08 (.28)	.76 (.21)	.67 (.21)
Agreement on fertility preferences	.87 (.14)	1.02 (.17)	.93 (.16)	1.10 (.20)
Negotiation of sexual activity (high vs. low)	1.30 (.33)	1.03 (.25)	1.17 (.35)	.92 (.25)
Attitudes towards domestic violence (high vs. low)	.79 (.12)	1.04 (.16)	.81 (.14)	1.20 (.21)
Exposure to FP messages via...				
Mass media			.95 (.07)	.86 (.07)
Personal contacts			1.12 (.13)	1.24 (.15)
Health workers			1.15 (.36)	1.22 (.27)
Individual's socio-demographic characteristics				
Age group				
15 – 19			1.00	1.00
20 – 14			1.41 (.36)	.78 (.20)
Education				
No schooling			1.00	1.00
Primary			.98 (.32)	.99 (.34)
Secondary			1.30 (.46)	1.05 (.38)
Higher			.60 (.45)	1.77 (1.22)
Wealth quintile				
Poorest			1.00	1.00
Poorer			.83 (.19)	1.34 (.32)
Middle			.82 (.21)	.98 (.27)
Richer			.69 (.19)	1.37 (.36)
Richest			.65 (.23)	1.26 (.45)

	Model 1 RRR (s.e.)		Model 2 RRR (s.e.)	
	Short-term only	LARC	Short-term only	LARC
Religion				
Buddhism			1.00	1.00
Others			1.24 (.58)	1.84 (.56)*
Number of living children				
0			1.00	1.00
1+			12.10 (3.74)***	19.68 (7.20)***
Residence				
Rural			1.00	1.00
Urban			1.06 (.29)	.55 (.16)*

*p<.05; ** p<.01; *** p<.001

Note: Model 2 controlled for husband's age, husband's education, and region.

Table 3. Sample distribution and current use of modern contraceptives by individual's characteristics, Bangladesh 2014.

	Distribution % or mean (s.e.)	Current use of modern contraceptives %		
		Non use	Short-term	LARC
Total		48.82	36.85	14.33
Women's empowerment in...				
Household economy***				
Low	45.19	55.24	33.03	11.73
High	54.81	43.53	39.99	16.48
Social decision-making***				
No	48.80	53.83	34.28	11.88
Yes	51.20	44.04	39.29	16.66
Health care decision-making***				
No	43.89	53.45	34.40	12.15
Yes	56.11	45.20	38.76	16.04
Agreement on fertility preferences				
No	17.42	49.95	34.82	15.23
Yes	82.58	48.58	37.28	14.14
Negotiation of sexual activity				
No	9.17	52.71	33.58	13.71
Yes	90.83	48.43	37.18	14.39
Attitudes towards domestic violence				
Low	28.34	49.84	36.26	13.90
High	71.66	48.42	37.08	14.50
Overall score (RRR; s.e.)	4.07 (.03)	--	1.15 (.03)***	1.21 (.05)***
Exposure to FP messages via...				
Mass media (RRR; s.e.)				
Health workers**	.30 (.01)	--	1.16 (.07)*	.80 (.07)*
No	78.60	50.57	35.81	13.62
Yes	21.40	42.38	40.67	21.40
Individual's socio-demographic characteristics				
Age group***				
15 – 19	38.77	53.31	35.94	10.75
20 – 14	61.23	45.98	37.42	16.60
Education***				
No schooling	7.50	49.96	25.51	24.53
Primary	26.59	48.32	33.41	18.28
Secondary	54.82	49.24	38.04	12.72
Higher	11.09	47.19	46.88	5.92

	Distribution % or mean (s.e.)	Current use of modern contraceptives %		
		Non use	Short-term	LARC
Wealth quintile***				
Poorest	19.09	50.37	28.94	20.68
Poorer	18.90	48.75	36.59	14.66
Middle	19.90	48.70	36.93	14.37
Richer	22.32	48.31	37.55	14.13
Richest	19.78	48.08	43.84	8.07
Religion				
Buddhism	91.97	49.05	36.39	14.57
Others	8.03	46.23	42.14	11.64
Number of living children***				
0	27.25	74.89	24.85	.26
1+	72.75	39.06	41.34	19.60
Husband's age (RRR; s.e.)	28.56 (.09)	--	1.00 (.01)	1.03 (.01)*
Husband's education***				
No schooling	16.64	47.01	28.97	24.01
Primary	31.52	48.26	34.73	17.01
Secondary	39.06	50.63	38.46	10.91
Higher	12.77	46.92	47.85	5.60
Residence***				
Rural	72.77	50.96	34.61	14.43
Urban	27.23	43.11	42.82	14.07
Region				
Barisal	6.31	45.98	35.87	18.15
Chittagong	20.29	59.43	28.87	11.79
Dhaka	35.46	47.43	39.06	13.51
Khulna	8.66	41.15	43.04	15.81
Rajshahi	11.07	37.74	42.02	20.23
Rangpur	11.12	38.68	44.29	17.03
Sylhet	7.10	70.50	22.48	7.02

*p<.05; ** p<.01; *** p<.001

Table 4. Factors associated with current use of modern contraceptives among currently married women aged 15-24, Bangladesh 2014.

	Model 1 RRR (s.e.)		Model 2 RRR (s.e.)	
	Short-term only	LARC	Short-term only	LARC
Women's empowerment in...				
Household economy (high vs. low)	1.39 (.14)**	1.42 (.20)*	1.27 (.13)*	1.16 (.18)
Social decision-making	1.11 (.12)	1.31 (.19)	1.05 (.11)	1.12 (.17)
Health care decision-making	1.06 (.10)	1.14 (.14)	1.06 (.10)	1.17 (.17)
Agreement on fertility preferences	1.06 (.11)	.91 (.12)	1.06 (.12)	.95 (.14)
Negotiation of sexual activity (high vs. low)	1.19 (.15)	1.13 (.22)	1.01 (.15)	.96 (.20)
Attitudes towards domestic violence (high vs. low)	1.01 (.09)	1.02 (.12)	.97 (.09)	1.20 (.16)
Exposure to FP messages via...				
Mass media			1.07 (.07)	.98 (.11)
Health workers			1.10 (.12)	1.08 (.18)
Individual's socio-demographic characteristics				
Age group				
15 – 19			1.00	1.00
20 – 14			.78 (.08)**	.85 (.13)
Education				
No schooling			1.00	1.00
Primary			1.17 (.25)	.81 (.22)
Secondary			1.29 (.29)	.74 (.21)
Higher			1.78 (.47)*	.77 (.29)
Wealth quintile				
Poorest			1.00	1.00
Poorer			1.36 (.20)*	.94 (.18)
Middle			1.31 (.21)	.96 (.21)
Richer			1.34 (.21)	1.19 (.26)
Richest			1.51 (.27)*	.78 (.19)
Religion				

	Model 1 RRR (s.e.)		Model 2 RRR (s.e.)	
	Short-term only	LARC	Short-term only	LARC
Buddhism			1.00	1.00
Others			1.38 (.21)*	.90 (.23)
Number of living children				
0			1.00	1.00
1+			4.57 (.47)***	15.01 (7.37)***
Residence				
Rural			1.00	1.00
Urban			1.47 (.14)***	1.63 (.23)**

*p<.05; ** p<.01; *** p<.001

Note: Model 2 controlled for husband's age, husband's education, and region.

Table 5. Sample distribution and current use of modern contraceptives by individual's characteristics, Indonesia 2012.

	Distribution % or mean (s.e.)	Current use of modern contraceptives %		
		Non use	Short-term	LARC
Total		43.04	11.24	45.72
Women's empowerment in...				
Household economy**				
Low	14.63	36.73	9.38	53.89
High	85.37	44.12	11.56	44.31
Social decision-making				
No	16.65	37.87	10.64	51.49
Yes	83.35	44.08	11.36	44.56
Health care decision-making				
No	19.68	46.39	11.59	42.02
Yes	80.32	42.22	11.16	46.62
Agreement on fertility preferences*				
No	32.56	46.92	11.01	42.07
Yes	67.44	41.17	11.35	47.48
Negotiation of sexual activity **				
Low	15.12	48.65	6.04	45.31
High	84.88	42.04	12.17	45.79
Attitudes towards domestic violence				
Low	46.53	40.87	12.35	46.78
High	53.47	44.93	10.28	44.79
Overall score (RRR; s.e.)	4.55 (.03)	--	1.04 (.06)	0.99 (.03)
Exposure to FP messages via...				
Mass media (RRR; s.e.)	1.04 (.03)	--	1.01 (.06)	.98 (.04)
Personal contacts (RRR; s.e.)	.66 (.01)	--	1.51 (.20)**	1.53 (.13)***
Health workers***				
No	65.18	47.30	11.11	41.59
Yes	34.82	35.06	11.49	53.45
Individual's socio-demographic characteristics				
Age group***				
15 – 19	19.17	52.42	8.83	38.76
20 – 14	80.83	40.82	11.81	47.37
Education***				
No schooling	1.67	66.45	9.3	24.25
Primary	28.86	38.1	12.44	49.45
Secondary	64.12	43.05	11.14	45.82
Higher	5.35	62.37	6.62	31.01

	Distribution % or mean (s.e.)	Current use of modern contraceptives %		
		Non use	Short-term	LARC
Wealth quintile				
Poorest	23.99	46.13	11.06	42.81
Poorer	24.32	39.27	12.94	47.8
Middle	21.83	39.65	11.65	48.7
Richer	19.32	44.67	10.74	44.59
Richest	10.54	48.78	7.805	43.41
Religion				
Buddhism	n/a	n/a	n/a	n/a
Others				
Number of living children***				
0	26.62	89.42	5.91	4.67
1+	73.38	26.22	13.17	60.61
Husband's age (RRR; s.e.)	27.15 (.10)	--	1.04 (.02)**	1.03 (.01)***
Husband's education**				
No schooling	1.19	57.73	6.89	35.38
Primary	32.47	40.43	11.93	47.64
Secondary	59.73	42.57	11.24	46.19
Higher	6.61	57.3	8.77	33.94
Residence				
Rural	59.59	42.46	10.87	46.67
Urban	40.41	43.9	11.79	44.30

Region***	Distribution % or mean (s.e.)	Current use of modern contraceptives %		
		Non use	Short-term	LARC
Aceh	1.47	51.15	8.32	40.52
North Sumatera	3.50	68.63	10.35	21.02
West Sumatera	1.41	46.93	9.19	43.88
Riau	2.05	45.33	18.82	35.85
Jambi	1.71	33.57	18.14	48.30
South Sumatera	3.47	34.64	4.44	60.92
Bengkulu	.73	52.97	11.47	35.55
Lampung	3.64	37.09	9.06	53.85
Bangka Belitung	.68	35.32	17.22	47.45
Riau Islands	.44	47.33	11.17	41.50
Jakarta	2.59	43.05	12.11	44.84
West Java	18.12	39.94	10.73	49.33
Central Java	12.63	41.36	9.07	49.57
Yogyakarta	.73	50.26	10.17	39.57
East Java	17.66	36.05	12.48	51.46
Banten	5.01	37.20	11.64	51.16
Bali	1.28	43.06	11.19	45.75
West Nusa Tenggara	2.55	47.81	3.11	49.09
East Nusa Tenggara	1.53	65.53	5.27	29.21
West Kalimantan	2.42	39.71	12.62	47.67
Central Kalimantan	1.43	38.28	18.06	43.66
South Kalimantan	2.22	33.68	22.13	44.19
East Kalimantan	1.65	44.82	18.00	37.18
North Sulawesi	1.00	38.17	18.18	43.65
Central Sulawesi	1.33	51.41	21.37	27.22
South Sulawesi	3.08	52.75	8.43	38.82
Southeast Sulawesi	1.04	53.06	14.76	32.18
Gorontalo	.55	39.72	16.37	43.91
West Sulawesi	.63	46.90	26.09	27.01
Maluku	.56	57.01	5.90	37.10
North Maluku	.46	52.41	5.33	42.26
West Papua	.41	67.16	6.71	26.13
Papua	2.01	89.57	2.82	7.60

*p<.05; ** p<.01; *** p<.001

Table 6. Factors associated with current use of modern contraceptives among currently married women aged 15-24, Indonesia 2012.

	Model 1 RRR (s.e.)		Model 2 RRR (s.e.)	
	Short-term only	LARC	Short-term only	LARC
Women's empowerment in...				
Household economy (high vs. low)	1.03 (.25)	.64 (.10) **	1.03 (.27)	.62 (.12) *
Social decision-making	.85 (.21)	.73 (.11) *	.93 (.25)	.84 (.16)
Health care decision-making	1.11 (.20)	1.59 (.22) ***	1.03 (.22)	1.50 (.27) *
Agreement on fertility preferences	1.15 (.17)	1.28 (.12) **	1.31 (.22)	1.41 (.16) **
Negotiation of sexual activity (high vs. low)	2.31 (.52) ***	1.18 (.15)	1.91 (.50) *	.99 (.17)
Attitudes towards domestic violence (high vs. low)	.75 (.11) *	.87 (.08)	.82 (.13)	1.01 (.13)
Exposure to FP messages via...				
Mass media			1.01 (.07)	.94 (.06)
Personal contacts			1.35 (.21)	1.38 (.14) **
Health workers			1.13 (.21)	1.3 (.17) *
Individual's socio-demographic characteristics				
Age group				
15 – 19			1.00	1.00
20 – 14			.93 (.20)	0.62 (.11) **
Education				
No schooling			1.00	1.00
Primary			.68 (.35)	1.13 (.37)
Secondary			.56 (.30)	.99 (.33)
Higher			.31 (.18) *	.68 (.30)
Wealth quintile				
Poorest			1.00	1.00
Poorer			1.37 (.31)	1.26 (.20)
Middle			1.02 (.27)	1.04 (.19)
Richer			.91 (.27)	1.01 (.21)
Richest			.61 (.23)	.87 (.21)

	Model 1 RRR (s.e.)		Model 2 RRR (s.e.)	
	Short-term only	LARC	Short-term only	LARC
Religion				
Buddhism			n/a	n/a
Others			n/a	n/a
Number of living children				
0			1.00	1.00
1+			9.32 (1.94) ***	68.74 (17.25) ***
Residence				
Rural			1.00	1.00
Urban			1.06 (.20)	.81 (.11)

*p<.05; ** p<.01; *** p<.001

Note: Model 2 controlled for husband's age, husband's education, and region.

Appendix 1. Measures of women’s empowerment across surveys.

Women’s empowerment questions	Responses	Cambodia	Bangladesh	Indonesia
		2014	2014	2012
<u>Household economy decision-making</u>				
Who usually decides how money you earn is spent	Respondent only or jointly vs. others	X	X	X
Your earn more than your husband	Yes vs. no	X	---	X
Who usually decides how money your husband earns is spent	Respondent only or jointly vs. others	X	---	X
Who usually makes decisions about major household purchases	Respondent only or jointly vs. others	X	X	X
Who usually makes decisions about daily household purchases	Respondent only or jointly vs. others	---	---	---
Do you own this or other house either alone or jointly with someone else?	Yes vs. no	X	---	X
Do you own any land either alone or jointly with someone else?	Yes vs. no	X	---	X
<u>Social decision-making</u>				
Who usually makes decisions about visits to your family or relatives	Respondent only or jointly vs. others	X	X	X
<u>Health care decision-making</u>				
Who usually makes decisions about health care for your	Respondent only or jointly	X	X	X

Women's empowerment questions	Responses	Cambodia 2014	Bangladesh 2014	Indonesia 2012
self	vs. others			
<u>Agreement on fertility preferences</u>				
Does your husband want the same number of children/more or fewer than you want?	Yes vs. no	X	X	X
<u>Negotiation of sexual activity</u>				
Wife can negotiate sex/condom use with husband in different situations	Yes vs. no	X	X	X
<u>Attitudes towards domestic violence</u>				
Husband is justified in beating wife in different situations	Yes vs. no	X	X	X
--- Information is not available				