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Women's Empowerment and Modern Contraceptive Use: Evidence from Four Southeast Asian Countries

By Chiew Way Ang[1] and Siow Li Lai[2]

Abstract

Modern contraceptive prevalence rates differ across Southeast Asian countries due to the different levels of socio-economic development, cultural practices, and women's empowerment. This study investigates the relationship between women's empowerment and modern contraceptive use in Cambodia, Indonesia, Myanmar, and the Philippines, where Demographic and Health Surveys data are available. The main study variables include modern contraceptive use (as measured by the percentage of married women aged 15-49 currently using a modern contraceptive method) and women's empowerment measures, which include asset ownership, household decision-making, and attitudes towards spousal violence. Binary logistic regression is used to assess the association between modern contraceptive use and women's empowerment, controlling for the effects of women's age, education, work status, exposure to mass media, exposure to family planning via media, place of residence, wealth index, age at marriage, and number of living children. Results show that pills and injections were commonly used across the countries under study. Multivariate analysis reveals that women with greater empowerment were more likely to use a modern contraceptive method, but the effect varied across women's empowerment indicators. It is important to empower women in the household as disempowered women tend to neglect their rights to access primary health care, which could jeopardize their health. Hence, empowering women remains an important agenda for improving modern contraceptive use within Southeast Asian countries.

Keywords: Women's empowerment, Contraception, Family planning, Southeast Asia, Binary logistic regression

Introduction

Reproductive rights are fundamental human rights in the sphere of development and population concerns (United Nations Population Fund [UNFPA], 2014). Family planning practice allows women to control the frequency and timing of their births, thus reducing the likelihood of high-risk births and protecting themselves from unintended pregnancies and sexually transmitted diseases (STDs) (Guttmacher Institute, 2002). In addition, delaying pregnancies among adolescents who are physically immature and limiting births among older women who may suffer from various illnesses are crucial in reducing the risk of suffering from obstetric complications (Guttmacher Institute, 2002; World Health Organization [WHO], 2020).

Despite the rise in modern contraceptive use, unplanned pregnancies remain a concern in low-income countries. In 2019, of the 1.64 billion women aged 15-49 years in low- and middle-income countries (LMICs), 56% wanted to avoid pregnancies, but only 43% were

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using a modern contraceptive method (Sully et al., 2020). Furthermore, the modern contraceptive prevalence rate (CPR) among married women in the LMICs remained stagnant at about 53% over the past two decades (World Bank, 2022). The sluggish increase in modern CPR may be due to various obstacles in promoting family planning and contraceptive use, especially in LMICs. The progress of closing the gaps in meeting the need for family planning was uneven across countries. Achieving universal access to sexual and reproductive health care services as set in the Sustainable Development Goals (SDGs) will be challenging for LMICs (UN DESA, 2019, 2020b).

Contraceptive use is linked to women's empowerment. Past studies have investigated the effect of women's empowerment on contraceptive use (Adebowale et al., 2016; Do & Kurimoto, 2012; Do & Soelaeman, 2017; Palamuleni & Adebowale, 2014), especially the role of women in household decision-making (Adebowale et al., 2016; Hameed et al., 2014; Singh et al., 2019). A systematic literature review by Prata et al. (2017) discovered that women with greater power in household decision-making were more likely to use contraception. A study on South and Southeast Asian countries found a positive relationship between women's household economic decision-making and short-term and/or Long-Acting Reversible Contraception (LARC) (Do & Soelaeman, 2017). A study in India found a positive association between women's household decision-making power and contraceptive use (Singh et al., 2019). In Ethiopia, women's attitudes against spousal violence and women's household decision-making power influenced contraceptive use (Tadesse et al., 2013).

This study investigates the association between women's empowerment and modern contraceptive use in selected Southeast Asian countries, namely Cambodia, Indonesia, Myanmar, and the Philippines. There are very few studies focused on the influence of women's empowerment on contraceptive use across Southeast Asian countries, as most studies focused on African countries with very low modern CPR (Adebowale et al., 2016; Do & Kurimoto, 2012; Mercer et al., 2019; Yaya et al., 2018). Besides, it is worth noting that the range of modern CPR in the Association of Southeast Asian Nations (ASEAN) was rather significant, from as low as 34.3% in Malaysia to as high as 71.3% in Thailand in the 2010s (UN DESA, 2021), and the choice of contraceptive methods varied widely across the countries. Therefore, a better understanding of modern contraceptive use in Southeast Asia is crucial for policymakers in designing strategies for improving contraceptive use.

Materials and Methods

Country Settings

This study focused on four Southeast Asian countries. The modern CPR in Cambodia had increased from 18.7% in 2000 to 45.3% in 2020 while that in Indonesia had increased from 54.4% to 59.0% during the same period. The modern CPR in Myanmar and the Philippines had increased from 29.3% and 32.0% in 2000 to 55.2% and 41.9% in 2020, respectively. However, these figures were much lower than those in Singapore (60.3%), Thailand (77.9%), and Vietnam (67.2%) (UN DESA, 2020a).

The modern CPR in Cambodia, Indonesia, Myanmar, and the Philippines remained low despite the gradual increase in modern CPR over these decades. The number of modern contraceptive users is projected to decline in the South-Eastern region by the year 2030 (UN DESA, 2020b). The low modern CPR poses a serious reproductive health concern. In 2019, there were about 20.2 million pregnancies among women aged 15-49 in Southeast Asia, and 46% were unintended pregnancies. In addition, 30% (6.0 million) of Southeast Asian women had undergone an abortion, of which 12% were unsafe abortions. Slightly more than half (51%) of Southeast Asian women wanted to avoid pregnancy, but only 39% chose to use a modern contraceptive method (Sully et al., 2020).

Various policies and strategies have been implemented in Southeast Asian countries to promote family planning. For instance, the Cambodian government has expanded the availability of LARC and permanent methods since 2016 to achieve the target of 48% of modern CPR in 2020 (World Health Organization Regional Office for the Western Pacific [WHO WPRO], 2017). On the other hand, the decentralization policy in Indonesia since the year 2000 has resulted in the deterioration of the role and power of the National Population and Family Planning Board (BKKBN) in regulating the family planning program in the country (Sanubari, 2016). Meanwhile, the government in Myanmar has increased reproductive health commodities to avoid stock-out issues and has expanded the range of contraceptives available to women (Department of Public Health, 2018; Family Planning 2020, 2019). In the Philippines, the family planning program persistently faces obstacles as it opposes the religious norms in the country (Melgar & Carrera-Pacete, 2017), and thus Filipino women have limited access to contraceptives information and services. These findings indicate that more efforts are needed in promoting modern contraceptive use in Southeast Asia.

Study Design

This study used secondary data obtained from the Demographic and Health Surveys (DHS) Program conducted in Cambodia (CDHS 2014), Indonesia (IDHS 2017), Myanmar (MDHS 2015-16), and the Philippines (NDHS 2017). DHS is a nationally representative population-based survey with a large sample size, conducted through face-to-face interviews. The sample was selected based on a two-stage stratified sampling design derived from the list of enumeration areas (EAs) drawn from the census in each country (Ministry of Health and Sports. & ICF., 2017; National Institute of Statistics., Directorate General for Health., & ICF., 2015; National Population and Family Planning Board., Statistics Indonesia., Ministry of Health., & ICF., 2018; Philippine Statistics Authority. & ICF., 2018).

The sample for this study included women aged 15-49 years who were currently married or in union. These include 11,668 Cambodian women, 34,467 Indonesian women, 7,870 Burmese women, and 15,445 Filipino women. Sample weight was applied to ensure the sample resembles the true population distribution in each country.

Study Variables

The main dependent variable for this study was modern contraceptive use (as measured by the percentage of married women aged 15-49 currently using a modern contraceptive method). The study explored which contraceptive methods were used across Southeast Asian countries.

This study focused on the relationship between women's empowerment and contraceptive use. The measurements of women's empowerment were constructed based on the framework suggested by Kabeer (1999, 2005) and the women's empowerment indices used in the DHS, namely women's household decision-making power and women's attitude towards spousal violence. In addition, some past studies had identified that women's asset ownership was associated with contraceptive use (Do, 2019; Tadesse et al., 2013). Thus, the measurements of women's empowerment in this study include women's household decision-making power (health care, large household purchases, and visits to family/relatives), women's attitude towards and response to spousal violence (such as going out without telling husband, neglecting household duties, arguing with husband, or refusing to have sex with husband), and women's asset ownership (owning a house or land alone or jointly).

Women's asset ownership was grouped as "does not own any asset," "women's sole ownership" if they solely own a house or land or both, and "joint ownership" if they own a house and/or land jointly with their husband. Women were considered to have "high empowerment" in household decision-making if they had a say in all decision-making, and

"low empowerment" if otherwise. Similarly, those who answered "no" to all justifications of spousal abuse were considered to have "high empowerment," and "low empowerment" if otherwise.

Besides women's empowerment indicators, several demographic and socio-economic variables were included in this study. These include women's age (<25, 25-29, 30-34, 35-39, 40-44, and 45-49), women's educational level (no schooling/primary, secondary, and tertiary), and women's work status outside the home. Women's exposure to mass media (reading newspaper/magazine, listening to the radio, and watching television) was recorded with the categories "not at all," "access one of the media less than once a week" and "access one of the media at least once a week." In addition, women were asked whether they had heard of family planning on media in the past few months (on radio, on television, and in newspaper/magazine), and the variable was recorded as "no" or "yes." Place of residence (urban, rural), wealth index (poorest, poorer, middle, richer, and richest), age at first marriage (<18, 18-20, 21-23, and at least 24 years), and the number of living children (no children, 1, 2, 3, 4, and 5 and above) were also included in this study.

Ethical Consideration

The procedure and questionnaire for CDHS 2014 and NDHS 2017 had been reviewed and approved by the ICF Institutional Review Board (IRB), and complied with the United States Department of Health and Human Services requirements for the "Protection of Human Subjects" (45 CFR 46). The IRB of IDHS 2017 was housed within the Ministry of Health (MoH) whereby MoH determined that IDHS 2017 did not require approval from IRB. Meanwhile, the MDHS 2015-16 had been reviewed and approved by the IRB as well as the Myanmar Ministry of Health Ethics Review Committee. Informed consent was obtained from each respondent before the interview was conducted. The informed consent emphasized that respondents' participation is voluntary, and the respondents' identity and information will be strictly kept confidential.

Data Analysis

The data were analyzed using SPSS version 26. Percentage distributions and cross-tabulations were presented to show the choice of contraceptive methods and modern CPR in each country. A Chi-square test (or Fisher's exact test for a 2*2 contingency table) was used to examine the bivariate association between modern contraceptive use and the independent variables. Binary logistic regression was used to investigate the association between women's empowerment and modern contraceptive use in each country, net of other independent variables in the model.

Results

Table 1 displays the percentage distribution of married women by contraceptive method currently used in selected Southeast Asian countries. In general, pills and injections were commonly used across the countries. About three in ten married Burmese women opted for injections, while 29% of those in Indonesia reported using injections. Meanwhile, about 18% of married Cambodian women used the pill, and about 21% used the same method in the Philippines. In terms of the traditional methods, withdrawal was popular in Cambodia and the Philippines, where about 14.4% of Cambodian women and 10.3% of Filipino women used this method to avoid pregnancy.

Table 1: Percentage Distribution of Married Women by Contraceptive Method Currently Used

	Cambodia (n=11,668)	Indonesia (n=34,467)	Myanmar (n=7,870)	Philippines (n= 15,445)
Modern method	**38.8**	**57.2**	**51.3**	**40.4**
Pill	17.7	12.1	13.8	20.9
IUD	4.4	4.7	2.8	3.5
Injections	9.1	29.1	27.6	5.0
Implants	2.2	4.7	0.9	1.2
Sterilization (female and male)	3.1	3.9	5.1	7.5
Condom (female and male)	2.1	2.5	1.0	1.7
Lactation amenorrhea (LAM)	0.1	0.1	0.0	0.5
Other modern method	0.1	0.1	0.1	0.1
Traditional method	**17.5**	**6.4**	**0.9**	**13.9**
Periodic abstinence	3.0	1.9	0.3	3.5
Withdrawal	14.4	4.2	0.6	10.3
Other traditional method	0.1	0.3	0.0	0.1
Not using	**43.7**	**36.4**	**47.8**	**45.7**

Source: Authors' computation using DHS data

Table 2 presents the proportion of women currently using a modern contraceptive method in relation to women's empowerment and socio-economic characteristics. The prevalence of using a modern contraceptive method was found to be higher among women who had joint asset ownership, except in Myanmar. Except for Indonesian women, those that were more empowered in decision-making had a higher prevalence of using modern contraception. Women's attitude towards spousal violence was associated with modern contraception in Cambodia, where those who condoned spousal violence had a higher prevalence of using a modern method.

Women with exposure to mass media had a higher prevalence of using a modern method in the four countries. Meanwhile, except for Cambodian women, those that had heard of family planning through media were more likely to opt for a modern contraceptive method.

Women's age and educational level were associated with modern contraception in all the countries. Women aged 35-39 had a higher prevalence of using modern contraception in Indonesia and Myanmar, while women aged 30-34 had a higher prevalence of using modern contraception in Cambodia and the Philippines. Women aged 45-49 had the lowest modern CPR in all four selected countries. Cambodian and Indonesian women who had primary or no schooling had higher modern CPR than others. Meanwhile, women who received secondary education had a high prevalence of using modern contraception in Myanmar and the Philippines. Women's work status was associated with the use of modern contraception except for Filipino women. Working women had a higher modern CPR than non-working women in Cambodia and Myanmar, but the opposite was true in Indonesia. Rural women had a higher modern CPR as compared to urban women, except in Myanmar. Burmese women from the richest families had the highest prevalence of using a modern method, while women from poorer families had the highest modern CPR across the wealth groups in the other three countries. Women married below the age of 18 had a higher prevalence of using a modern method, except in Myanmar. Women who had 2 to 3 children had a higher prevalence of using modern contraception in the four countries.

Table 2: Modern CPR by Selected Variables[3]

Variables	Cambodia		Indonesia		Myanmar		Philippines	
	n	%	n	%	n	%	n	%
Panel A: Women's Empowerment Indicators								
Total	11,668	38.8	34,467	57.2	7,870	51.3	15,445	40.4
Women's asset ownership		***		***				***
Does not own	2,264	29.4	10,097	54.1	2,646	53.1	6,993	39.0
Women sole ownership	639	37.6	7,699	57.3	1,812	50.3	1,246	36.9
Joint ownership	8,765	41.2	16,671	59.3	3,412	50.5	7,206	42.6
Women's household decision-making		**				*		*
Low empowerment	1,583	35.4	10,336	57.6	2,731	49.4	2,466	38.1
High empowerment	10,079	39.4	24,078	57.0	5,137	52.3	12,979	40.7
Women's attitude towards spousal violence		*						
Low empowerment	6,349	39.6	12,311	57.3	4,418	51.0	2,048	41.4
High empowerment	5,319	37.8	22,134	57.1	3,452	51.6	13,397	40.2

Variables	Cambodia		Indonesia		Myanmar		Philippines	
	n	%	n	%	n	%	n	%
Panel B: Media Exposure Variables								
Exposure to mass media		*		***		***		***
Not at all	2,015	40.2	1,240	44.3	1,205	39.4	937	32.1
Access one of the media less than once a week	2,118	40.7	3,763	53.0	1,752	48.0	2,253	39.4
Access one of the media at least once a week	7,535	38.0	29,464	58.1	4,913	55.1	12,255	40.8
Heard of family planning on media in the past few months				*		***		*
No	4,877	39.8	15,040	56.5	5,432	48.6	4,970	39.0
Yes	6,791	38.1	19,427	57.7	2,438	56.5	10,475	41.0

[3] Table 2 Notes
(i) Missing values are excluded from the calculations.
(ii) Chi-square/Fisher's exact test significance: ***p<0.001, **p<0.01, *p<0.05.

Variables	Cambodia		Indonesia		Myanmar		Philippines	
	n	%	n	%	n	%	n	%
Panel C: Demographic and Socio-Economic Variables								
Age		***		***		***		***
<25	2,209	31.6	3,840	53.4	1,094	58.0	2,200	41.2
25-29	2,241	43.8	5,426	55.7	1,299	57.9	2,706	43.2
30-34	2,567	47.5	6,539	61.0	1,486	57.1	2,744	46.9
35-39	1,519	47.4	6,956	63.9	1,474	61.8	2,850	44.7
40-44	1,647	38.4	6,273	60.8	1,326	46.6	2,519	40.0
45-49	1,485	18.6	5,433	44.6	1,191	22.3	2,426	24.4
Educational level		***		***		***		***
No schooling/Primary	7,690	39.8	11,445	60.4	4,823	47.4	3,408	40.2
Secondary	3,588	37.6	17,956	57.8	2,432	58.0	7,272	43.9
Tertiary	390	26.4	5,066	45.5	613	57.2	4,765	35.2
Work status		***		**		*		
Not working	3,195	32.1	14,813	58.0	3,063	49.8	7,619	40.5
Working	8,470	41.5	19,630	56.5	4,805	52.1	7,826	40.2
Place of residence		***		***		***		***
Urban	3,330	32.8	17,320	55.0	2,057	57.3	5,092	38.1
Rural	8,338	39.9	17,147	59.2	5,813	49.1	10,353	42.2
Wealth index		***		***		***		***
Poorest	2,190	39.5	7,980	56.3	1,685	46.2	4,265	43.8
Poorer	2,180	42.4	6,721	61.4	1,620	50.3	3,569	46.2
Middle	1,942	38.3	6,649	59.6	1,608	49.8	2,938	41.1
Richer	2,267	39.2	6,629	56.3	1,554	54.7	2,576	36.9
Richest	3,089	34.6	6,488	52.3	1,403	55.9	2,097	33.4
Age at first marriage		***		***		***		***
<18	3,409	44.1	9,041	62.5	2,029	53.3	3,488	47.0
18-20	3,971	41.2	9,934	62.2	2,444	52.0	4,590	44.5
21-23	2,404	36.4	7,470	55.5	1,568	53.7	3,354	39.4
At least 24	1,884	26.9	8,022	45.1	1,829	46.1	4,013	31.4
Number of living children		***		***		***		***
No children	1,129	4.3	2,660	4.3	879	29.9	1,201	2.6
1	2,593	36.9	8,340	50.6	1,907	56.1	3,137	31.8
2	3,211	46.6	11,554	68.0	1,968	60.2	3,886	46.1
3	2,218	47.0	6,811	66.4	1,404	56.2	2,991	51.6
4	1,318	42.6	3,005	64.5	811	49.4	1,781	46.1
5 and above	1,199	34.6	2,097	48.5	901	31.2	2,449	43.8

Table 3 shows the binary logistic regression of modern contraceptive use by selected variables. Women who had joint ownership over the asset were more likely than those with no asset ownership to use a modern contraceptive method in Cambodia (AOR=1.244; 95% CI=1.105, 1.402) and the Philippines (AOR=1.098; 95% CI=1.014, 1.189). Cambodian women who solely owned an asset were more likely to use a modern contraceptive method compared to those who did not own any asset (AOR=1.240; 95% CI=1.030, 1.494). Filipino women with higher empowerment in household decision-making were more likely than those with lower empowerment to use a modern contraceptive method (AOR=1.155, 95% CI=1.046, 1.276). In addition, Indonesian women that did not condone spousal violence were more likely to use modern contraception compared to those that condoned spousal violence.

Women who had exposure to mass media were more likely to use a modern contraceptive method, except in Cambodia. Women who had heard of family planning on media in the past few months were more likely to use a modern contraceptive method in Indonesia (AOR=1.060; 95% CI=1.010, 1.113) and Myanmar (AOR=1.198; 95% CI=1.069, 1.342).

The likelihood of women using modern contraception decreased with age in the four selected countries. Secondary- and tertiary-educated Indonesian women were less likely than those with primary education or no schooling to use a modern contraceptive method. However, secondary educated women were more likely to opt for modern contraception compared to those with primary/no schooling in Myanmar (AOR=1.291; 95% CI=1.142, 1.458) and the Philippines (AOR=1.212; 95% CI=1.093, 1.343). Besides that, working women had a higher tendency to use a modern contraceptive method across the countries. Surprisingly, rural women had higher odds of using modern contraception in Indonesia (AOR=1.121; 95% CI=1.064, 1.181), and the opposite was true in Myanmar (AOR= 0.803; 95% CI=0.698, 0.923). Women from poorer families were more likely to use a modern contraceptive method than those from the poorest families in the four countries. Meanwhile, the odds of using a modern contraceptive method were also higher among women from the wealthier families in Indonesia (middle families) and Myanmar (middle to richest families). Cambodian and Indonesian women that married at an older age (21 and above) were less likely to use a modern contraceptive method. Overall, the odds of using a modern contraceptive method increased with the number of living children across the four countries.

Table 3: Binary Logistic Regression of Modern Contraceptive Use[4]

Variables	**Cambodia** AOR (95% CI)	**Indonesia** AOR (95% CI)	**Myanmar** AOR (95% CI)	**Philippines** AOR (95% CI)
Panel A: Women's Empowerment Indicators				
Constant	0.028***	0.035***	0.254***	0.015***
Women's asset ownership	**			*
Does not own	REF	REF	REF	REF
Women sole ownership	1.240* (1.030, 1.494)	0.986 (0.923, 1.055)	1.133 (0.984, 1.305)	0.921 (0.802, 1.056)
Joint ownership	1.244*** (1.105, 1.402)	1.019 (0.960, 1.081)	1.107 (0.980, 1.249)	1.098* (1.014, 1.189)
Women's household decision-making				**
Low empowerment	REF	REF	REF	REF
High empowerment	1.062 (0.944, 1.195)	0.983 (0.935, 1.033)	1.098 (0.990, 1.217)	1.155*** (1.046, 1.276)
Women's attitude towards spousal violence		*		
Low empowerment	REF	REF	REF	REF
High empowerment	0.950	1.056*	1.007	1.076

[4] Table 3 Notes
(i) AOR: adjusted odds ratio
(ii) CI: confidence interval
(iii) Wald test significance: ***p<0.001, **p<0.01, *p<0.05

	(0.876, 1.030)	(1.005, 1.111)	(0.912, 1.113)	(0.965, 1.199)
Variables	**Cambodia** AOR (95% CI)	**Indonesia** AOR (95% CI)	**Myanmar** AOR (95% CI)	**Philippines** AOR (95% CI)
Panel B: Media Exposure Variables				
Exposure to mass media		***	***	***
Not at all	REF	REF	REF	REF
Access one media less than once a week	1.105 (0.963, 1.268)	1.593*** (1.364, 1.862)	1.345*** (1.139, 1.588)	1.442** (1.160, 1.793)
Access one media at least once a week	1.060 (0.935, 1.201)	1.897*** (1.643, 2.190)	1.657*** (1.423, 1.928)	1.642*** (1.339, 2.014)
Heard of family planning on media in the past few months		*	**	
No	REF	REF	REF	REF
Yes	0.955 (0.875, 1.043)	1.060* (1.010, 1.113)	1.198** (1.069, 1.342)	1.051 (0.972, 1.138)

Variables	**Cambodia** AOR (95% CI)	**Indonesia** AOR (95% CI)	**Myanmar** AOR (95% CI)	**Philippines** AOR (95% CI)
Panel C: Demographic and Socio-Economic Variables				
Age	***	***	***	***
<25	REF	REF	REF	REF
25-29	1.012 (0.874, 1.171)	0.512*** (0.462, 0.568)	0.511*** (0.421, 0.621)	0.665*** (0.581, 0.761)
30-34	0.906 (0.773, 1.063)	0.406*** (0.364, 0.453)	0.399*** (0.325, 0.491)	0.594*** (0.514, 0.687)
35-39	0.794* (0.661, 0.953)	0.368*** (0.329, 0.413)	0.432*** (0.346, 0.539)	0.471*** (0.404, 0.550)
40-44	0.517*** (0.429, 0.624)	0.311*** (0.276, 0.350)	0.214*** (0.169, 0.271)	0.355*** (0.301, 0.419)
45-49	0.192*** (0.155, 0.238)	0.154*** (0.137, 0.174)	0.066*** (0.051, 0.085)	0.162*** (0.136, 0.194)
Educational level		***	***	***
No schooling/Primary	REF	REF	REF	REF
Secondary	1.074 (0.974, 1.185)	0.884*** (0.834, 0.937)	1.291*** (1.142, 1.458)	1.212*** (1.093, 1.343)
Tertiary	0.858 (0.637, 1.156)	0.692*** (0.628, 0.763)	1.181 (0.949, 1.468)	1.094 (0.963, 1.243)
Work status	***	***	***	***
Not working	REF	REF	REF	REF
Working	1.577*** (1.440, 1.726)	1.100*** (1.049, 1.154)	1.299*** (1.172, 1.439)	1.231*** (1.144, 1.325)
Place of residence		***	**	
Urban	REF	REF	REF	REF
Rural	1.147 (0.994, 1.323)	1.121*** (1.064, 1.181)	0.803** (0.698, 0.923)	1.041 (0.964, 1.123)

Variables	Cambodia AOR (95% CI)	Indonesia AOR (95% CI)	Myanmar AOR (95% CI)	Philippines AOR (95% CI)
Wealth index	*	***	**	**
Poorest	REF	REF	REF	REF
Poorer	1.191** (1.050, 1.352)	1.221*** (1.129, 1.321)	1.182* (1.016, 1.376)	1.198** (1.070, 1.342)
Middle	1.040 (0.911, 1.187)	1.166*** (1.076, 1.264)	1.275** (1.089, 1.492)	1.038 (0.919, 1.172)
Richer	1.123 (0.979, 1.289)	1.081 (0.995, 1.175)	1.355*** (1.144, 1.604)	0.978 (0.859, 1.114)
Richest	0.975 (0.826, 1.151)	1.034 (0.943, 1.133)	1.356** (1.110, 1.656)	0.937 (0.812, 1.081)
Age at first marriage	***	***		
<18	REF	REF	REF	REF
18-20	0.924 (0.837, 1.019)	1.034 (0.971, 1.101)	0.999 (0.877, 1.138)	0.988 (0.894, 1.093)
21-23	0.837** (0.745, 0.942)	0.934 (0.870, 1.004)	1.081 (0.929, 1.258)	0.960 (0.858, 1.075)
At least 24	0.679*** (0.589, 0.785)	0.887** (0.820, 0.961)	1.085 (0.919, 1.281)	0.939 (0.831, 1.062)
Number of living children	***	***	***	***
No children	REF	REF	REF	REF
1	12.838*** (9.500, 17.351)	28.158*** (23.141, 34.264)	4.056*** (3.370, 4.882)	18.142*** (12.572, 26.180)
2	20.191*** (14.822, 27.506)	85.481*** (69.816, 104.660)	7.421*** (6.023, 9.144)	42.480*** (29.401, 61.376)
3	24.222*** (17.546, 33.437)	91.172*** (74.051, 112.252)	8.082*** (6.414, 10.183)	62.746*** (43.188, 91.160)
4	23.749*** (16.983, 33.211)	89.229*** (71.630, 111.152)	7.876*** (6.030, 10.286)	55.131*** (37.621, 80.792)
5 and above	21.828*** (15.438, 30.863)	51.342*** (40.810, 64.593)	5.150*** (3.866, 6.862)	61.482*** (41.826, 90.377)

Discussion

The most commonly used method among Cambodian and Filipino women was the pill, while Indonesian and Burmese women used the injection. Surprisingly, the proportion of married women using the withdrawal method was still relatively high in Cambodia and the Philippines. The traditional method is far less effective than the modern method (Marquez et al., 2017; Polis et al., 2016; Rossier & Corker, 2017). This may cause contraceptive failure where unintended pregnancies may occur, impacting women's lives and health (Polis et al., 2016).

The present study found that modern contraceptive use was positively associated with women's empowerment, but the effect varied across countries. Women's asset ownership was positively associated with modern contraceptive use in Cambodia and the Philippines. The finding is similar to that of Do (2019), Khraif et al. (2017), and O'Regan and Thompson (2017). Women who had ownership over their house or land indicated that they had power in the household, and thus greater rights to make choices about reproductive matters (O'Regan & Thompson, 2017).

Many past studies found that women who were more empowered in decision-making were more likely to opt for modern contraception (Adebowale et al., 2016; Do & Soelaeman, 2017; Lai & Tey, 2020; Palamuleni & Adebowale, 2014; Tadesse et al., 2013; Yaya et al., 2018). This study found that women's household decision-making power was positively associated with modern contraceptive use in the Philippines, but the relationship was insignificant in the other three countries. The insignificant association between women's household decision-making power and modern contraceptive use may be due to the influence of joint decision-making dominated by the husband (Kibira et al., 2014). Women's attitude against violence was positively associated with modern contraceptive use in Indonesia but not in the other three countries. The patriarchal system embedded within the society denied and neglected women's rights, which included their right of practicing family planning (Kibira et al., 2014), which explains the modest relationship between women's empowerment and modern contraceptive use in most of the Southeast Asian countries under study.

Less empowered women rarely communicate openly with their spouses about women's sexual and reproductive health and rights (Patrikar et al., 2014). Hence, women's empowerment enables them to be independent in decision-making and enhances the right to their health (Palamuleni & Adebowale, 2014; Sholihah et al., 2019). It is essential to empower women in the household if their society places them at a disadvantage so that their health will not be jeopardized (Blackstone, 2016). Disempowered women are less likely to report abuse and to access primary health care due to their low position in the household (Blackstone, 2016). Hence, empowering women remains an important agenda for improving modern contraceptive use in Southeast Asia.

This study also found that the proxies for women's empowerment, such as women's education, employment, and exposure to mass media, were significantly associated with modern contraceptive use. Education was positively associated with modern contraceptive use in Myanmar and the Philippines, and this is consistent with the findings in past studies (Islam, 2017; Lai & Tey, 2020; Larsson & Stanfors, 2014; Lasong et al., 2020; Mahato et al., 2020; Yaya et al., 2018). Educated women have better knowledge of family planning and have more favorable attitudes towards the use of modern contraception, which explains the higher prevalence of modern contraceptive use among educated women (Lasong et al., 2020; Samarakoon & Parinduri, 2015). However, this study found no association between education and modern contraceptive use in Cambodia and a negative association in Indonesia. One study on sub-Saharan African countries concluded that the impact of education varied according to the context reflecting the region, culture, and level of development of a country (Larsson & Stanfors, 2014). The insignificant association between education and modern contraceptive use in Cambodia indicated that the effect of education was mediated through other variables. This is consistent with the finding by Larsson and Stanfors (2014) that there was no educational impact on contraceptive use in Kenya because the education variable was correlated with the other factors. Meanwhile, the negative association between education and modern contraceptive use in Indonesia is consistent with the finding by Gayatri and Utomo (2019). Better educated Indonesian women were less likely to opt for the modern method. Instead, they preferred to use the traditional method because there are no adverse side effects and no risk of sub-fecundity (Gayatri & Utomo, 2019). The IDHS 2017 report showed that 11.5% of the tertiary-educated Indonesian women were using a traditional method compared to 3.9% among those with primary/no education.

Working women were more likely to use a modern contraceptive method in the four selected countries, and this is consistent with the results in past studies (Islam, 2017; Lai & Tey, 2020; Maqsood et al., 2015; Singh et al., 2019; Tadesse et al., 2013). Working women who acted as wage earners and financial contributors to the family have higher bargaining power, contributing to their right to utilize contraception (Maqsood et al., 2015). In general,

exposure to mass media was positively associated with modern contraceptive use, except in Cambodia. This finding is consistent with the past research by Islam (2017) and Singh et al. (2019). Indonesian and Burmese women who had heard of family planning via media were more likely to use a modern contraceptive method, and this is consistent with the findings by Bajoga et al., (2015), Lasong et al. (2020), and Palamuleni and Adebowale (2014).

Wealth was positively associated with modern contraceptive use in all four countries, which corroborates past studies (Islam, 2017; Lai & Tey, 2020; Palamuleni & Adebowale, 2014; Tadesse et al., 2013). Women from wealthier families have higher purchasing power and better access to family planning services (Adebowale et al., 2016; Lasong et al., 2020; Singh et al., 2019), which explains the higher rate of modern contraceptive use. Interestingly, rural Indonesians were more likely to use modern contraception than their urban counterparts. The Village Midwife Program, established in 1989, successfully reached out to rural women in accessing reproductive health care services in Indonesia (Gayatri & Utomo, 2019), and thus the higher modern contraceptive use in the rural areas.

Several recommendations can be drawn from this study. Education is a key element in improving women's empowerment. Education reduces women's reliance on men as providers and improves their reproductive knowledge, enabling them to obtain and process information about modern contraception (Samarakoon & Parinduri, 2015). Women are often deprived of education due to the cultural system and belief that adult sons are expected to be financially responsible for their parents and family (Jalilian, 2012; Olson-Strom & Rao, 2020). The government should allocate more funds to the public education system in reducing the financial burden of the impoverished households to increase the literacy and enrollment rate among women. Narrowing gender disparity in education will result in more women working in the non-agriculture sector and subsequently contribute to household income (Lai & Tey, 2020). These will empower women within the household and thus increase the use of modern contraception.

In addition, policymakers should ensure equitable access to family planning services. For instance, the Burmese government should increase and upgrade the infrastructure of health facilities and provide more training to family planning and healthcare providers. Meanwhile, the Cambodian government that focused on increasing the use of LARC should ensure the availability of LARC in all health facilities and spread the information on effective contraception in reducing the misconception and myths about contraceptive use. The Indonesian government should increase the number of family planning field and village midwives that could directly provide information on family planning to couples. In the Philippines, the government should educate reproductive health advocates on clarifying gender equality, human rights, and scientific aspects of reproductive health to women to avoid the denial of artificial contraception based on religious beliefs. The authorities should also utilize mass media to spread accurate family planning information to encourage couples to practice family planning. In addition, the family planning information should be age-friendly and easy to access. Besides the Internet, information on family planning should be spread through broadcasting, television, magazines, and other sources.

The government and the community should provide free counseling and consultation for women on their sexual and reproductive health needs, especially among the poor, whereby accessing primary health care may be a financial burden to this underprivileged group. Lack of access to information on contraception, misconception, misinformation, and male-dominance mindset are some of the factors restricting women's rights to utilize modern contraception (Jain & Muralidhar, 2012; Singh et al., 2019). Hence, easy access to information and financial aid on family planning services will encourage women to opt for modern contraception. Proper management in promoting family planning is essential to achieve universal access to sexual and reproductive health care services, in line with the SDGs.

Strength and Limitations

This study utilized the nationally representative sample of DHS to examine the relationship between modern contraceptive use and women's empowerment across Southeast Asian countries, since relevant past studies are scarce. Despite the strengths, a few limitations of this study should be noted. First, the measurements of women's empowerment used in this study may not represent or cover all dimensions due to data availability. Second, only married women or women in union were selected without considering the men's perspectives on contraceptive use. In addition, the causal relationship between women's empowerment and modern contraceptive use could not be established due to the cross-sectional nature of this study.

Conclusion

Women's empowerment played a role in influencing contraceptive use. Improving women's standard of living, education, and employability could empower women and improve their say in the household. It is essential to uplift women's status, which, in turn, empowers them to make decisions related to sexual and reproductive health matters. Women with greater awareness of and use of family planning experience fewer reproductive health problems such as unintended and unplanned pregnancies, STDs, and HIV/AIDS. This study provided some insights to policymakers in considering the appropriate interventions to increase the use of modern contraception in Southeast Asia.

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