Original research article

Changes in the use of effective and long-acting reversible contraception in Vietnam☆

Sarah Asad [a], Courtney Hebert [b], Rebecca Andridge [c], Nghia Nguyen [d], Maria F. Gallo [a],*

[a] The Ohio State University (OSU), College of Public Health (CPH), Division of Epidemiology, Cunz Hall, 1841 Neil Avenue, Columbus, OH, 43210, USA
[b] OSU, College of Medicine, Department of Biomedical Informatics, 250 Lincoln Tower, 1800 Cannon Drive, Columbus, OH, 43210, USA
[c] OSU, CPH, Division of Biostatistics, Cunz Hall, 1841 Neil Avenue, Columbus, OH, 43210, USA
[d] Department of Obstetrics and Gynecology, Vinmec International Hospital, 458 Minh Khai, Hanoi, Vietnam

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ABSTRACT

Objectives: To calculate the prevalence and identify correlates of unmet need for contraception and to assess whether prevalence of use of effective contraception and long-acting reversible contraception (LARC) has changed over time among married or cohabiting, reproductive-age women in Vietnam.

Methods: Study population was drawn from nationally representative Multiple Indicator Cluster Surveys conducted in 2000, 2006, 2011 and 2014. Unmet need for contraception was defined as occurring when a fecund, married or cohabiting woman is not using any method of contraception but either does not want children or wants to delay birth for at least 1 year or until marriage. Following the ranking of method effectiveness by the Centers for Disease Control and Prevention, we defined "effective contraception" as implant, intrauterine device, male and female sterilization, injectable, pill, patch, ring or diaphragm. We used multivariable logistic regression to identify correlates of unmet need for contraception in 2014 and Cochran–Armitage trend tests to assess changes in effective contraception and LARC use from 2000 to 2014. All analyses used survey weights to account for the complex sampling design.

Results: In 2014, 4.3% of married or cohabiting, reproductive-age women had unmet need for contraception. Multivariable analysis showed that age, education and number of children ever born were statistically significant correlates of unmet need for contraception. Use of effective contraception statistically significantly declined from 53.0% in 2000 to 45.7% in 2014 (p<.0001). Similarly, LARC declined from 39.6% in 2000 to 30.0% in 2014 (p<.0001). After adjusting for age, education, residence and having at least one son, these secular trends remained.

Conclusion: Findings indicate that effective contraception and LARC use have decreased among married or cohabiting women of reproductive age in Vietnam. Correlates of unmet need for contraception should be used to inform interventions to prevent unintended pregnancy.

Implications: Although the prevalence of unmet need for contraception was low (4.3%) in 2014, the use of effective contraception and long-acting reversible contraception declined among reproductive-age, married or cohabiting women in Vietnam from 2000 to 2014. This finding is particularly striking given the economic growth in the nation during this time frame.

1. Introduction

Unmet need for contraception — not desiring pregnancy at the current time and yet not using a modern method of contraception — is a significant driver of unintended pregnancy. In low-resource settings,

the prevalence of unmet need for contraception among married women varies from an estimated 9% to 38%, which represents a slight decline in recent decades [1]. In South Asia, women who use a traditional contraceptive method (e.g., periodic abstinence or withdrawal) or no contraception account for approximately 85% of unintended pregnancies [2]. When questioned about their nonuse of contraception, women with unmet need most commonly cite opposition (male or female partner) to contraception, infrequent sexual activity, and fear of side effects or health risks [1].

In Vietnam, the prevalence of contraceptive use among women who are married or partnered is estimated at 75% [3]. Despite this high proportion of reported use, about 40% of pregnancies among ever-married

women are unintended. Unintended pregnancy has been positively associated with older age, earlier age at marriage (at<20 years of age), having at least one living son, history of unintended pregnancy and pre-pregnancy contraception use. Abortion in Vietnam has been legal since 1945 and widely available as a part of basic healthcare services provided by the government since the early 1960s [4]. With the caveat that abortion data generally are underestimations with possible biases, Vietnam has a high abortion rate: estimated at 35 abortions per 1000 women aged 15–44 years in 2000 [5]. A cross-sectional study of 1224 abortion patients found that those undergoing a repeat abortion were more likely to be married, be older and have a higher parity compared to women having an initial abortion [6]. Women having a first abortion more often attributed their contraception nonuse to lack of contraceptive knowledge, whereas women having a repeat abortion more often cited partner disapproval of contraceptives [6]. While unintended pregnancy and abortion have been studied in Vietnam, unmet need for contraception among women has been understudied. In order to fill this gap in knowledge, the present research aims to identify the correlates of unmet need for contraception and assess changes in use of contraception over time among women of reproductive age in Vietnam.

2. Methods

2.1. Objectives

This study had two main objectives. The first objective was to estimate the prevalence of unmet need for contraception [based on the World Health Organization (WHO) definition [7]] among married or cohabiting women of reproductive age (15–49 years) in Vietnam in 2014 and identify correlates of having unmet need for contraception. The second objective was to evaluate whether the use of effective contraception and long-acting reversible contraception [LARC, which consists of intrauterine device (IUD) and implants] changed in this population from 2000 to 2014. Following the Centers for Disease Control and Prevention's ranking of method effectiveness, we defined "effective" methods as implant, IUD, male and female sterilization, injectable, pill, patch, ring and diaphragm [8].

2.2. Study design

We used data from the 2000, 2006, 2011 and 2014 Vietnam Multiple Indicator Cluster Surveys (MICS), which are nationally representative, cross-sectional household surveys implemented by Vietnam General Statistics Office and the United Nations Children's Fund [9]. The goal of the MICS is to provide national-level health data on women and children in Vietnam to inform policies and interventions in the nation. We excluded women from the analyses if they were missing data on current contraception use (overall or for method type). In 2000, only women who were currently married or living with a man were asked questions about contraceptive use. Similarly, in 2006, only women who were currently married or in a union were asked about contraceptive use. Thus, we restricted the 2011 and 2014 datasets to women who were married or living with a man (in a union) in order to make the population uniform across data years (Fig. 1).

The analysis of unmet need for contraception was based on the WHO definition: a fecund woman who is sexually active but is not using any method of contraception, and who reports wanting to postpone the next birth or who does not wish to have any more children [7]. Because the survey did not ask women about current sexual activity, we restricted our analysis to women who were married or living with a partner. Self-reported fecundity, marital status, current pregnancy status, current contraceptive use, desire for (more) children and desire to postpone (initial or next) birth for at least 1 year or until marriage were used to derive the binary variable for unmet need for contraception. We excluded women from this analysis if they were missing data for any of these variables. Women who had missing data on fecundity but who reported current contraception use were classified as fecund.

2.3. Data analysis

We used logistic regression to assess correlates of unmet need for contraception in 2014. We assessed the following nine variables as possible correlates: age (15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49 years), education (none/preschool only, primary/lower secondary, vs. upper secondary and higher), ethnicity (Kinh vs. non-Kinh),
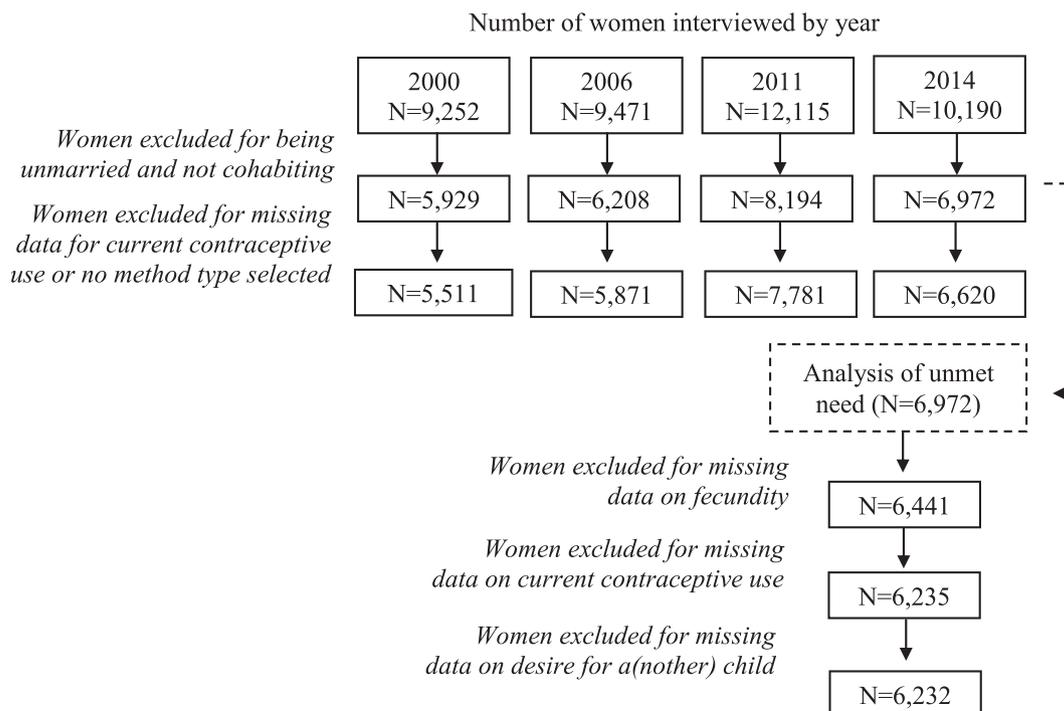
Number of women interviewed by year

Fig. 1. Disposition of study participants for analyses of prevalence of use of effective contraception, use of LARC and unmet need for contraception, Vietnam MICS, 2000–2014.

residence (rural vs. urban), region (Red River Delta, Northern Midlands and Mountain, North Central and Central Coastal, Central Highlands, South East vs. Mekong River Delta), wealth quintile (poorest to richest: 1, 2, 3, 4, 5), having a son (no vs. yes), early marriage before age 18 years (no vs. yes) and number of children ever born (0, 1, 2, 3, 4, 5 or more). We selected these variables for evaluation because of their previous association in the literature with contraceptive use, abortion and unintended pregnancy among Vietnamese women [3,6,10,11]. To build our regression model, we assessed each possible correlate individually with the outcome of interest, unmet need for contraception (yes/no). All variables that were associated in bivariable analysis with unmet need for contraception using a p value <.25 were included in the initial multivariable model, following the approach recommended by Hosmer et al. [12]. We then performed backward selection to remove variables with a p value >.05 one at a time until only those that were statistically significant remained in the final multivariable model. To assess trends over time, we first used a Cochran–Armitage trend test to assess differences in the prevalence of use of effective contraception and LARC (separate analyses) from 2000 to 2014. In this analysis, the data from all years were merged, and year was assessed as a categorical predictor. We used logistic regression to assess differences in use of effective contraception and LARC by year (categorical predictor) after adjusting for age, education, residence and having at least one son. We then converted year into a continuous predictor to assess the time trend after adjustment.

All analyses were adjusted using survey weights to account for the differences in selection probability resulting from the MICS two-stage sampling method [9]. The main sampling strata for this survey were urban and rural areas within each of the six regions of Vietnam. Census enumeration areas were systematically selected from each of these strata, and then 20 households were sampled from each enumeration area. Because we used only publicly available data, the present analyses were exempt from ethical review. All analyses were performed in SAS (Statistical Analysis System, version 9.4; SAS Institute, Cary, NC, USA).

3. Results

Women were surveyed in 2000 (N=9252), 2006 (N=9471), 2011 (N=12,115) and 2014 (N=10,190). After excluding women who were infecund, not married or cohabiting, or missing data on current contraceptive use or desire for pregnancy, a total of 6232 women were included in the analysis of unmet need for contraception in 2014 (Fig. 1). Of this subset, 313 had unmet need for contraception, which corresponded to a weighted, population-level estimate of 4.3% of women with unmet need for contraception. The women included in the analysis of unmet need for contraception had a mean age of 35.2 years (standard deviation: 8.1) and were predominantly of Kinh ethnicity (86%) with only primary or lower secondary education (60%) (Table 1). Additionally, most women lived in rural areas (69%) but were relatively spread across regions. Most women had ever used contraception (90%), had a son (74%), were not married before age 18 years (85%) and had 1–2 children (73%).

Women 15–19 years of age had the highest prevalence of unmet need for contraception (12%) compared to women who were older (Table 1). Those of non-Kinh ethnicity had a higher prevalence of unmet need for contraception (6.5%) than those of Kinh ethnicity (4.0%). Furthermore, women with no or preschool only education (8.8%), in the poorest wealth quintile (5.5%), with no sons (5.9%), with an early marriage (5.5%) and with no children (9.2%) had a higher prevalence of unmet need for contraception than other subgroups within those categories.

In the bivariable analyses, all variables were associated with unmet need for contraception based on a p value <.25 (Table 2). In the multivariable analysis, correlates of unmet need for contraception consisted of age, education, region and number of children ever born (Table 2). Women aged 30–34 years [adjusted odds ratio (aOR): 0.44, 95%

Table 1
Characteristics of married or cohabiting women 15–49 years of age from Vietnam MICS, 2014, overall and by unmet need for contraception

	Total (N=6232)		Unmet need (N=313; 4.3%)		No unmet need (N=5919; 95.7%)	
	N	%	N	%	N	%
Age in years						
15–19	122	1.7	15	11.9	107	88.1
20–24	565	9.0	47	8.6	518	91.4
25–29	967	15.5	55	5.6	912	94.4
30–34	1295	20.7	59	4.1	1236	95.9
35–39	1188	19.1	33	2.0	1155	98.0
40–44	1147	18.8	62	4.1	1085	95.9
45–49	948	15.3	42	3.4	906	96.6
Ethnicity						
Kinh	5066	85.6	225	4.0	4841	96.0
Non-Kinh	1166	14.4	88	6.5	1078	93.5
Education						
None/preschool only	398	5.1	44	8.8	354	91.2
Primary/lower secondary	3597	60.1	151	3.6	3446	96.4
Upper secondary and higher	2237	34.8	118	5.0	2119	95.0
Residence						
Rural	3711	69.2	166	4.1	3545	95.9
Urban	2521	30.8	147	4.9	2374	95.1
Region						
Red River Delta	975	23.2	33	3.5	942	96.5
Northern Midlands and Mountain	1113	14.6	54	5.1	1059	94.9
North Central and Central Coastal	925	20.2	31	3.2	894	96.8
Central Highlands	1081	5.9	83	7.3	998	92.7
South East	1086	16.6	73	6.5	1013	93.5
Mekong River Delta	1052	19.5	39	3.3	1013	96.7
Wealth quintile						
1 (poorest)	1310	19.0	89	5.5	1221	94.5
2	1292	22.8	44	2.9	1248	97.1
3	1062	18.2	57	4.9	1005	95.1
4	1256	19.9	73	5.3	1183	94.7
5 (richest)	1312	20.1	50	3.4	1262	96.6
Ever use of contraception						
No	643	9.7	179	24.6	464	75.4
Yes	5589	90.3	134	2.2	5455	97.8
Has at least one son[a]						
No	1657	26.0	105	5.9	1552	94.1
Yes	4569	74.0	207	3.8	4362	96.2
Early marriage; before age 18 years[b]						
No	4712	85.1	228	4.2	4484	95.8
Yes	895	14.9	57	5.5	838	94.5
Number of children						
0	195	3.1	22	9.2	173	90.8
1	1398	21.9	100	6.9	1298	93.1
2	3129	51.1	110	3.1	3019	96.9
3	994	16.5	46	3.7	948	96.3
4	342	5.3	19	4.1	323	95.9
5 or more	174	2.1	16	5.7	158	94.3

[a] Missing data for 6 participants.
[b] Missing data for 625 participants.

confidence interval (CI): 0.22–0.89], 35–39 years (aOR: 0.23, 95% CI: 0.11–0.49), 40–44 years (aOR: 0.46, 95% CI: 0.22–0.94) or 45–49 years (aOR: 0.37, 95% CI: 0.18–0.80) had lower odds of unmet need for contraception compared to those aged 15–19 years. Women with primary or lower secondary education (aOR: 0.43, 95% CI: 0.27–0.68) and women with upper secondary education or higher (aOR: 0.48, 95% CI: 0.29–0.78) had lower odds of unmet need for contraception compared to those with no education or preschool only education. In addition, compared to women with no children, women with two children had lower odds of unmet need for contraception (aOR: 0.49, 95% CI: 0.28–0.88).

In 2000–2014, about 60%–65% of surveyed women were included in the analysis of prevalence of use of effective contraception and LARC (Fig. 1). Prevalence of use of effective contraception was 53% in 2000, 54% in 2006, 49% in 2011 and 46% in 2014 (Fig. 2), and this downward trend was statistically significant (p<.0001). Prevalence of LARC use was 40% in 2000, 38% in 2006, 33% in 2011 and 30% in 2014 (Fig. 2),

Table 2
Bivariable and multivariable analyses of correlates of unmet need for contraception among married or cohabiting women 15–49 years of age from Vietnam MICS, 2014 (N=6232)

Correlate	OR	(95% CI)	aOR[b]	(95% CI)
Age in years				
15–19	1.0	--	1.0	--
20–24	0.69	(0.36–1.3)	0.77	(0.39–1.5)
25–29	0.44	(0.23–0.83)[a]	0.53	(0.27–1.0)
30–34	0.31	(0.16–0.60)[a]	0.44	(0.22–0.89)
35–39	0.15	(0.08–0.31)[a]	0.23	(0.11–0.49)
40–44	0.31	(0.16–0.60)[a]	0.46	(0.22–0.94)
45–49	0.26	(0.13–0.51)[a]	0.37	(0.18–0.80)
Ethnicity				
Kinh	1.0	--	--	--
Non-Kinh	1.7	(1.2–2.2)[a]	--	--
Education				
None/preschool only	1.0	--	1.0	--
Primary/lower secondary	0.39	(0.26–0.60)[a]	0.43	(0.27–0.68)
Upper secondary and higher	0.54	(0.35–0.84)[a]	0.48	(0.29–0.78)
Residence				
Rural	1.0	--	--	--
Urban	1.2	(0.95–1.6)[a]	--	--
Region				
Red River Delta	1.0	--	1.0	--
Northern Midlands and Mountain	1.5	(0.99–2.2)[a]	1.2	(0.80–1.9)
North Central and Central Coastal	0.91	(0.60–1.4)	0.85	(0.56–1.3)
Central Highlands	2.2	(1.3–3.5)[a]	1.8	(1.1–2.9)
South East	1.9	(1.3–2.8)[a]	1.8	(1.2–2.7)
Mekong River Delta	0.94	(0.62–1.4)	0.88	(0.57–1.4)
Wealth quintile				
1 (poorest)	1.0	--	--	--
2	0.51	(0.34–0.76)[a]	--	--
3	0.87	(0.60–1.3)	--	--
4	0.95	(0.67–1.4)	--	--
5 (richest)	0.60	(0.41–0.89)[a]	--	--
Has at least one son				
No	1.0	--	--	--
Yes	0.63	(0.49–0.81)[a]	--	--
Early marriage; before age 18 years				
No	1.0	--	--	--
Yes	1.3	(0.96–1.9)[a]	--	--
Number of children				
0	1.0	--	1.0	--
1	0.73	(0.43–1.2)[a]	0.82	(0.48–1.4)
2	0.32	(0.19–0.54)[a]	0.49	(0.28–0.88)
3	0.38	(0.22–0.69)[a]	0.63	(0.32–1.2)
4	0.42	(0.20–0.87)[a]	0.62	(0.27–1.4)
5 or more	0.60	(0.25–1.4)	0.65	(0.24–1.8)

[a] p value <.25 and thus was included in the initial full model for the multivariable analysis.
[b] Adjusted for all variables in the column with data reported.

which represent a statistically significant decrease in use of effective contraception and LARC from 2000 to 2014 (p<.0001).

Stratification by age revealed that use of effective contraception was highest among women aged 30–34 and women aged 35–39 years and lowest among women aged 15–19 years (Appendix A). Most age groups had a significant decline in prevalence of use of effective contraception from 2006 to 2011. Similarly, use of LARC was highest among women aged 30–34 and women aged 35–39 years and lowest among women aged 15–19 years. Again, most age groups had a significant decrease in prevalence of LARC use from 2006 to 2011. The prevalence of the use of effective contraception was highest among women with no or preschool only education and lowest among the highest-education group. This finding was similar for the use of LARC by education. By residence type, use of effective contraception and LARC were higher among rural women. Furthermore, women who had at least one living son had a higher prevalence of use of effective contraception and LARC.

We then assessed the changes in prevalence of use of effective contraception and LARC after adjusting for age, education, residence and having at least one son. Use of effective contraception statistically significantly differed in 2006 compared to 2000 (p=.004) and 2014 compared to 2000 (p<.0001), but no significant differences were found between 2011 and 2000 (p=.05). For use of LARC, there was a significant difference for 2011 compared to 2000 (p≤ .0001) and 2014 compared to 2000 p<.0001), but no significant differences were found between 2006 and 2000 (p=.35). We then assessed year as a continuous predictor to assess the trend over time from 2000 to 2014 after adjusting for the variables of interest. This resulted in a p<.0001 for both use of effective contraception and LARC, indicating a significant decrease in use of effective contraception and LARC over time.

4. Discussion

We found statistically significant decreases in the use of effective contraception and LARC among married or cohabiting women of reproductive age in Vietnam. From 2000 to 2014, prevalence of use of effective contraception and LARC decreased from 53% to 46% and from 40% to 30%, respectively. These declines were robust to adjustments for age, education, residence and having at least one son. This finding is consistent with previous evidence showing a decrease in IUD use from 26% in 2003 to 18% in 2012 among all reproductive-age women (regardless of union status) in Southeast Asia [13]. While this earlier study found an increase in pill use (from 24% to 28%) during 2003–2012 in Southeast Asia, we found no evidence of increased pill use among married or cohabiting women in Vietnam in our analysis.

Vietnam's family planning program, which unofficially began in 1963 and then was institutionalized in 1988, traditionally has had a focus on the promotion of IUDs (with promotion of female sterilization added in the mid-1990s) [14]. Use of other contraceptive methods were not encouraged or publically provided. With the reforms of Đổi Mới, the government started providing oral contraception and condoms, as well as IUDs, to health facilities in the public sector free of charge. As a result, today, most couples using contraception receive them at low cost, and the method mix has begun to change.

However, the nonhormonal IUD in Vietnam remains the most widely available method of effective contraception and is commonly used [15]. However, women in Vietnam often discontinue IUD use due to health concerns, excessive menstrual bleeding, weight loss, infection and discomfort during sexual intercourse. IUD discontinuation, delay in switching to a new contraceptive method and switching to less effective methods could contribute to unintended pregnancy among women in Vietnam. Whether the decrease in LARC use during 2000–2014 is a result of higher rates of IUD discontinuation or fewer women initiating IUD use remains unknown and warrants study.

Prevalence of unmet need for contraception among married or cohabiting women of reproductive age in 2014 was 4.3%. This prevalence is lower than the estimated 14% of married women with unmet need for contraception in 2006–2013 in the broader Southeast Asia region [1]. Correlates of unmet need for contraception in the multivariable analysis in the present analysis were young age, low education and having children. Surprisingly, having no sons was not positively associated with unmet need for contraception in the multivariable analysis despite literature supporting a relationship between having a son and contraceptive use [3,6]. Vietnam's traditional cultural emphasis on having a male heir to continue the family line could contribute to a postnatal sex selection method in which couples opt to end their childbearing (either by use of contraception or abortion) once they have a son [16]. We found no evidence, though, of an association between having a male offspring and unmet need for contraception.

The primary strength of our analyses is the large sample size from a nationally representative survey, which was repeatedly implemented over time in the population. The main limitation is the reliance on cross-sectional survey data, which do not allow us to establish causality. In addition, item nonresponse was prevalent in the dataset. Bias could have been introduced into our findings if missing data were related to the woman's unmet need for contraception or contraceptive use. We
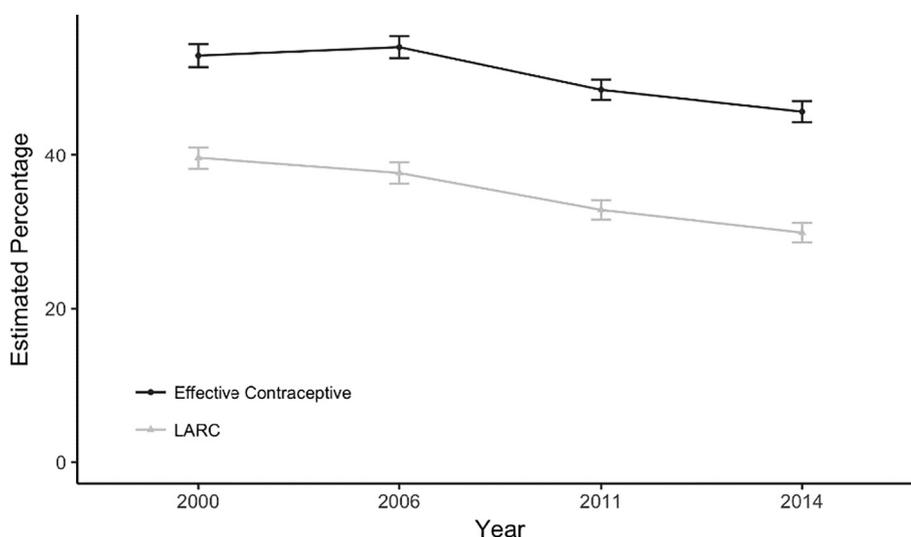
Fig. 2. Weighted prevalence and associated 95% CIs for use of effective contraception (implant, IUD, male and female sterilization, injectable, pill, patch, ring or diaphragm) and LARC (IUD or implant) among married or cohabiting women aged 15–49 years, Vietnam MICS, 2000–2014 (N=25,300).

used χ^2 tests to assess whether those with missing data for unmet need for contraception were different than those included in the analysis in terms of age, ethnicity, education, wealth quintile, residence, region, having a son, early marriage and number of children ever born. Those with missing data were more likely to be younger, have higher education levels, have urban residence, have no sons, not have an early marriage and have no children compared to those included in that analysis (data not shown but available upon request). We also used χ^2 tests to assess whether those with missing data for current contraceptive use differed from those included in the analysis in terms of age, education, residence and having at least one son. Women with missing data were more likely to be younger, have a higher education, have urban residence and have no sons compared to those included in the analyses (data not shown but available upon request).

Finally, because the survey did not ask about women's sexual activity, we used marriage and cohabitation as proxies for being sexually active. However, unmet need for contraception could be expected to be higher among unmarried, noncohabiting women; they could be expected to have less desire for children given the strong social norms against having children outside of a union. This suggests that our estimates of unmet need for contraception may be underestimations.

During 30 years of the political and economic reforms of Đổi Mới, Vietnam has rapidly transitioned from being one of the poorest countries in the world to its current classification as a lower-middle-income country [17]. Following this success, some nongovernmental organizations and other development partners have reduced their presence and investment in the country. Since 2010, national and donor funding for family planning in Vietnam has declined [18]. However, in 2016, the Vietnamese government committed to Family Planning 2020, a global partnership to support women's and girl's autonomy related to fertility. The government prioritized not only increasing national access to contraception but also increasing the method mix. Evidence suggests that having more methods available increases the overall use of contraception [19]. Further study in Vietnam could assess programs and strategies to introduce a wider range of contraceptive methods and to evaluate how this might affect contraceptive method choice, contraceptive use and unmet need for contraception.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.contraception.2018.11.014.

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