

Twelve-month contraceptive discontinuation, associated factors and its consequences in Nepal

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ABSTRACT

Introduction: Contraceptive prevalence rate (CPR) remained stagnant in Nepal in the past ten years and Nepal failed to achieve the millennium development goals target on CPR in 2015. Since CPR is based on the use of contraceptives, it is extremely important to assess contraceptive discontinuation rates to find the reason for this stalemate in the country.

Method: The 2016 Nepal Demographic and Health Survey contraceptive calendar data was used to get all the episodes of contraceptive use within one year. It was used to find discontinuation rates by methods, reasons, and associated factors. Pearson's chi-square test was used to compare discontinuation rates across predictor variable categories and a multivariate logistic regression model was used to find independent factors of discontinuation rates.

Result: Nepal reported a twelve-month contraceptive discontinuation rate of 64.4% along with higher discontinuation of modern methods (pill, intra-uterine device, injectable and male condom) and traditional methods (rhythm and withdrawal) than India and Bangladesh in 2016. Most women cited 'side effects' and 'wanted more effective method' as the main reason for the discontinuation of modern methods whereas 'method failure' and 'desire to become pregnant' as the main reasons for the discontinuation of traditional methods. The bivariate analysis found age, province, education level, and wealth indices as the main predictor whereas multivariate analysis found province and education level as the independent factors of twelve-month discontinuation rates in Nepal.

Conclusion: Stagnant unmet need for family planning and higher contraceptive discontinuation were responsible for the stagnation of the contraceptive prevalence rate in Nepal since 2006. Province and education were independent predictors of the twelve-month discontinuation rate in Nepal in 2016. Further analysis of discontinuation "while in need" is needed to assess the family planning plans, policies, and programs of Nepal at the national, provincial, and local levels to improve the contraceptive prevalence rate in the country.

Keywords: Contraceptives, discontinuation, DHS, logistic regression, Nepal, twelve-month, unmet need

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INTRODUCTION

Family planning is important for controlling the population as well as saving lives.¹ It is the right of women to choose and use different contraceptive methods for spacing or limiting the family.² Family planning plans and policies are devised to achieve national, provincial, and local level targets on contraceptive use, which in turn, are affected by the discontinuation of the contraceptive methods within 12 to 60 months of use.^{3,4} These contraceptive dynamics can be analyzed using the contraceptive calendar, which was included in the Demographic and Health Surveys (DHS) since the mid-1980s with a few changes in various DHS cycles.⁵ The 2016 Nepal DHS (NDHS) survey used the seventh cycle of the DHS questionnaire (DHS7) containing the contraceptive calendar and its raw data is available for further analysis to the registered users.⁶

Contraceptive prevalence rate (CPR) remained stagnant in the last ten years.^{7,8} and Nepal failed to achieve the millennium development goal target of CPR in 2015.⁹ Thus, it is extremely important to analyze the contraceptive discontinuation to find the reasons for this stalemate by methods, reasons, and factors for assessing the family planning plans and policies of the country.

This paper aims to assess contraceptive discontinuation within 12 months of use by methods as well as reasons and find the associated factors among reproductive-age Nepali women within one year to evaluate the family planning plans, policies, and programs with key indicators in 2016.

METHOD

The contraceptive calendar used in the DHS7 questionnaire had two columns where the first column was used to fill births, pregnancies, terminations, and contraceptive use in each of the boxes corresponding to a month whereas the second column was filled with the reasons for discontinuation of contraceptive use in each of the boxes of that column wherever applicable (Figure 1).⁵

The 2016 Nepal Demographic and Health Survey (NDHS) raw data file of women questionnaire was used to extract all the contraceptive calendar events between 3 and 62 months using DHS Contraceptive Calendar Tutorial.⁵ It provided longitudinal event data on contraceptive use among reproductive-age women (15-49 years) for five years before the survey. This five-year contraceptive events data was further filtered by

removing events related to the “contraceptive not used”, “births”, “termination” and “pregnancies” categories to analyze the twelve-month discontinuation of the contraceptives. The filtered data was verified using reported discontinuation rates and total episodes of use published in the 2016 NDHS report.⁷

Discontinuation indicator variable (1 = discontinuation and 0 = no discontinuation) was created from the extracted discontinuation codes available in the filtered event data file. This variable was used to get cross-tabulations with the age group, province, type of residence, highest education level, and wealth index variables using the standard DHS survey weight. Pearson’s chi-square test was used to assess the homogeneity of discontinuation rates across categories of these socio-demographic variables.¹⁰ The post-hoc test was done for statistically significant variables using Holm’s p-value adjustment technique on R 4.0.3 software.¹¹

A multivariate binary logistic regression model was fitted to find the independent factors associated with contraception discontinuation obtained using a complex sampling procedure. Independent variables with a p-value less than 0.25 in the bivariate analysis were eligible for the final model.¹² Confounding effects among the eligible independent variables were assessed with variance inflation factor (VIF) where only the variables with a VIF value of 2 or less were taken to the final multivariate logistic regression model.¹² A complex sampling analysis plan was created using strata, clusters, and survey weights in the IBM SPSS 20 software.¹³

RESULT

Table 1 shows the weighted number of episodes of use identical to the reported data, which confirms that the weighted analysis of the discontinuous indicator variable is valid for analyzing twelve-month contraceptives discontinuation dynamics. However, there was a discrepancy in the discontinuation rate by specific method between estimated and reported values.

Table 1 revealed that around two third of episodes discontinued one or more contraceptive methods within one year in Nepal. The twelve-month discontinuation rate for methods with 50 and more episodes was highest for the emergency contraception method (93%) followed by pill (78.4%) and male condom (74.9%). Nearly two-thirds of users of rhythm, withdrawal, lactation amenorrhea, and injectable discontinued them

INSTRUCTIONS:
ONLY ONE CODE SHOULD APPEAR IN ANY BOX.
COLUMN 1 REQUIRES A CODE IN EVERY MONTH.

CODES FOR EACH COLUMN:

COLUMN 1: BIRTHS, PREGNANCIES, CONTRACEPTIVE USE (2)

B BIRTHS
P PREGNANCIES
T TERMINATIONS

0 NO METHOD
1 FEMALE STERILIZATION
2 MALE STERILIZATION
3 IUD
4 INJECTABLES
5 IMPLANTS
6 PILL
7 CONDOM
8 FEMALE CONDOM
9 EMERGENCY CONTRACEPTION
J STANDARD DAYS METHOD
K LACTATIONAL AMENORRHEA METHOD
L RHYTHM METHOD

M WITHDRAWAL
X OTHER MODERN METHOD
Y OTHER TRADITIONAL METHOD

COLUMN 2: DISCONTINUATION OF CONTRACEPTIVE USE

0 INFREQUENT SEX/HUSBAND AWAY
1 BECAME PREGNANT WHILE USING
2 WANTED TO BECOME PREGNANT
3 HUSBAND/PARTNER DISAPPROVED
4 WANTED MORE EFFECTIVE METHOD
5 SIDE EFFECTS/HEALTH CONCERNS

6 LACK OF ACCESS/TOO FAR
7 COSTS TOO MUCH
8 INCONVENIENT TO USE
F UP TO GOD/FATALISTIC
A DIFFICULT TO GET PREGNANT/MENOPAUSAL
D MARITAL DISSOLUTION/SEPARATION
X OTHER

(SPECIFY)
Z DON'T KNOW

(1) Year of fieldwork is assumed to be 2015. For fieldwork beginning in 2016, all references to calendar years should be increased by one; for example, 2009 should be changed to 2010, 2010 should be changed to 2011, 2011 should be changed to 2012, and similarly for all years throughout the questionnaire.

(2) Response categories may be added for other methods, including fertility awareness methods.

			COL. 1	COL. 2
	12	DEC	01	
	11	NOV	02	
	10	OCT	03	
2	09	SEP	04	
0	08	AUG	05	2
1	07	JUL	06	0
5	06	JUN	07	1
(1)	05	MAY	08	5
	04	APR	09	
	03	MAR	10	
	02	FEB	11	
	01	JAN	12	
	12	DEC	13	
	11	NOV	14	
	10	OCT	15	
2	09	SEP	16	
0	08	AUG	17	2
1	07	JUL	18	0
4	06	JUN	19	1
	05	MAY	20	4
	04	APR	21	
	03	MAR	22	
	02	FEB	23	
	01	JAN	24	
	12	DEC	25	
	11	NOV	26	
	10	OCT	27	
2	09	SEP	28	
0	08	AUG	29	2
1	07	JUL	30	0
3	06	JUN	31	1
	05	MAY	32	3
	04	APR	33	
	03	MAR	34	
	02	FEB	35	
	01	JAN	36	
	12	DEC	37	
	11	NOV	38	
	10	OCT	39	
2	09	SEP	40	
0	08	AUG	41	2
1	07	JUL	42	0
2	06	JUN	43	1
	05	MAY	44	2
	04	APR	45	
	03	MAR	46	
	02	FEB	47	
	01	JAN	48	
	12	DEC	49	
	11	NOV	50	
	10	OCT	51	
2	09	SEP	52	
0	08	AUG	53	2
1	07	JUL	54	0
1	06	JUN	55	1
	05	MAY	56	1
	04	APR	57	
	03	MAR	58	
	02	FEB	59	
	01	JAN	60	
	12	DEC	61	
	11	NOV	62	
	10	OCT	63	
2	09	SEP	64	
0	08	AUG	65	2
1	07	JUL	66	0
0	06	JUN	67	1
	05	MAY	68	0
	04	APR	69	
	03	MAR	70	
	02	FEB	71	
	01	JAN	72	

Figure 1. Contraceptive calendar used in DHS-7 Women Questionnaire

within 12 months in 2016. Intra-uterine device (IUD) was discontinued by 44% of users whereas implant was discontinued by nearly 23% of users within 1 year.

All the female sterilization episodes continued with the same methods within 1 year so there was no discontinuation. Therefore, it was not included while describing the reasons for discontinuation. Table 2 shows the reasons for discontinuation of selected contraceptive methods in twelve months where reasons above five percentage points were highlighted.

Among the reasons with more than 50 episodes of use in the twelve months, pill, IUD, and Norplant were discontinued the most due to "side effects"

whereas male condom was discontinued the most due to "wanted to become pregnant" followed by "inconvenient to use". Injectable was discontinued the most due to "side effects" followed by "wanted to become pregnant". The withdrawal was discontinued the most due to "wanted to become pregnant" whereas rhythm was discontinued the most due to "wanted to become pregnant" followed by "became pregnant while using" and "Wanted more effective method."

Overall, "side effect" was the most commonly cited reason for the twelve-month contraceptive discontinuation in 2016 followed by "desire to become pregnant" and "wanted more effective methods" in the country.

Table 3 shows the distribution of the twelve-month discontinuation indicator with weighted numbers and percent distribution of cases for selected socio-demographic variables. Among the seven provinces, province 5 had the highest (70.2%) and province 3 had the lowest (56.8%) contraceptive discontinuation rates. It was higher in the urban area (64.9%) than in rural areas (63.5%) whereas it was highest among the users

with a “secondary” level of education (69.4%) and lowest among users with “no education” (54.9%). Among the wealth indices, it was lowest (59.0%) among the “poorest” and highest (66.8%) among the “middle” wealth index group. Among the five-year age groups, it was highest in the 20-24 years (68.6%) and lowest in the 45-49 years (53.8%) old women.

Table 1. Twelve-month discontinuation of contraceptive methods, 2016, Nepal

Method	Discontinuation Indicator, n (%) ¹		Total Episodes	Reported Discontinuation ²	Reported Episodes
	Discontinuation	No discontinuation			
Pill	1163 (78.4)	321 (21.6)	1484 (100)	73.8+7.5=81.3%	1485
Intra Uterine Device	71 (44.1)	90 (55.9)	161 (100)	28.2+9.8=38.0%	161
Injectable	1225 (65.8)	638 (34.2)	1863 (100)	58.4+9.6=68.0%	1863
Condom	803 (74.9%)	269 (25.1)	1072 (100)	68.9+8.9=77.8%	1072
Female sterilization	0 (0.0)	311 (100.0)	311 (100)	-	-
Male sterilization	2 (2.3)	86 (97.7)	88 (100)	-	-
Periodic abstinence/rhythm	141 (67.8)	67 (32.2)	208 (100)	55.8+4.1=59.9%	208
Withdrawal	1137 (67.7)	543 (32.3)	1680 (100)	62.6+5.5=68.1%	1680
Other traditional methods	1 (80.0)	4 (20.0)	5 (100)	-	-
Norplant	78 (22.6)	267 (77.4)	345 (100)	7.6+4.3=11.9%	345
Lactation amenorrhea	2 (66.7)	1 (33.3)	3 (100)	-	-
Emergency contraception	80 (93.0)	6 (7.0)	86 (100)	-	-
Total	4703 (64.4)	2603 (35.6)	7306 (100)	58.1+7.4=65.5%	7306 ³

Note: 1 = Weighted cases and percentage; 2 = Includes “discontinuation due to any reason + switched to other methods”; 3 = Includes 492 episodes of other methods i.e. Female sterilization, male sterilization, other traditional methods, Lactation amenorrhea, and Emergency contraception.

Table 2. Reasons for twelve-month contraceptive discontinuation by methods, 2016, Nepal

Reason/Method:	Pill	IUD	Injectable	Male Condom	Rhythm	Withdrawal	Norplant	EC
Became pregnant while using	3.8	0.0	0.7	2.9	16.8	5.4	0.3	1.2
Wanted to become pregnant	4.4	1.9	5.7	14.3	17.8	9.0	3.8	14.0
Husband disapproved	0.1	0.0	0.6	2.6	0.5	0.7	0.3	1.2
Side effects	12.7	29.8	23.0	1.2	0.5	0.0	10.4	29.1
Access / availability	0.3	0.0	0.4	0.4	0.0	0.1	0.0	0.0
Wanted more effective method	2.4	0.0	2.3	4.9	6.7	5.5	0.6	9.3
Inconvenient to use	1.7	3.1	1.4	5.2	0.0	0.9	1.4	3.5
Infrequent sex/husband away	1.8	0.0	1.2	4.9	1.0	3.2	0.3	4.7
Cost	0.0	0.0	0.0	0.1	0.0	0.0	2.0	0.0
Difficult to get pregnant / menopause	0.1	0.0	0.0	0.4	0.0	0.1	0.3	0.0
Marital dissolution	0.0	0.0	0.1	0.0	0.0	0.1	0.3	0.0
Other reason	0.8	1.9	0.7	0.7	0.0	0.1	0.6	0.0
Don't know	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Missing	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Unknown reason	50.3	6.8	29.6	37.5	25.5	42.7	2.3	30.2
Any reason	78.4 (1133)	43.5 (70) ^a	65.8 (1225)	75.1 (805) ^a	68.8 (143) ^a	67.7 (1137)	22.6 (78)	93.0 (80)
Total	1484	161	1863	1072	208	1680	345	86

Note: IUD = Intra Uterine Device, EC = Emergency Contraception; a=Total do not add due to rounding error introduced by survey weights.

Table 3 also shows the test of homogeneity of proportion i.e., the comparison of discontinuous rates across variable categories using Pearson's chi-square test. Twelve-month discontinuous rates were statistically different for provinces, highest education levels, wealth indices, and age groups but it was not statistically different for the residence types. However, all the variables were eligible for the final multivariable logistic regression model as p-values were less than 0.25.¹²

Post-hoc test with Holm's p-value corrections revealed statistically different discontinuation rates between provinces 1 and 4, provinces 1 and 6, provinces 1 and 7, provinces 2 and 4, provinces 2 and 5, provinces 2 and 7, provinces 3 and 4, province 3 and 5, province 3 and 5, province 3 and 7 and, province 5 and 6. Statistically different results were also obtained for "no education and primary levels", "no education and secondary levels", "no education and higher levels" and, "primary and secondary levels" of female

education. Women belonging to the "poorest" wealth index had statistically different discontinuation rates from other wealth indices. Discontinuation rates were significantly different for 15-19 with 20-24 and 25-29 age groups; 20-24 with 35-39, 40-44, and 45-49 age groups; and 25-29 as well as 30-34 with 35-39 and 45-49 age groups.

VIF values were found to be less than the recommended threshold of two for all the eligible independent variables for this model (Table 4). Therefore, the confounding effect was ruled out and all the independent variables were taken to the final model.

The overall accuracy of the regression model was 65%, which means that model was able to predict the discontinuation indicator variable categories correctly in 65% of the cases. Regression ANOVA for the model was statistically significant so the results were valid and interpreted accordingly.

Table 3. Association of discontinuation indicator with socio-demographic variables, 2016, Nepal

Method	Discontinuation Indicator, N (%) ¹		Total Episodes	Chi-square test statistic value	p-value
	Discontinuation	No discontinuation			
Region					
Province 1	771 (61.0)	493 (39.0)	1264	133.023	<0.001
Province 2	578 (57.6)	426 (42.4)	1004		
Province 3	794 (56.8)	604 (43.2)	1398		
Province 4	506 (68.5)	233 (31.5)	739		
Province 5	1164 (73.2)	427 (26.8)	1591		
Province 6	306 (64.0)	172 (36.0)	478		
Province 7	585 (70.2)	248 (29.8)	833		
Type of residence					
Urban	2955 (64.9)	1596 (35.1)	4551	1.565	0.211
Rural	1749 (63.5)	1006 (36.5)	2755		
Highest education level					
No education	1089 (54.9)	893 (45.1)	1982	112.374	<0.001
Primary	925 (65.4)	489 (34.6)	1414		
Secondary	1873 (69.4)	825 (30.6)	2698		
Higher	817 (67.4)	395 (32.6)	1212		
Wealth index					
Poorest	727 (59.0)	506 (41.0)	1233	20.874	<0.001
Poorer	938 (64.4)	518 (35.6)	1456		
Middle	962 (66.8)	479 (33.2)	1441		
Richer	978 (65.7)	511 (34.3)	1489		
Richest	1099 (65.1)	588 (34.9)	1099		
Age groups					
15 – 19	177 (59.0)	123 (41.0)	300	41.925	<0.001
20 – 24	1005 (68.6)	459 (31.4)	1464		
25 – 29	1438 (65.8)	748 (34.2)	2186		
30 – 34	1104 (65.1)	592 (34.9)	1696		
35 – 39	564 (58.8)	396 (41.2)	960		
40 – 44	318 (61.3)	201 (38.7)	519		
45 – 49	98 (53.8)	84 (46.2)	182		
Total	4703 (64.4)	2603 (35.6)	7306		

Note: 1 = Weighted cases and percentage;

Table 4. Assessment of confounding effect among independent variables, 2016, Nepal

Variable	Province	Residence	Education	Wealth	Age
VIF	1.036	1.141	1.446	1.391	1.192

Table 5. Complex sample logistic regression model fit for 12-month discontinuation, 2016, Nepal

Variables	Logit	Std. Error of Logit	Hypothesis Test			Odds ratio	95% Confidence Interval for Odds ratio	
			t	df	Sig.		Lower	Upper
(Intercept)	.952	.332	2.866	369.000	.004	2.591	1.348	4.980
Province 1	-.507	.157	-3.240	369.000	.001	.602	.443	.819
Province 2	-.549	.173	-3.168	369.000	.002	.577	.411	.812
Province 3	-.656	.169	-3.890	369.000	.000	.519	.373	.723
Province 4	-.233	.170	-1.366	369.000	.173	.792	.567	1.108
Province 5	.068	.163	.418	369.000	.676	1.070	.777	1.474
Province 6	-.164	.168	-.974	369.000	.331	.849	.610	1.182
Province 7	.000		Reference category			1.000	Reference category	
Urban	-.015	.093	-.161	369.000	.872	.985	.820	1.183
Rural	.000		Reference category			1.000	Reference category	
No education	-.543	.115	-4.707	369.000	.000	.581	.463	.729
Primary	-.139	.110	-1.267	369.000	.206	.870	.702	1.080
Secondary	.042	.097	.433	369.000	.665	1.043	.862	1.262
Higher	.000		Reference category			1.000	Reference category	
Poorest	-.100	.152	-.658	369.000	.511	.905	.671	1.220
Poorer	.071	.134	.527	369.000	.599	1.073	.824	1.397
Middle	.158	.136	1.160	369.000	.247	1.171	.896	1.531
Richer	.081	.128	.634	369.000	.527	1.085	.843	1.395
Richest	.000		Reference category			1.000	Reference category	
15 – 19	-.287	.323	-.888	369.000	.375	.750	.397	1.417
20 – 24	.186	.272	.683	369.000	.495	1.204	.705	2.057
25 – 29	.135	.271	.499	369.000	.618	1.145	.672	1.952
30 – 34	.124	.271	.459	369.000	.646	1.132	.665	1.928
35 – 39	-.034	.272	-.125	369.000	.900	.966	.566	1.650
40 – 44	.057	.283	.203	369.000	.840	1.059	.607	1.846
45 – 49	.000		Reference category			1.000	Reference category	
Model Accuracy = 65.0%			Model ANOVA: F = 7.556			ANOVA p-value = <0.001		
Pseudo R-Square values:			McFadden = 0.028 (2.8%)			Nagelkerke = 0.050 (5%)		

As per the Nagelkerke pseudo-R-square value, only 5% of the variance (variation) in the dependent variable was explained by these independent variables so it was not a useful model fit index (Table 5).

Twelve-month contraceptive discontinuation rate had an independent effect on three provinces and one education level after holding the effect of other independent variables constant. Province 1 was nearly 40% less likely, province 2 was nearly 42% less likely and province 3 was nearly 48% less likely to discontinue contraceptives in twelve months compared to province 7 controlling the effect of type of residence, highest education level, wealth index, and age group variables.

Similarly, women with “no education” level were around 42% less likely to discontinue the use of contraceptives in twelve months compared to women with a “higher” level of education

controlling for the province, type of residence, wealth index, and age group variables.

DISCUSSION

The reported contraceptive discontinuation rates were based on the life table estimates whereas estimated values in this study were obtained directly from the discontinuation indicator variable⁵. Thus, there was a discrepancy in the two types of discontinuation rates. However, the number of weighted cases was identical in both the estimates so all the results obtained from this study are valid.

Twelve-month contraceptive discontinuation rate among Nepali women of reproductive age (64.4%) was higher than Indian women (37.4%) and Bangladeshi women (37.1%).^{14,15} This was due to the higher discontinuation rates for the pill (78.4% in Nepal, 47.0% in India, and 41.6% in Bangladesh), IUD (44.1% in Nepal and 27.3% in India), Injectable (65.8% in Nepal, 58.8% in India and 34.1% in

Bangladesh), male condom (74.9% in Nepal, 52.6% in India and 44.7% in Bangladesh), rhythm (67.8% in Nepal, 50.6% in India and 27.7% in Bangladesh) and withdrawal (67.7% in Nepal, 59.5% in India and 30.9% in Bangladesh) in Nepal than India and Bangladesh. Analysis of DHS surveys found that on average, over one-third of women who start using a modern contraceptive method stop using within the first year, and over one-half stop before two years, which was different for Nepal as over two-thirds of women stopped using the pill, injectable and condom within first year^{16,17}.

Reasons for discontinuation of contraceptives within 12 months were also different in Nepal compared to India and Bangladesh. For instance, 3.8% “became pregnant while using” the pill in Nepal compared to 1.9% in India and 4.5% in Bangladesh. On the other hand, 5.6% of Nepali women, 8.0% of Indian women, and 4.0% of Bangladeshi women discontinued the use of injectables, as they wanted to become pregnant. The male condom was discontinued by 14.3% and 4.9% in Nepal compared to 2.9% and 2.2% in India and, 10.7% and 4.5% in Bangladesh due to ‘desire to become pregnant and ‘wanted more effective method’. Nearly 17% and 5.4% discontinued using the rhythm and withdrawal in Nepal compared to 4.9% and 4.6% in India and, 4.7% and 6.4% in Bangladesh due to method failure.^{7,14,15}

These differences in discontinuation by methods and reasons point out the need for reviewing the discontinuation rates in Nepal in terms of ‘discontinuation in need’ or ‘discontinuation due to quality of family planning services’ as they heavily affect the contraceptive prevalence rate (CPR) in the country.¹⁸ Further analysis of the 2015 Nepal Health Facility Survey revealed that improving the skills of providers, ensuring job descriptions for all providers, improving the FP service delivery system in the facility, and having electricity in the facility all lead to improved client satisfaction.¹⁹ Differences in unmet need and demand for family planning satisfaction were found for age, education, wealth index, and child loss experience among Nepali women.²⁰

CPR between 2006 and 2011 declined in Nepal due to a high proportion of spousal separation, increased use of traditional methods, abortion, emergency contraception, and a lack of innovative approaches to cater services to difficult-to-reach or special sub-groups⁸. The same trend and reasons continued in 2016 as well.^{21,22} The unmet need for family planning in Nepal remained at around 24% between 2006 and 2016 and only one-

third of the demand was satisfied with modern methods triggering CPR stagnation in 2011 and 2016^{23,22}. Twelve-month discontinuation needs a greater variety of methods to facilitate switching rather than stopping after discontinuation and improve CPR in Nepal too.²⁴

Bivariate cross-tabulation analysis revealed that twelve-month contraceptive discontinuous rates were statistically different across the province, highest education level, wealth index, and age groups. Analysis of Myanmar DHS 2015-16 also showed statistically different bivariate results for age groups, marital status, occupation, wealth index, region/province, number of births in the past five years, and type of methods used.³ Thus, it is required to perform an in-depth analysis of contraceptive discontinuation using other key factors that affect this rate as done in the further analysis of 2017 Indonesian DHS.⁴

The multivariate logistic regression model identified provinces and the highest education level variables as the independent factors for explaining the twelve-month contraceptive discontinuation rates in Nepal. This finding is different from a similar study done in Myanmar where they found age groups, wealth index, region/province, and the number of births in the last five years as the independent factors for explaining discontinuous rates.³ Further analysis of the 2017 Indonesian DHS also revealed multiple factors related to methods, demography, and socio-economic domains as the independent predictors for explaining discontinuation rates.⁴

The main limitation of this study is the use of a limited set of factors available in the extracted data from the DHS contraceptive calendar tutorial to explain the determinants of contraceptive discontinuation in Nepal. The results would have been better if the survival analysis was used to account for the duration and right censoring of events^{25,4,17} to get relative risk for the sixty-month-long longitudinal contraceptive calendar data extracted from the 2016 NDHS.

CONCLUSION

The contraceptive discontinuation rate was higher in Nepal than in India and Bangladesh in 2016. It was higher for the modern as well as traditional methods in Nepal. Unmet needs for family planning and contraceptive discontinuation were responsible for the stagnation of the contraceptive prevalence rate in Nepal since 2006. Province and education level were independent predictors of the twelve-month discontinuation rate in Nepal in

2016 and they were different than Myanmar and Indonesia in the same period. Further analysis of discontinuation “while in need” is needed to assess the family planning plans, policies, and programs of Nepal at the national, provincial, and local levels to improve the contraceptive prevalence rate in the country.

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