


BMJ Open Modern contraceptive use among young women aged 15–24 years in selected municipalities of Western Nepal: results from a cross-sectional survey in 2019

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ABSTRACT

Objective To estimate the modern contraceptive prevalence rate (mCPR) and its predictors among young women aged 15–24 years.

Design Cross-sectional analysis of Adolescent Youth Project baseline survey.

Setting 29 municipalities within Lumbini Province and Sudurpaschim Province in Western Nepal.

Participants 683 young women aged 15–24 years who were living in the catchment area of the selected 30 private OK network health facilities at the study sites from November to December 2019 and who provided informed consent or assent.

Outcome measure mCPR among young women aged 15–24 years.

Results The mean age of the respondents was 19 years, 61.7% never had sex and 63.9% were unmarried. The mCPR was 11.9% (95% CI 9.5 to 14.8). Of those who reported using a modern method of contraception, injectables (37.9%) were the most common, followed by male condom (35.9%) and implants (8.8%). Majority (86.4%) of the respondents reported currently not using any method of contraception. In the binary logistic regression analysis, the odds of contraceptive use were higher among women aged 20–24 years (adjusted OR (AOR)=5.50, 95% CI 2.94 to 10.29) and those of Janajati caste/ethnicity (AOR=2.08, 95% CI 1.16 to 3.71), while the odds were lower among women who faced high level of barriers (individual, family/societal, service provider and health facility barriers) to contraceptive use (AOR=0.36, 95% CI 0.14 to 0.98).

Conclusions The mCPR among young women aged 15–24 years was low but similar to the national level. Sexual and reproductive health programmes aiming to improve the mCPR in this population of young women should consider the reported level of sexual activity. Reaching young women to improve their knowledge and self-efficacy for contraception is critical to ensure they can access contraception when needed. The focus should be on reaching not just young women but also key influencers and service providers and making health facilities adolescent-friendly to reduce barriers to contraceptive uptake and to realise self-efficacy.

BACKGROUND

Reaching young people especially girls with quality contraceptive information and

Strengths and limitations of this study

- The study focused on young women aged 15–24 years, a population among which subnational studies on contraception use are lacking and is critical for improving modern contraceptive use in Nepal.
- The study used a cluster random sampling approach, standard data collection tools and analyses to increase the generalisability and comparability of the results with national surveys.
- During sampling, larger municipalities could have been under-represented due to the size of the primary sampling unit.
- Since the study sites were mostly periurban areas, relative to the wealth index of Nepal Demographic and Health Survey 2016, the sample did not include the poorer segments of the population and may be biased towards the richer, more educated and empowered women.
- Owing to the cross-sectional design, associations between variables cannot be interpreted as causal.

services that are affordable and accessible is important to improve the uptake of modern contraceptives and address the risks of unsafe sex and unwanted pregnancies. Young people's right to contraceptive information and services is globally recognised, yet they frequently face barriers that lead to high rates of unintended pregnancy.¹ Estimates for 2019 show that, among adolescents in low-income and middle-income countries, half of all pregnancies were unintended and the unmet need for modern contraception was much higher among them compared with all women aged 15–49 years (43% vs 24%).²

Use of contraception, particularly among young women, not only reduces pregnancy-related health risks and mortality³ but also cuts the risk of other poor health outcomes, including neonatal and under-5 child mortality.^{4–6} In developing countries, where birth spacing is less than 2 years, infant

mortality is 45% and 60% higher compared with births that are 2–3 years apart and 4 or more years apart.⁷ Additionally, through contraception use, other severe social and economic consequences to young women, including not reaching their potential for educational achievement and not getting a paid job, can be prevented.^{6,8} In 2019, it was predicted that meeting the unmet need for modern contraception among women aged 15–19 would globally lead to a decrease of six million unintended pregnancies, two million unplanned births and four million abortions each year.²

Family planning (FP) is a right⁹ and a priority public health programme of Nepal's Ministry of Health and Population. Improving modern contraceptive prevalence rate (mCPR) is a major target of the Sustainable Development Goal (SDG) 3 (target 3.7) to ensure universal access to sexual and reproductive health (SRH) care services including FP.¹⁰ Nepal is committed to increasing the number of additional users of FP by an estimated one million by 2020, with a special focus on meeting the needs of adolescents and youth and prioritising equitable access to voluntary FP in its Health Sector Strategy 2015–2020.¹¹ In Nepal, the age-specific fertility rate is higher among younger women, including adolescents, while contraceptive use is low and the unmet need is high.^{12,13} In 2016, the mCPR was 4% and 17.9% among currently married women aged 15–19 years and 20–24 years, respectively.¹³ The unmet need for FP was highest among 15–19 years (34.9%), followed by 20–24 years (32.6%), currently married women.¹³

Despite some types of FP services being available in almost all (98%) health facilities in Nepal,¹⁴ adolescents and youth face barriers to accessing them and realising their fundamental SRH rights.¹⁵ Several factors including lack of awareness/education, complex cultural norms around SRH, limited availability of services, lack of confidentiality when seeking services and judgement-laden service provision where they were provided services are some of the barriers in Nepal.¹⁶ National averages often mask the true situation. To achieve the goals of FP2020 initiative¹⁷ and SDG 3 on health and well-being, granular information from subnational studies is required to inform the design and implementation of age-appropriate interventions. However, an assessment of

modern contraceptive use among young women at the subnational level is lacking in Nepal.

To achieve further improvements in national mCPR, which has remained stagnant over the past decade,¹³ it is imperative to meet the needs of young women who, for several reasons, are vulnerable physically as well as socially. The Adolescent Youth Project (AYP) is a 3-year project that aims to improve the mCPR as well as the self-efficacy and self-empowerment for contraception among adolescents and youth aged 15–24 years in selected municipalities of Western Nepal. Using baseline survey data collected as part of the AYP's evaluation to measure the preliminary status of several outcomes and objectives of the project, this study estimates the mCPR and its predictors among young women aged 15–24 years in selected municipalities of Western Nepal.

METHODS

Study design, sites and population

Nepal is administratively divided into 7 provinces, 77 districts and 753 municipalities. Each municipality is further divided into wards. The AYP is being implemented in Nepal by Population Services International (PSI) through two local implementing partners (Non-Governmental Organizations) in 29 municipalities of Lumbini Province and Sudurpaschim Province. This cross-sectional survey was conducted among women aged 15–24 years in all these municipalities (table 1).

The study population consisted of women aged 15–24 years living in the catchment area of the selected private OK network health facilities at the time of the survey. OK is a brand used by PSI in Nepal to identify its network of private health facilities. At the time of data collection for this study, the private facilities in the selected geographies had just been contracted to work with the AYP. However, most of these facilities (not all) have been part of the OK network through another project for over 3 years. OK network health facilities consist of private clinics, polyclinics and hospitals where trained mid-level health providers¹⁸ provide FP and other reproductive health services. The AYP works to strengthen the technical and managerial capacity of these facilities for FP service delivery. In addition to organising mobile FP clinics in

Table 1 Study sites

Province	District	Municipalities
Lumbini	Banke	Khajura, Kohalpur, Nepalgunj, Rapti Sonari
	Bardiya	Bansgadhi, Madhuwan, Rajapur, Thakurbaba
	Dang	Gadhawa, Ghorahi, Lamahi, Tulsipur
	Kapilvastu	Banganga, Buddhabhumi, Kapilvastu, Krishnanagar, Maharajgunj
	Rupandehi	Butwal, Shuddhodhan, Siddharthanagar, Tilottama
Sudurpaschim	Kailali	Dhangadhi, Godawari, Lamkichuha, Tikapur
	Kanchanpur	Belauri, Bhimdatta, Laaljhadi, Mahakali

the community to provide short-acting contraception (condoms, contraceptive pills and intramuscular injectables), including emergency contraceptive pills, the OK network health facilities are central to the AYP's strategy for increasing uptake of modern contraceptives among target women. The catchment area of one OK network health facility is typically the ward in which the facility is located. There are 30 OK network health facilities in the AYP, one in each municipality, except in the municipality of Kapilvastu where there are two (wards 1 and 3).

Informed consent

Written informed consent was obtained from all respondents above 18 years of age. For respondents below 18 years of age, we obtained written assent from the respondents once written consent was obtained from their mother or father. Confidentiality and anonymity were maintained at all stages of data collection. All data were coded to remove identifying information and secure confidentiality. Respondents were not compensated for participation in the study.

Sample size and sampling technique

Since previous subnational prevalence was not available for this age group, a conservative sample size calculation was used where the prevalence (p) was 50% to obtain the largest sample size possible. A design effect of 1.6 estimated by the Nepal Demographic and Health Survey (NDHS) was used to account for cluster sampling.¹³ Using the formula and parameters given below, the initial sample size (n) was calculated to be 676. After adjusting for cluster size, the target sample size for this study was 696. Since non-replacement technique was used during sampling, there was a shortfall of 11 eligible households and a further 2 eligible respondents refused to participate in the study. Thus, the final completed sample size for the study was 683 women aged 15–24 years.

$$n = DEF * \frac{(z^2 * p(1-p) \div e^2)}{1 + \frac{z^2 * p(1-p)}{e^2 * N}} * NR$$

where the prevalence (p) of modern contraceptives among women aged 15–24 years was 0.5; the level of confidence measure (z) was 1.96; the margin of error (e) was 0.05; adjustment for 10% expected non-response (NR) was 1.1; the estimated population of women aged 15–24 years in study sites (N) was 282 148¹⁹; and the design effect (DEF) was 1.6.¹³

A cluster random sampling design was used to select the sample. The primary sampling unit (PSU) for the study was the catchment area of the OK network health facility. In Kapilvastu, the catchment areas of the two OK network health facilities were considered as a single PSU due to their proximity. For sampling purpose, each catchment area was divided into four segments based on four directions, north, south, east and west, with the health facility at the centre. Each segment consisted of 24 households. Consequently, each PSU was composed of 96 households and there were 29 PSUs in total. From 24 households

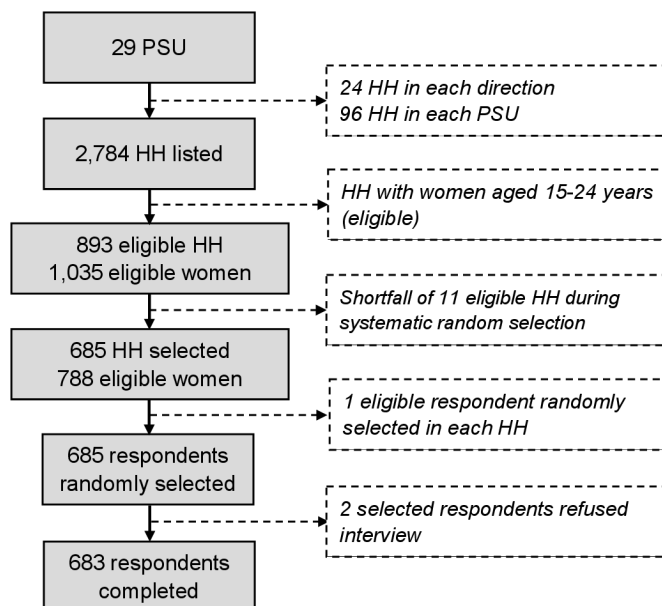


Figure 1 Sampling profile. HH, household; PSU, primary sampling unit.

in each direction, those with eligible members (women aged 15–24 years) were listed. Thereafter, the sampling interval was calculated by dividing the total number of eligible households by six (required household per direction) and the random start number was identified using lottery method to select the first household. The sampling interval was added to the first random start number to identify the remaining households in each direction. In cases where there were six or less eligible households in each direction, all of them were selected for interview. If the selected household had more than one eligible member, then all eligible members were listed in a Kish grid table,²⁰ and with its help one member was randomly selected for interview (figure 1). Since the sample was not self-weighting, weighting factors were calculated and added to the data file.

Data collection tools and technique

The questionnaire and the indicators were primarily adapted from the NDHS¹³ and FP2020 survey instruments.¹⁷ The questionnaire was initially developed in English, then translated into Nepali language and pretested together with other survey tools in selected communities of Lalitpur District in Bagmati Province. The data collection took place from November to December 2019. Female enumerators aged between 20 and 25 years administered the semistructured questionnaire in face-to-face interviews. Once consent/assent was obtained, the interviews were carried out in the respondent's house, only between the interviewer and the respondent, in a private space preferred by the respondent (like a private room) using the CEntry (Census and Survey Entry) app in mobile Android devices. If eligible respondents were not available during the first visit, two further household visits were made to attempt to hold interviews. The questionnaire collected information on (1) sociodemographic

characteristics; (2) contraceptive knowledge, self-efficacy, barriers and practices; and (3) exposure to information about contraception.

Study variables

Outcome variable

The mCPR (current use of modern contraceptive methods) among women aged 15–24 years was defined as per the Demographic and Health Survey definition.^{13 21} Modern methods include male and female sterilisation, injectables (intramuscular), intrauterine contraceptive device (IUCD), contraceptive pills, implants, male condoms, lactational amenorrhoea and emergency contraception.¹³

$$\text{mCPR} = \frac{\text{\# of women 15–24 currently using modern contraceptives at the time of the survey}}{\text{Total \# of women 15–24}} \times 100$$

Predictor variables

Background characteristics

Background characteristics included age (in completed years), province, marital status, occupation, religion, sexual activity (never/ever had sex), education (where primary refers to completion of grades 1–5, some secondary grades 6–9 and school education examination (SEE) equivalent to grade 10) and caste/ethnicity (where the recoded categories of the caste variable from the NDHS²² were adapted for analysis into the following groups: Brahmin/Chhetri, Janajati, Dalit, Terai Caste, and others; Newar was included in the Janajati group).

Socioeconomic position

The ‘Nepal Equity Tool’ was used to generate this variable.²³ The tool has a series of questions about household items, dwelling materials and cooking fuel. Weights derived from the full wealth index found in the 2016 NDHS data set were attached to each answer to create a composite score. Thereafter quintiles were constructed according to the national thresholds.

Knowledge of modern contraceptive methods

Knowledge of modern contraceptive methods was measured using nine questions that prompted respondents’ knowledge on each of the available modern contraceptive methods: female sterilisation, male sterilisation, IUCD, injectables (intramuscular), implants, contraceptive pills, male condoms, emergency contraception and lactational amenorrhoea method. The respondents were further probed to verify their understanding of each method. Affirmative responses were scored 1 (yes) and 0 (no) otherwise. Responses from the nine questions were tallied to produce a composite score that ranged from 0 to 9, with higher scores indicating better knowledge of the methods. The final constructed scale had a Cronbach’s alpha²⁴ reliability coefficient of 0.79. The scores were then divided into three categories: low (0–3), medium (4–6) and high (7–9).

Self-efficacy for contraception

Self-efficacy is defined as the personal belief that one can successfully perform a specific action under specified

conditions.^{25 26} It was measured through four questions relating to women’s ability to access and use contraception: (1) I have easy access to contraceptives; (2) I can discuss contraceptive methods with my husband/partner or anyone if I want; (3) I can seek SRH/FP information if I need them; and (4) I can seek SRH/FP services if I need them. In question 2, discussion ‘with husband/partner’ was asked to those who ever had sex, while discussion ‘with anyone’ was asked to those who never had sex, and these were then combined during the analysis. The responses to these questions were measured on a 5-point Likert-type scale (1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree). Thus, the total composite score ranged from 4 to 20, with higher scores indicating better overall self-efficacy. The final constructed scale had a Cronbach’s alpha reliability coefficient of 0.67. The scores were then divided into three categories: low (4–10), medium (11–15) and high (16–20).

Barriers to contraceptive use

Barriers to contraceptive use were measured using 20 questions in four dimensions or subscales: (1) individual barriers (four items) included embarrassment/shyness, lack of awareness of adolescent-friendly health services, pressure to have child after marriage and fear of infertility due to use of contraceptives; (2) family/societal barriers (five items) included fear of parents, judgemental attitudes, disapproval of community gatekeepers, family pressure to have children/not to use a method and son preference; (3) service provider barriers (four items) included inadequate counselling, reluctance to provide contraceptive services, biasedness and cultural taboos; and (4) health facility location and service barriers (seven items) included poor physical access, cost of services and transport, lack of privacy, long waiting time, inconvenient opening hours, stockout of commodities, and lack of female providers. These barriers were identified through a human-centred design (problem-solving process that begins with understanding the human factors and context surrounding a challenge) workshop that was conducted with women aged 15–24 years from the study sites before the study was implemented.²⁷ Affirmative responses to these questions meant the barrier was present, which was scored 1 and 0 otherwise. Thus, the total composite score ranged from 0 to 20, with higher scores indicating the presence of more self-reported barriers. The final constructed scale had a Cronbach’s alpha reliability coefficient of 0.82. The scores were then divided into three categories: low (0–6), medium (7–13) and high (14–20).

Exposure to contraception messaging

Exposure to contraception messaging in mass media was measured based on whether respondents had seen, heard or read about contraception on the radio, television, newspaper/magazine, mobile phone (voice or text message), brochure or flip chart, poster/hoarding board/billboard, internet, and street drama in the past 3 months.

Exposure to contraception messaging from interpersonal sources was measured based on whether respondents had heard about contraception from mothers' group (primarily comprising women of reproductive age),²⁸ teachers, government female community health volunteers²⁸ and OK female community health volunteers (PSI volunteers) in the past 3 months.

Data analysis

Univariate analysis was carried out by examining the frequency distribution (n/%) and mean (\pm SD) of the variables. OR with 95% CI was estimated using penalised logistic regression models to investigate the associations between predictor variables and mCPR. A penalised likelihood approach reduces bias when analysing the risk factor with low prevalence and/or when some of the cells formed by the outcome and categorical predictor variable have few/no observations.^{29 30} Wald test was used at each step of the analysis to obtain the overall p value for predictors. First, unadjusted bivariate models were developed. Predictors with p value <0.1 in the unadjusted analyses were included in the adjusted multivariable model. However, marital status and occupation, both with similar distribution of outcome, were excluded from the multivariable model because they predicted the mCPR almost completely, had large SE and confounded the relationship between mCPR and age. The final model was adjusted for age, caste/ethnicity, knowledge of modern contraceptive methods and barriers to contraceptive use. Multicollinearity was assessed using variance inflation factor.^{31 32} P<0.05 was considered statistically significant in the final adjusted model. Sampling weights were used to account for the cluster sampling design. Data were analysed using Stata SE V.15.1 using the 'svy' command for survey data analysis. It takes survey design characteristics into account and adjusts calculations accordingly.

Participant and public involvement

Participants or the public were not involved in the design, or conduct, or reporting or dissemination plans of this study.

RESULTS

A total of 2784 households were listed, of which 893 (32.1%) households had 1035 young women aged 15–24 years. Of the 685 young women selected for interview, 2 refused to participate in the study. In total, 683 out of 1035 (65.9%) young women, 1 in each selected household, were interviewed (figure 1).

Background characteristics

The characteristics of the respondents are presented in table 2. The mean age of the respondents was 19 (\pm 2.5) years. Both the mean age at first marriage and the mean age at first sex were 18 (\pm 2.1) years. Respondents were predominantly Hindu (90%), were SEE and above educated (66.4%), were unmarried (63.9%), were

students (54.4%), of Brahmin/Chhetri (45.1%) caste/ethnicity, from Lumbini Province (68.3%) and belonged to the highest wealth quintile (58.6%). Majority of the respondents had high level of knowledge of modern contraceptive methods (59.6%) and high level of self-efficacy for contraception (61.6%), while majority faced medium-level barriers to contraceptive use (54.6%). Majority of them never had sex (61.7%). In the past 3 months, 58.1% were exposed to information about contraception from mass media, while 56.6% were exposed to such information from interpersonal sources. Additional descriptive statistics on socioeconomic position, knowledge of modern contraceptive methods, self-efficacy for contraception, barriers to contraceptive use and exposure to information about contraception are provided in online supplemental tables 1, 2, 3, 4 and 5, respectively.

Contraceptive use

The prevalence of contraceptive use is presented in table 3. The overall prevalence of contraceptive use was 13.6% (95% CI 11.1 to 16.5). The mCPR was 11.9% (95% CI 9.5 to 14.8). Of those reporting using a modern method of contraception, injectables (37.9%) were the most widely used method, followed by male condom (35.9%) and implants (8.8%). Only 14.6% were using a long-term method (IUCD or implant). None of the respondents reported using sterilisation and lactational amenorrhoea methods. Majority (86.4%) of the respondents were currently not using any method of contraception. Additional descriptive statistics on contraceptive use by fertility preferences among married women are provided in online supplemental tables 6 and 7, respectively.

Predictors of modern contraceptive use

The mCPR by background characteristics and predictors of mCPR among women aged 15–24 years are presented in table 4. In the unadjusted analysis, age, marital status, caste/ethnicity, occupation, knowledge of modern contraceptive methods and barriers to contraceptive use were all significantly associated with use of modern contraceptive methods (p<0.1). The odds of using modern contraception were higher among women of older age group, were married, belonging to Janajati caste/ethnicity, engaged in occupation as housewife and others, and had medium and high level of knowledge of modern contraceptive methods. The odds were lower among women facing high level of barriers to contraceptive use.

In the adjusted analysis, the variables age and barriers to contraceptive use were significantly associated (p<0.05) with use of modern contraceptive methods. The odds of using modern contraception were nearly five times higher among women of the 20–24 years age group compared with women of the 15–19 years age group (adjusted OR (AOR)=5.50, 95% CI 2.94 to 10.29). Likewise, women facing high level of barriers to contraceptive use were less likely to use modern contraception than those facing low level of barriers (AOR=0.36, 95% CI 0.14 to 0.98). The variable caste/ethnicity overall was not associated

Table 2 Characteristics of the respondents (N=683)

Characteristics	Weighted		Unweighted
	n	%	n
Sociodemographic factors			
Age (years)			
15–19	343	50.2	352
20–24	340	49.8	331
Mean age (\pm SD)	19.4 (\pm 2.5)		
Province			
Lumbini	466	68.3	492
Sudurpaschim	217	31.7	191
Marital status			
Unmarried	436	63.9	446
Married	247	36.1	237
Mean age at first marriage, years (\pm SD)	18.4 (\pm 2.1)		
Caste/ethnicity			
Brahmin/Chhetri	308	45.1	302
Janajati	201	29.5	201
Dalit	68	9.9	68
Terai Caste	61	8.9	66
Others	45	6.6	46
Religion			
Hindu	615	90.0	612
Muslim	39	5.7	41
Others	29	4.3	30
Education			
No education	22	3.2	21
Primary (1–5)	29	4.2	30
Some secondary (6–9)	179	26.2	176
SEE and above	453	66.4	456
Occupation			
Student	372	54.4	378
Housewife	229	33.6	217
Others	82	12.0	88
Socioeconomic level			
Lowest	0	0	0
Second	4	0.5	3
Middle	43	6.3	45
Fourth	236	34.6	233
Highest	400	58.6	402
Contraceptive knowledge, self-efficacy, barriers and practices			
Knowledge of modern contraceptive methods			
Low (1–2)	77	11.3	86
Medium (4–6)	199	29.1	196
High (7–9)	407	59.6	401
Self-efficacy for contraception			
Low (4–10)	29	4.3	33

Continued

Table 2 Continued

Characteristics	Weighted		Unweighted
	n	%	n
Medium (11–15)	233	34.1	235
High (16–20)	421	61.6	415
Barriers to contraceptive use			
Low (0–6)	161	23.6	151
Medium (7–13)	373	54.6	375
High (14–20)	149	21.8	157
Sexual activity			
Never had sex	421	61.7	429
Ever had sex	262	38.3	254
Mean age at first sex, years (\pm SD)	18.4 (\pm 2.1)		
Exposure to information about contraception			
Mass media			
No	286	41.9	262
Yes	397	58.1	421
Interpersonal sources			
No	296	43.4	282
Yes	387	56.6	401

SEE, school education examination.

with contraceptive use. However, within the levels of caste/ethnicity, Janajati women were around two times significantly more likely to use modern contraception compared with Brahmin/Chhetri women (AOR=2.08, 95% CI 1.16 to 3.71). Unlike the unadjusted bivariate analysis, knowledge of modern contraceptive methods

was not significantly associated with modern contraceptive use in the adjusted multivariable analysis (table 4).

DISCUSSION

Using the AYP evaluation baseline survey data, this paper investigated the mCPR and its predictors among young women aged 15–24 years. The mCPR found in this study (13.6%) was comparable with women of similar reproductive age group (15–24 years) in Nepal (10.4% in 2016) but lower than in women aged 15–49 years (33.2%).¹³ Compared with the national average, the method mix was also similar, with injectables as the most used method, followed by male condom.¹³ In low-income and middle-income countries, adolescent (15–19 years) women generally lag behind older women in contraceptive use.³³ The results from this subnational study were no different. Among countries in South Asia, Bangladesh however has higher mCPR among married women aged 15–24 years and pills are a popular method of choice.³⁴ In Nepal, to achieve further improvements in mCPR, it is imperative to target young women who, for several reasons, are vulnerable physically as well as socially.

The study sites were mostly periurban areas in the terai (or plains) ecological zone of Nepal. Although it constitutes only 23% of the total land, 50% of the population live in terai and are generally considered to have better geographical accessibility to services compared with mountain and hill areas.³⁵ Most women in the study sample were relatively highly educated or continuing

Table 3 Prevalence of contraceptive use (N=683)

Characteristics	% (95% CI)
Any method	13.6 (11.1 to 16.5)
Any modern method*	11.9 (9.5 to 14.8)
Any traditional method†	1.7 (0.9 to 2.9)
Not currently using	86.4 (83.5 to 88.9)
Modern method mix (n=81)	
Injectables	37.9 (27.2 to 49.9)
Male condom	35.9 (25.6 to 47.7)
Implants	8.8 (3.8 to 19.2)
Pill	6.7 (2.6 to 16.2)
IUCD	5.8 (1.9 to 16.1)
Emergency contraceptive pill	4.9 (1.8 to 12.5)

*Modern methods reported included injectables (intramuscular), IUCD, contraceptive pill, implants, male condom and emergency contraceptive pill.

†Traditional method reported included withdrawal only. IUCD, intrauterine contraceptive device.

Table 4 Predictors of modern contraceptive use among women aged 15–24 years (N=683)

Characteristics	n	Prevalence, n (%)	Unadjusted		Adjusted		
			OR (95% CI)	P value	OR (95% CI)	P value	P value*
Sociodemographic factors							
Age (years)							
15–19	343	13 (3.8)	1.0		1.0		
20–24	340	68 (20.1)	6.45 (3.44 to 12.09)	<0.001	5.50 (2.94 to 10.29)	<0.001	<0.001
Province							
Lumbini	466	50 (10.7)	1.0				
Sudurpaschim	217	31 (14.6)	1.43 (0.84 to 2.44)	0.184			
Marital status							
Unmarried	436	5 (1.3)	1.0				
Married	247	76 (30.7)	32.58 (13.66 to 77.71)	<0.001			
Caste/ethnicity							
Brahmin/Chhetri	308	30 (9.7)	1.0		1.0		
Janajati	201	31 (15.6)	1.72 (0.96 to 3.05)	0.066	2.08 (1.16 to 3.71)	0.013	
Dalit	68	11 (16.7)	1.86 (0.83 to 4.16)	0.133	1.76 (0.80 to 3.89)	0.159	
Terai Caste	61	3 (5.1)	0.49 (0.14 to 1.71)	0.265	0.85 (0.24 to 3.08)	0.809	
Others	45	6 (12.2)	1.29 (0.49 to 3.38)	0.604	2.65 (0.94 to 7.51)	0.066	0.069
Religion							
Hindu	615	74 (12.1)	1.0				
Muslim	39	5 (14)	1.18 (0.47 to 2.97)	0.723			
Others	29	2 (5.6)	0.43 (0.10 to 1.89)	0.267			
Education							
No education	22	2 (11)	1.0				
Primary (1–5)	29	8 (27.4)	3.05 (0.69 to 13.55)	0.143			
Some secondary (6–9)	179	24 (13.6)	1.27 (0.34 to 4.82)	0.720			
SEE and above	453	47 (10.3)	0.93 (0.26 to 3.35)	0.909			
Occupation							
Student	372	7 (1.8)	1.0				
Housewife	229	67 (29.2)	22.29 (9.69 to 51.30)	<0.001			
Others	82	7 (9.2)	5.44 (1.86 to 15.88)	0.002			
Socioeconomic level							
Lowest + second + middle	47	7 (15.5)	1.0				
Fourth	236	36 (15.2)	0.98 (0.39 to 2.46)	0.960			
Highest	400	38 (9.6)	0.58 (0.23 to 1.43)	0.234			
Contraceptive knowledge, self-efficacy and barriers							
Knowledge of modern contraceptive methods							
Low (1–2)	77	2 (3.1)	1.0		1.0		
Medium (4–6)	199	18 (8.8)	2.98 (0.84 to 10.56)	0.091	1.73 (0.47 to 6.41)	0.414	
High (7–9)	407	61 (15.1)	5.50 (1.66 to 18.18)	0.005	2.33 (0.65 to 8.29)	0.193	0.318
Self-efficacy for contraception							
Low (4–10)	29	2 (5.2)	1.0				
Medium (11–15)	233	20 (8.8)	1.75 (0.38 to 7.98)	0.470			
High (16–20)	421	59 (14.1)	3.00 (0.69 to 12.96)	0.142			

Continued

Table 4 Continued

Characteristics	n	Prevalence, n (%)	Unadjusted		Adjusted		
			OR (95% CI)	P value	OR (95% CI)	P value	P value*
Barriers to contraceptive use							
Low (0–6)	161	19 (11.8)	1.0		1.0		
Medium (7–13)	373	57 (15.2)	1.33 (0.71 to 2.49)	0.366	1.58 (0.86 to 2.91)	0.141	
High (14–20)	149	5 (3.7)	0.29 (0.11 to 0.78)	0.015	0.36 (0.14 to 0.98)	0.046	0.004
Exposure to information about contraception							
Mass media							
No	286	30 (10.7)	1.0				
Yes	397	51 (12.8)	1.21 (0.73 to 2.03)	0.458			
Interpersonal sources							
No	296	40 (13.5)	1.0				
Yes	387	41 (10.7)	0.77 (0.47 to 1.26)	0.295			

*Wald test.

SEE, school education examination.

their education and economically better off compared with the rest of the women of the same age in Nepal.³⁶ They had high knowledge, self-efficacy and exposure to information about contraception. As such it can be expected that they will have relatively better awareness of their own health and the factors that can affect their health. Also, with higher education and wealth, modern contraceptive use does not necessarily increase, but the age-specific fertility rate decreases in these age groups.³⁶

A large proportion of women in this study never had sex (61.7%) and were currently not using any form of contraception (86.4%). Among unmarried women, 96.4% never had sex (results not shown). In Nepal, premarital sexual activity remains a taboo. It is largely not reported among unmarried women, particularly adolescents and youth. In 2016, less than 1% of never married women aged 15–24 years reported ever having sex in Nepal.³⁶ Even if young women have not had sex and do not have an immediate need for contraception, it is important they have the knowledge and self-efficacy for modern contraception use and are empowered enough to make their choices when needed. Most of the women in this study had medium to high level of knowledge and self-efficacy. However, self-efficacy was not associated with contraceptive use. Previous studies reported an association between higher self-efficacy and greater contraceptive use among sexually active women,^{37–39} while the same may not be true for knowledge, as evidenced by national¹³ as well as subnational studies in Nepal,^{40 41} where despite higher knowledge contraceptive use was low. Nevertheless, the results are contextual and sociodemographic characteristics and cultural factors should be considered during interpretation.

Women who use modern contraceptives were more likely to be married and of higher (20–24 years) age group. While the latter result is similar to other studies

in developing countries, unlike the current results they report contraceptive use to be much higher among unmarried sexually active adolescent girls than among married or in union adolescent girls.^{42 43} Among married adolescents, contraceptive use is reported to be lower as a result of social norms regarding marriage, fertility expectations and other cultural barriers.⁴⁴ In our sample, the mean age at first sex and the mean age at first marriage were the same. These results could lead to an assumption that as women become older they marry, and once married both sexual activity and contraception use are more likely to be reported. However, due to social desirability bias, premarital sexual activity could have been under-reported. This could have led to an underestimation of the mCPR in this study.

In Nepal, the median age at first marriage is 17.9 years and at first birth is 20.4 years among women aged 25–49 and nearly 17% of women aged 15–19 would have begun childbearing.¹³ Most births take place within marriage and those married are traditionally more exposed to the risk of childbearing. In this study, the mCPR among married women aged 15–24 years was 30.7%. Among all women, the use of traditional method was also low (1.7%). Married young women are under pressure to prove fertility and they may be planning for a child and not using contraception.⁴⁵ Nearly 16% of non-pregnant married women in this study wanted to have children within 2 years (online supplemental table 6). However, 58.1% of married women who wanted to delay the birth of the next child for 2 or more years were not using any modern contraception (online supplemental table 7). These women may have the need for contraception use but may be facing barriers in doing so, an important consideration for adolescent and youth programming.

Additionally, in Nepal, a large proportion of male population are migrants working abroad typically in low-skilled



work in Middle Eastern countries and Malaysia.⁴⁶ Husbands being away followed by side effects/health concerns are the major reasons for discontinuation of contraception among married women of reproductive age (15–49 years) (MWRA) who discontinued any method.¹³ Postpartum FP counselling is also low (13.3% in MWRA and 12.2% in the 15–24 years age group) among women who have had a live birth.¹³ Additionally, safe abortion services have been rapidly scaled up since its legalisation in 2002,⁴⁷ and recent trends show that increasingly higher proportion of women use medical abortion services to terminate pregnancy.⁴⁸ Male migration, leading to spousal separation, followed by changing marriage pattern, abortion and contraception are the major factors associated with decline in fertility in Nepal.⁴⁹ Furthermore, the use of traditional methods is increasing among MWRA,¹³ and evidence suggests that it might even be under-reported in NDHS among women aged 15–39 years.⁵⁰

Most women in this study belonged to relatively advantaged caste/ethnic groups, including Brahmin/Chhetri and Janajati, when compared with Dalit, Terai Caste and other caste/ethnic groups. Janajati women were significantly more likely to use modern contraception compared with Brahmin/Chhetri women. Migration of male members of the household and the resulting spousal separation are higher among Brahmin/Chhetri, which might be reasons.⁵¹ Even at the national level, between 2011 and 2016, increase in the use of modern contraceptives among MWRA was found to be statistically significant only among Janajati, while a decline in use of modern contraceptives was reported among the rich and advantaged caste/ethnic groups, such as the Brahmin/Chhetri and Newar, whose education level is generally high.⁵¹

Women facing high level of barriers to contraceptive use were significantly less likely to use modern contraceptives compared with those facing low level of barriers. Providing knowledge, improving self-efficacy and making services available will not matter as long as barriers that prevent women from accessing modern contraceptive services exist. Barriers at the individual, family/society, service provider and health facility level should be addressed to improve use of modern contraceptives. Previous studies have highlighted culturally rooted stigma, embarrassment of discussing SRH issues and fear of getting recognised as key individual barriers to use of service.⁵² Additionally at the family/societal level, family members and teachers fail to discuss sexual health issues and contraception particularly with unmarried adolescents due to restrictive cultural norms around sexuality and fear of promoting premarital sex.⁴⁵ Service providers' judgemental attitude and reluctance to provide services, including perceived discomfort among adolescents, particularly unmarried ones, to ask for services from providers of opposite gender, are important barriers at the provider level.^{52 53} Likewise, health facility location, service hours and distance are additional barriers at the health facility level.¹⁶

This study has several implications. First, since sexual activity and thereby contraceptive use is reported mostly by married women, programmes that target young women (both married and unmarried) to improve modern contraceptive use may not be expected to increase the mCPR as an outcome because marriage among women of the young age group is low.³⁶ However, sexual activity might be under-reported and hence programmes should continue reaching all women, particularly adolescent unmarried women, to improve their contraception knowledge and self-efficacy. As such, improvements in the mCPR among young women in need (married women who want to delay the next birth and unmarried sexually active) and improvements in knowledge and self-efficacy among all women are better indicators or outcomes, which capture both their use and ability to get and/or negotiate contraception when they need to.

Second, despite knowledge and self-efficacy, women may still not be able to access contraception due to the presence of barriers at different levels in their life. Thus, behaviour change activities should be targeted not only at young women but also at key influencers, including family members, community gatekeepers and providers. This, coupled with interventions to make health facilities adolescent-friendly, will help reduce barriers to contraceptive uptake, creating an enabling environment for young women both in the community and health facilities. In Nepal, inequality between adolescents and adult women between 2006 and 2016 for modern contraceptive use has decreased, for which the adolescent-friendly health services launched in 2008 with further scaling up of FP2020 from 2015 are thought to be the reasons.³³ Third, it is critical to investigate the reasons for higher contraceptive use among Janajati women, and on the other hand the reasons for low use among young married and sexually active women. The findings could be critical to improve modern contraceptive use among young women in the study sites. Finally, although the sample and the results were among women, the implication outlined above apply to both women and men. Without enhancement in contraception knowledge and self-efficacy among men, including positive behaviour change, enabling environment for contraception use among women cannot be realised.

Strengths and limitations

The study focused on young women aged 15–24 years, a population among which subnational studies on contraception use are lacking and is critical for improving modern contraceptive use in Nepal. The study used a cluster random sampling approach, standard data collection tools and analyses to increase the generalisability and comparability of the results with national surveys. However, there are some limitations which need to be considered while interpreting the results. During sampling, larger municipalities could have been under-represented due to the size of our PSU. Since the study sites were mostly periurban areas, relative to the wealth index of NDHS

2016, the sample did not include the poorer segments of the population and may be biased towards the richer, more educated and empowered women. Owing to the cross-sectional design, the associations between variables cannot be interpreted as causal.

CONCLUSION

In the selected municipalities of Western Nepal, the mCPR among young women aged 15–24 years was low but similar to the national level. Age, caste/ethnicity and barriers to contraceptive use were the key predictors of the mCPR in this population. The odds of contraceptive use were significantly higher among women aged 20–24 years and of Janajati ethnicity, while the odds were lower among women who faced high level of barriers (individual, family/societal, service provider and health facility barriers) to contraceptive use. SRH programmes aiming to improve the mCPR in this population of young women should consider the reported level of sexual activity. Although self-efficacy did not predict contraceptive use, reaching women to improve their knowledge and self-efficacy for contraception may still be critical to ensure they can access modern contraception when needed. The focus should be on reaching not just young women but also key influencers and service providers and making health facilities adolescent-friendly to reduce the barriers to contraceptive uptake and to realise self-efficacy.

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