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## CLINICAL ARTICLE

## Association between having no sons and using no contraception among a nationally representative sample of young wives in Nepal

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## ABSTRACT

**Objective:** To examine whether a lack of sons predicts non-use of contraception among young wives in Nepal. **Methods:** Data were obtained from married females aged 15–24 years who participated in the Nepal 2011 Demographic and Health Survey (n = 2439). Multivariate models were used to test predictions of modern contraception use with the following variables: having no sons, social inequities (wealth, education, rural residence, and caste), gender inequities (early age at marriage, spousal age, and education gaps), respondent age, parity, and geographic region. **Results:** Most wives (79%) reported using no modern contraception. Non-use was more likely among those with no living sons (adjusted odds ratio [AOR], 1.6; 95% confidence interval [CI], 1.2–2.2), and those who married as a minor (AOR, 1.4; 95% CI, 1.02–1.9) and/or resided in a rural area (AOR, 1.6; 95% CI, 1.3–2.5). Having no daughters was negatively associated with non-use of contraception (AOR, 0.7; 95% CI, 0.5–0.9). **Conclusion:** Contraception use is not common among young wives in Nepal. It is, however, more likely among wives with sons and less likely among wives with daughters, demonstrating that son preference continues to affect contraception use among the next generation of mothers in Nepal.

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## 1. Introduction

Nepal is on target to achieve Millennium Development Goal 4 (MDG4), a reduction in child mortality by two-thirds from 1991 to 2015, and MDG5a, a reduction in maternal mortality by three-quarters from 1991 to 2015 [1]. Such reductions have been, in part, attributed to a decline in fertility: the total fertility rate in Nepal dropped from 4.1 in 2001 to 2.6 in 2011 [2]. However, the rate at which the total fertility rate is falling has diminished in the past 5 years, which may be due to inadequate improvements in contraceptive use in Nepal: the prevalence of contraceptive use among women of childbearing age remained at 33%–35% from mid-2000 to 2011 despite increased public health access to contraception in this time frame [3].

For young wives in Nepal, contraception use is even less likely, being reported by only 24% of wives ages 20–24 years and by only 14% of wives ages 15–19 years in 2011 [3]. Improved contraception use among young wives is key to achieving MDG4 and MDG5a, because both younger age at childbirth and non-use of contraception

are associated with an increased risk of maternal and infant or child mortality [3–9].

Social inequities are known to play a major role in inhibiting contraceptive use across world regions, particularly for adolescent and young adult wives [3,9–12]. Among young wives in Nepal, non-use of contraception is more likely among those who reside in rural areas and are impoverished, poorly educated, and of lower caste, as compared with those not living with these social inequities [2,13,14]. Such inequities compromise contraception knowledge and access; as a result, improved contraception education and access via public health family planning efforts have been a focus in Nepal [3,10].

In addition, increasing evidence indicates that gender inequities also affect contraception use among women [9,15,16]. Gender equity indicators include spousal age and education differentials favoring males [12,13,16], and early marriage of females (i.e., marriage as a minor [girl child marriage]) [3,17]. Gender inequities may also include son preference, whereby families who lack a son are more inclined to desire an additional child regardless of parity, whereas those who lack a daughter are not [13,14,18–20]. Such gender-related inequities, particularly son preference, are less likely to be addressed by interventions solely focused on improving contraceptive knowledge and access, but require social–structural solutions to increase the status of women and girls as a means of improving their reproductive health [15,21].

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The aim of the present study was to determine whether there is an association between having no sons and non-use of contraception among young married women in Nepal after accounting for social and gender inequities and parity [3,13,14,18–20]. Findings from the study may inform family planning programs and policies in the country to support additional health improvements required to achieve MDG4 and MDG5a.

## 2. Materials and methods

The present study involved analysis of data from the 2011 Nepal Demographic and Health Survey (DHS) [3]. The DHS is a population-based survey that is conducted in low-to-middle income countries to track reproductive health, maternal and child nutrition, child survival, and other important demographic and health indicators. The 2011 Nepal DHS was undertaken between January 1 and June 30, 2011, and was implemented by New ERA with oversight from the Nepal Ministry of Health and Population and technical assistance from ICF International. DHS procedures were reviewed and approved by the Nepal Health Research Council and the institutional review board (IRB) of ICF International in the United States. Informed consent from participants was obtained orally by New ERA prior to all interviews. The present analyses were reviewed and approved by the IRB of the University of California, San Diego, CA, USA.

The 2011 Nepal DHS was based on a stratified, 2-stage, nationally representative sample of 11 353 households. In the selected households, 12 918 women were identified as eligible for interview on the basis of being aged 15–49 years and residing in or spending the previous night in the household. Of these women, 12 674 women completed interviews (98% participation rate). Details of the survey design and data collection procedures are published elsewhere [3]. The present analyses were restricted to women who were currently married and aged 15–24 years ( $n = 2439$ ).

The primary independent variable was having no living sons, which was determined via items assessing the sex and mortality of each birth reported by the respondent. Covariates focused on social and gender inequity indicators. Social equity indicators included wealth quintile, education level (none, primary, and secondary or higher), urban or rural residence, and Dalit caste. All but caste are standardized DHS variables [3,22]. Gender inequity indicators included early age at marriage (<18 years at marriage vs  $\geq 18$  years at marriage), spousal age gap (husband  $\geq 10$  years older than wife vs husband <10 years older than wife), and spousal education gap (husband has more, equal, or fewer years of education than wife). These gender inequity indicators have been identified and used in previous studies of DHS data in Nepal and India [13,14,17]. Additional covariates deemed relevant to contraceptive use included respondent age, parity, geographic region, ecologic zone, and religion (Table 1).

The dependent variable—current modern contraceptive use—was dichotomized based on a yes or no response to a single question about current use of a contraceptive method. Participants were defined as currently using modern contraception if they reported current use of the contraceptive pill, an intrauterine device, injectable contraceptives, male condom, implants, female sterilization, or male sterilization. Respondents reporting periodic abstinence, withdrawal, or no contraception were considered non-users of modern contraceptives. Those reporting contraception use were also asked where they had obtained their reported method; these data were included in the present analyses only for descriptive purposes. Responses were classified as a government source (government hospitals, primary health centers, mobile outreach, and community health workers), non-governmental organization, private medical source (private clinics and pharmacies), or other source (shops and friends or relatives).

Associations between equity indicators and contraceptive use were examined by using bivariate and multivariate logistic regression. For multivariate analyses, 2 logistic regressions were constructed: a full

**Table 1**  
Contraception use among currently married Nepalese women aged 15–24 years.

	No. of women	Weighted percentage (95% CI)
Contraception use ( $n = 2439$ )		
Any modern spacing method	486	17.8 (15.7–20.0)
Female sterilization	40	2.5 (1.5–3.5)
Male sterilization	18	0.6 (0.1–1.0)
No modern method	1895	9.1 (76.9–81.4)
Type of spacing method used ( $n = 486$ )		
Pill	87	19.5 (15.2–23.7)
IUD	21	4.7 (1.8–7.6)
Injection	192	41.3 (35.3–47.4)
Condom	170	31.6 (26.5–36.7)
Implant	17	3.0 (1.0–5.1)
Source of contraceptive method ( $n = 544$ ) (N = 544)		
Government	288	55.8 (50.9–60.8)
NGO	29	4.7 (2.6–6.8)
Private medical source	213	37.2 (32.3–42.1)
Other	14	2.3 (0.8–3.7)

Abbreviations: IUD, intrauterine device; NGO, non-governmental organization.

model, including all variables presented in the bivariate analyses; and a reduced model, including all variables that had a  $P$  value of less than 0.05 in the bivariate analyses. The full model was a better fit for the data on the basis of a likelihood ratio test ( $P < 0.0001$ ), and is therefore the only multivariate model presented. Collinearity was assessed for all variables before construction of the final multivariate model; no tolerance levels were below 0.40. All analyses were conducted via SAS version 9.2 (SAS Institute, Cary, NC, USA) and adjusted for the complex survey design.

## 3. Results

Most study participants (79.1%) reported no current modern contraception use (Table 1). Among participants reporting modern contraceptive use, the most frequent method was spacing contraception (contraception used to delay rather than limit pregnancies) (17.8%); a small proportion reported sterilization (3.1%). Among users of spacing contraception, the primary method of choice was injections (41.3%), followed by condoms (30.0%) and the pill (19.5%). More than half of all contraception users obtained their contraception from a government source (55.8%); 37.2% obtained contraception from a private medical source.

Multivariate analysis indicated that non-use of contraception was significantly more likely among participants who reported no living sons (AOR, 1.6; 95% CI, 1.2–2.2). Significant covariates included rural residence (AOR, 1.8; 95% CI, 1.3–2.5), early age at marriage (AOR, 1.4; 95% CI, 1.02–1.9), and lower parity (0 vs  $\geq 3$  children: AOR, 8.6; 95% CI, 4.7–15.8; 1 vs  $\geq 3$  children: AOR, 2.8; 95% CI, 1.7–4.5).

Two post-hoc analyses were conducted to further explore the no living sons variable. In the first model, the no son predictor variable in the multivariate model was replaced with a categorical variable representing living children as son only, daughter only, son and daughter, or no children. All other variables in the model remained the same as those presented in Table 2. Overall, 33.7% of respondents had no children, 27.3% had only sons, 24.7% had only daughters, and 14.3% had children of both sexes. The adjusted model revealed that, as compared with having only a son or sons, having only a daughter or daughters (i.e., no sons) significantly increased the likelihood of not using modern contraception (AOR, 1.7; 95% CI, 1.2–2.3). In the second model, the sex of children variable in the multivariate model was replaced with a variable that assessed having no daughters versus having a daughter or daughters. Again, all other variables in the model remained the same. In this model, women with no daughters were more likely to use contraception (i.e., less likely to report non-use; AOR, 0.7; 95% CI, 0.5–0.9).

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