A Quiet Revolution in Condom Use in Urban India

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Abstract

Global condom use for pregnancy avoidance tends to be low, estimated at 6% as reported by reproductive-aged females in unions. Condom prevalence in urban India rose from 5.8% to 10% between 1993 and 2005. We analyze factors behind trends in urban condom use among non-sterilized married women using three National Family and Health Survey rounds. Relative risk ratios from multinomial regressions show that, compared to non-use, a woman's condom use is significantly associated with residing in the northern, central, and western regions, high parity, high education, desire to space as well as limit births, and awareness of condom's benefits for HIV prevention. Between 1998 and 2005 the strength of associations, although statistically significant, declined across covariates except for region and child spacing preference. This is consistent with the spread of condom use. Anomalies in condom reliance among limiters and high-parity women suggest an environment of constrained method choice.

Background

Estimates of global condom use to prevent pregnancies tend to be low at approximately 6%, as reported by married women of reproductive age. There is considerable variation with prevalence levels as high as 41% in Japan and well in excess 20% in at least 12 other industrialize countries. Only in two Sub-Saharan Africa countries, Botswana and Swaziland, do levels of use exceed 15%, and both countries are challenged by high HIV prevalence. Factors that contribute to low levels of condom use include inconsistent use that reduces its efficacy compared to other non-permanent methods, and reporting bias by married women who are less likely to mention them compared to men. With an increase in social marketing and HIV prevention programs and communication campaigns relaying information about condom's dual protection benefit, however, the use of condoms is rising in many developing countries. In India, the prevalence of condoms among urban married women has grown from 5.8 in 1992/93 to 9.8% in 2005/06 or by 70% over a twelve year period. Over a similar period, condom prevalence has risen in several countries and is higher in Vietnam, Turkey and Pakistan than India (Figure 1).

This article examines this growing trend in condom use among urban married women in India. First we provide an overview of the history of condoms in India. Then we estimate multivariate regression models to assess the strength and direction of associations between socio-economic and demographic factors and condom use, and observe how these patterns of association have varied over time. Finally we discuss several developments that may have contributed to this rise in condom use.

History of Condoms in India

The government of India established the first national family planning program in the world in 1952. At this time, condoms were privately manufactured and sold commercially at high prices, thus only available to wealthier individuals. The sale of condoms was estimated to be 7 million annually in the 1970s. Through funding from USAID, SIDA, and the Ford Foundation, the Indian government imported 400 million condoms in 1968 that were primarily distributed through health service delivery outlets[1]. Public sector condoms appeared on the market in the late 1960s when Hindustan Latex Corporation in Kerala was established to manufacture the Nirodh condom[2]. The Indian government started distributing condoms free of cost through family planning clinics and community workers, and at subsidized prices through community-based distributors and post offices under the depot holder scheme. In order to further improve access to condoms, the Government launched the Nirodh Marketing Program in 1968. The program established partnerships with six of the largest commercial companies to sell condoms at subsidized prices through their retailers of consumer durable goods. Condoms at this time were available at three different prices linked to three different distribution channels. In March 1972, the estimated monthly average use of condoms was up to 7 million pieces through the Nirodh Marketing Program (Jain, 1973).

Over the next decade however, the government shifted its attention, and adopted a targeted approach to family planning, focusing specifically on vasectomies and

[1] http://indiatoday.intoday.in/site/Story/2723/Cover%20Story/Under+control.html; Accessed on 25 February, 2011
[2] http://www.zimbio.com/Govt+Jobs+in+india/articles/e-wW_dpn4Hz/HINDUSTAN+LATEX+LIMITED+HLL; Accessed on 25 February, 2011

tubectomies, which by human rights advocates was criticized as coercive. Couple's knowledge of reversible contraceptive methods was limited demonstrating the need for IEC activities around non-permanent methods of contraception (Basu, 1994). Amidst a growing climate of distrust towards the government's incentivized family planning program, in 1991 the KamaSutra brand condom was introduced and the brand advertised their product with erotic images of Bollywood actors, linking condoms to pleasure for the first time (O'Barr, 2008). Within the next decade, the market was flooded with a wide range of international and domestically manufactured condom brands. The more condom manufacturers meant more competition, and with this competition condoms were kept at relatively low prices and diverse social marketing campaigns ensued.

At about the same time concerns about an HIV/AIDS epidemic in India grew. By the early 1990s HIV infections were recorded in every state of India. The National AIDS Control Organization (NACO) was established in 1992 to manage and oversee policy and program efforts associated with the prevention and treatment of HIV and AIDS. During its second phase (1999-2006), NACO focused its efforts on targeted interventions with high-risk groups, and behavioral change campaigns to increase awareness of HIV and AIDS, promote safe behaviors, and increase condom use[3]. NACO reported that over 1.6 billion condoms were distributed throughout India during this period[4]. Aggressive HIV and AIDS prevention campaigns developed focusing on the benefits of condoms in HIV prevention. The government campaign called (funded

[3] http://www.nacoonline.org/About_NACO/; Accessed on February 23, 2011.
[4] http://www.nacoonline.org/upload/NACO_04/Achievements%20of%20NACP-II.pdf, Accessed on February 23, 2001.

by USAID) “Condom, Bindas Bol!” (Condom-Just say it!), aimed at tackling social taboos around condoms that inhibits individuals from buying them in North India[5]. Numerous other campaigns have been developed and aired to increase condom use including the condom ring tone developed by the BBC World Service Trust[6], and “Yahi Hai Sahi” (This is the Right Choice) developed by ICICI Bank in partnership with three of the largest private condom manufacturers in India – JK Ansell Limited, Hindustan Latex Limited (HLL) and TTK-LIG Limited[7]. Between early government endorsement, local manufacturing and commercial and social marketing of condoms, the method’s accessibility has expanded substantially over time. Beyond increasingly favorable supply conditions, however, there would need to be growth in consumer demand to explain the rise in reported use of condoms by married women for pregnancy avoidance.

Determinants of Condom Use

Research is limited on the factors that lead urban married women to use condoms. Using the National Family Health Survey – III, researchers of one study found that among ever-married women in India, the odds of reported condom use at last sexual intercourse was 1.24 times greater among urban residents compared to rural residents, and women of secondary education and above were 4.44 times more likely than illiterate women to use condoms at last sex (Sogarwa, 2009). In Pakistan, an aggressive social marketing campaign to increase condom use in urban areas

[5] http://www.comminit.com/en/node/273554/cchangepicks, Accessed on February 23, 2011.
[6] http://www.condomcondom.org/phase-one-videos.php; Accessed on February 25, 2010
[7] http://shopsproject.org/resource-center/yahi-hai-sahi-growing-condom-market-north-india-through-private-sector; Accessed on February 25, 2010

increased male perceived availability of condoms, discussion and approval of family planning, and ever, current and consistent condom use with wife (Agha, 2010). Authors of a study in Vietnam report that an increase in condom use is underway and occurring primarily among urban women and the highly educated (Goodkind, 1997). The authors offered several reasons for this phenomena including: (1) government's discouraged use of supply-based methods other than IUDs; (2) an increase in condoms themselves through the private sector and aggressive social marketing; (3) compatibility of condoms with traditional methods where users rely on both methods simultaneously or switch frequently between them; (4) rise of extramarital and premarital sex; and (5) cultural factors related to Confucianism.

In our study, we hypothesize that condom use reported by married women will be significantly associated with socioeconomic factors (level of education, wealth quintile), cultural factors (religion, region, number of living sons), demographic factors (age and number of living children) and motivational factors (fertility preferences and awareness of condoms for HIV prevention). We also hypothesize the associations will be stronger in 2005 compared to 1998.

Methods

Data

Three National Family Health Surveys (NFHS) were conducted in 1993, 1998, and 2005 in India. These cross sectional surveys are representative at the national and state

levels, and were implemented in all states[8] of India by the International Institute for Population Sciences and Macro International. The NFHS is equivalent to the Demographic and Health Survey (DHS) that is conducted in over 80 developing countries and estimates population rates of fertility and infant and child mortality and measures maternal and child health, HIV risk, intimate partner violence, and other health outcomes.

Sample

A stratified, multistage sampling strategy was employed in the three NFHS surveys. In each state, a two-stage and a three-stage sampling procedures were used in rural areas and in urban areas, respectively. In rural areas villages comprised the Primary Sampling Units (PSU) and were selected proportional to population size (PPS), followed by a random selection of households within each PSU (IIPS, 1995; IIPS, 2000; IIPS, 2007). In urban areas, wards were selected first with PPS sampling, followed by a random selection of one census enumeration block (CEB) from each sampled ward, and finally households were randomly selected within each CEB. The total number of urban PSUs sampled was 1181 urban in 1993 (IIPS, 1995), 1021[9] in 1998 (IIPS,2000), and 1649 in 2005 (IIPS,2000).

The 1993 NFHS surveyed 27,534 ever-married urban women 13-49 years old with a response rate of 96.1 percent. The data collection was conducted in three phases from April 1992 to September 1993 (IIPS, 1995). The 1998 NFHS interviewed 27,862 ever-

[8] Over time the number of states in India has increased from 24 in 1993 to 26 in 1998 to 29 states in 2005.

[9] While the final published report excludes data from Tripura because of local problems in the state, these are included in the present analysis.

married urban women 15-49 years old, with a response rate of 95.5 percent. The data collection was from November 1998 to December 1999 (IIPS, 2000). The 2005 NFHS identified 61,028 eligible urban women 15-49 years old and interviewed 56,961 women for a response rate of 93.3 percent. The field work was carried in two phases from November 2005 to August 2006 (IIPS, 2007).

Analytic samples

The present analysis is restricted to currently married women of reproductive age (15-49 years old) residing in urban areas only and includes 22,035 women, 22,141 women, and 28,604 women surveyed in 1993, 1998, and 2005, respectively. Tables 1 and 2 present weighted frequencies of respondents across social, economic and demographic characteristics for the three DHS survey years and as distributed by contraceptive method choice. For the multinomial logistic regression models, estimated only 1998 and 2005 data, the sample excluded women who reported at the time of interview that they or their male partners were sterilized, were infecund and those who did not report their fertility preferences. The final analytic sample for the regression analysis consisted of 13,030 (excluding 7971 sterilized, 402 male partners sterilized, and 738 infecund) in 1998, and 16,724 (excluding 1087 sterilized, 304 male partners sterilized, and 769 infecund) in 2005.

Outcome Measure

The key outcome measure for this study is contraceptive method choice. Respondents who reported using a contraceptive method were asked the name of the specific method. A four-category contraceptive choice variable was constructed with the

following categories: 1) not using a method; 2) female sterilization use; 3) condom use; and 4) other method use. "Other method use" included other modern methods (pill, IUD, injections, diaphragm, female condom and male sterilization), and natural methods (periodic abstinence and withdrawal), and folk methods (herbal preparations).

Covariates

Study covariates included woman's age, educational attainment, number of living children, wealth quintile, religion, and region. Age is classified into 5-year groups from 15 to 19, 20 to 24 through to 40 to 49 years. A four-category educational attainment variable was constructed from the total number of years of completed schooling as reported by the respondent: 0 years (no schooling); 1 to 5 (primary); 6 to 10 (secondary); and 11 or higher. A six-category region variable was constructed based on the state of respondent's residence.

A standardized wealth index was developed based on interviewer's observation of household items and goods, and household structure (Filmer et al., 2001). Respondents were ranked on their household score and divided into a five-category wealth quintile variable with equal numbers in each category. Since the wealth quintile is measured at a national level the majority of the sample in this study falls in the top three quintiles. Comparisons on this variable across the three survey years are difficult because the types of assets used to develop the wealth quintiles changed. Items considered in the 1993 index include livestock and their shelter, consumer goods, source of drinking and non-drinking water, toilet facility type, cooking fuel type, lighting source and housing material. In 1998, main type of cooking utensils was added while non-drinking water

supply and livestock were removed. The items considered in the 2005 index consisted primarily of a broad array of consumer goods (e.g. mobile phone, computers), household structure (flooring, walls, and roofing), and house ownership.

The NFHS surveys ask respondents if they would like to have another child, and if so, the desired timing of their next birth from the date of the interview. A fertility preference variable was then constructed to classify respondents who want more children by whether they want the next child within two years or after two years. Sterilized women and women who want no more children are included as separate categories in addition to respondents who self-report as infecund because they cannot get pregnant. The respondent's knowledge of condoms in the prevention of HIV transmission is measured using a three-category variable: 1) does not know of the role of condoms in HIV prevention; 2) knows the role of condoms in HIV prevention; and 3) has not heard of HIV or AIDS. Because of the strong tradition for son preference in the country, a final covariate of interest was the total number of living sons, classified as none, one, and two or more.

Statistical Analysis

Contraceptive method choice was assessed by respondent background characteristics and the two motivation and knowledge covariates using Wald Chi-squared analysis and a 2-tailed significance level with a p-value <0.05. Bivariate analysis between respondent factors and method choice were performed on all married women, while multinomial logistic regression analyses were restricted to fecund, non-sterilized women. Relative risk ratios (RRRs) and 95% confidence intervals were obtained for

condom and other non-permanent method use as outcomes with no method use as the reference category. Reference categories for the other model covariates are age 15-19, no living children, no educational attainment, Hindu religion, southern region of residence, two or more living sons, desire for another child within two years and lack of knowledge that condoms can protect against HIV.

Multinomial regression models were run for 1998 and 2005 data. Models could not be run on 1993 because the 1993 questionnaire did not ask respondents about the role of condoms in HIV prevention. Relative risk ratios and standard errors are adjusted for survey sample design effect using the Taylor linearization approach. All analyses were conducted using STATA 9[10].

Results

Table 1 presents the weighted frequencies of the urban respondents' background characteristics for 1993, 1998, and 2005. Respondents were mainly between the ages of 20-39, had at least two living children, and had reached secondary education. Because the wealth index quintiles were categorized for a national distribution, the majority of the urban respondents fall into the highest two categories in all three survey years. The majority of respondents are Hindu and high proportions of them live in the southern and western regions of the country.

[10] StataCorp. 2005. *Stata Statistical Software: Release 9*. College Station, TX: StataCorp LP.

Condom use increased from 5.8% to 7.2% to 9.8% among urban married women across the three survey years. Figure 2 shows the diffusion of marital use of condoms by urban couples throughout the states of India over the twelve years. In 1993 higher condom use existed in northern India and by 1998 it spread into the central states and then further diffused to the west, several states in the east and Kerala in the south by 2005. Across all three surveys condom use is predominant in the northern Indian states as depicted by the spatial gradation in levels.

Table 2 shows contraceptive method choice by respondent background characteristics for 1993, 1998, and 2005 data. Women with one or two living children are more likely to use condoms than women with three, four or more children across all three surveys years. As women's education increased condom use also increased. In 2005 women with higher education levels were more likely to use condoms (24%) than female or male sterilization (19%). Women in the highest wealth quintile are more likely to use condoms than women of lower quintiles across all three surveys. Last, Sikhs and Jains are more likely to use condoms than women of other religious faiths.

The adjusted relative risk ratios and 95% confidence intervals for choosing condoms and other methods relative to no method use for social, economic and demographic covariates in 1998 and 2005 are presented in Table 3. In 2005 the relative risk of condom use compared to no method use was significant across all education levels relative to no education, all numbers of living children compared to no children, and all regions compared to the south. RRRs were significant among 30-34 year old women (1.69, 95% CI: 1.16-2.45) compared to 15-19 aged women, Jains (1.71, 95% CI: 1.05 -

2.78) relative to Hindus, and fourth (4.34, 95%CI: 1.91– 9.85) and highest (7.15, 95% CI: 3.18-16.17) wealth quintiles compared to the lowest wealth quintile. With respect to the desire to have another child after two years and the desire to have no more children relative to the desire to have a child within two years, the RRRs for condom use relative to no method use is 2.98 (95%CI: 2.38-3.75) and 2.37 (95%CI: 1.91-2.95), respectively. Among women who knew the role of condoms in HIV prevention compared to those who did not know, the 2005 adjusted relative risk of condom use relative to no use is 1.84 (95% CI: 1.60-2.11) times.

Data from 1998 show the relative risk of condom use relative to no contraceptive is greater across all 5-year age categories compared to 15-19 aged women compared to 2005. The RRRs of condom use compared to no method use for all numbers of living children compared to no children, all levels of education relative to no education, and all wealth quintiles compared to the lowest wealth quintile decreased from 1998 to 2005. These findings are in line with the dispersion of condom use across urban women over time.

In terms of geographic variations, compared to no method use, the relative risk of condom use increased and remained statistically significant in the North, Central, and West regions from 1998 to 2005. The RRR for condom use relative to no method use increased among those who want no more children and those who desire another child after two years compared to the desire to have a child within two years in 1998 and 2005, suggesting that women may be increasingly using condoms to limit their childbearing. Among women who know condoms role in HIV prevention compared to

those without this knowledge, the relative risk of using condoms compared to no method use is as strong in 1998 (1.76; 95% CI: 1.47-2.11) as it is in 2005 (1.84; 95% CI: 1.60– 2.11).

Multinomial logistic regression models were also estimated with “other methods” as the base outcome to observe if covariates associated with condom choice over no method differed. The strength of associations between number of living children and condom use versus no use and condom use versus other method use showed the most difference. The adjusted RRRs for greater number of living children (relative to few) lost statistical significance between 1998 and 2005 largely because of a spread of use of other non-permanent methods among women with 0 or 1 births by 2005.

Discussion

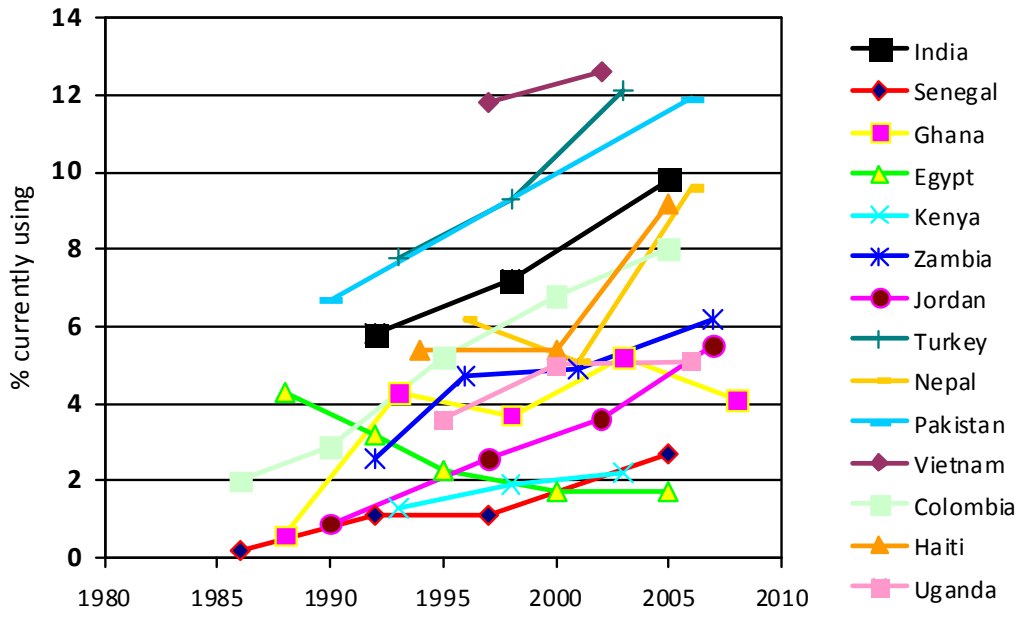
Condom use in urban India has risen steadily and quietly among couples as reported by married women of reproductive age, particularly those living in northern, central and western states, with fewer living children, with higher levels of education and in higher wealth quintiles. The rise in condom use is associated with a desire for spacing and limiting births, and an awareness of the method’s benefits for HIV prevention. The strong significant association of condom use by women not wanting any more births and those wanting births after 2 years, with higher adjusted RRRs in 2005 than 1998, suggests an enduring unmet contraceptive need to space births in the present environment of method choice.

There are additional influences not measured in this study that may contribute to why women are choosing condoms over other contraceptive methods. This includes the fear of side effects of other temporary methods. According to NFHS-III, within one year of beginning their use, the most common reason for discontinuing oral pills, injectables, and IUDs is concerns with side effects or health concerns (IIPS,2007). Another potential factor contributing to the condom's popularity may be active social marketing programs and commercial advertising of condoms, in which condoms are being promoted widely for their enhancement of sexual pleasure. Close to half of all female urban condom users reported pharmacies or drugstores (45.4%) as the source of condoms, while 35.7% reported their husbands (IIPS, 2007). Although urban areas appear to be the primary target of condom advertising, condom commercials are also aired in movie theaters in rural areas. Urban women may be more comfortable using condoms given the legal status of induced abortion and now availability of medical abortion as a new procedural option in cases of condom failure. To the extent marital condom use is consistent and correct, there will be expanded benefits of both prevention of unwanted pregnancy and sexually transmitted infections, including HIV. Higher condom use in the North is contrary to the fact that HIV/AIDs is concentrated in Andhra Pradesh, Karnataka, and Tamil Nadu (southern region) and Maharashtra (western region). This apparent inconsistency could be due to condom use primarily for pregnancy prevention in the North and for HIV prevention in the South. If this is true then condom use by men for HIV prevention in the South is unlikely to be reported by their wives. Further research, however, is needed to ascertain causes of differential condom use among regions. Moreover, given that HIV transmission risk is concentrated in urban areas, although more in southern than northern states, rising

condom use in urban areas is well placed. Lastly, the decline in RRRs for condom use versus no use between 1998 and 2005 associated with most factors suggests fewer social differentials and less economic inequity in use.

This study's design, and thus its findings, is limited by relying on cross-sectional NFHS data. Inferences of causality cannot therefore be drawn. Nonetheless, what is striking is the observed increase in reported use of condoms by female respondents, who usually are thought to under report this method's use with their partners. The substantial sample power of the NFHS also lends a major advantage for the present analysis. As such, the analysis addresses the population of urban couples in the second largest country in the world and documents its growing preference for condoms to protect themselves from the risk of unintended pregnancy, as well as sexually transmitted infections.

Figure 1: Trends in Condom Prevalence among Urban Married Women of Childbearing Age in Selected Countries: 1986-2008



*StatCompiler: Accessed on 24 February, 2011

Figure 2: Condom Use in Urban India 1993-2005

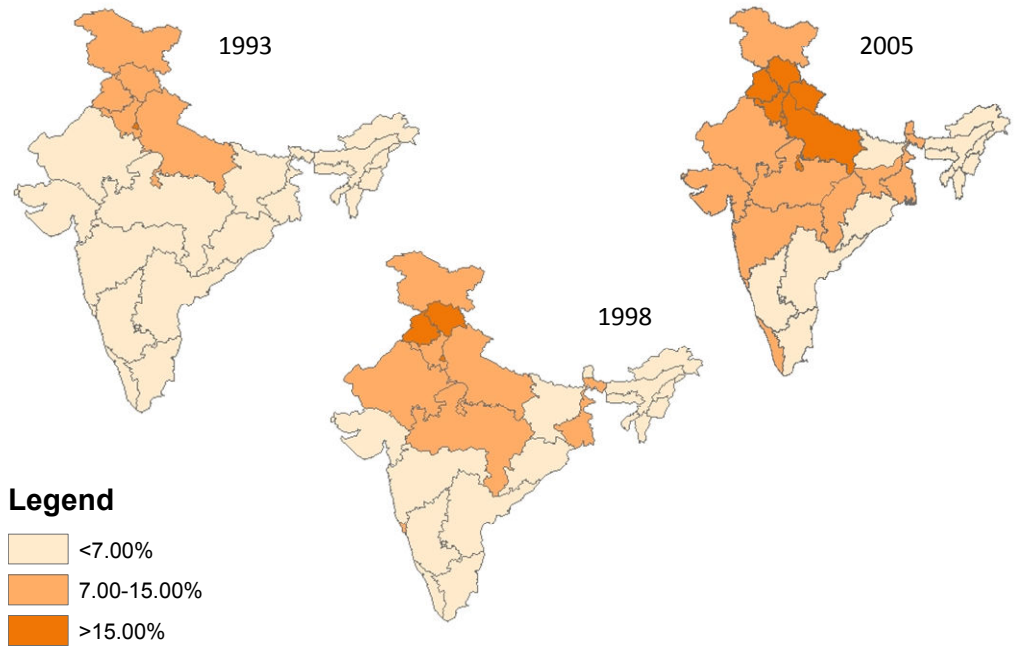


Table 1: Weighted Frequencies and Distribution of Respondents by Social, Economic and Demographic Characteristics

Characteristics	Number (Weighted %)					
	1993 (n=22035)		1998 (n=22141)		2005 (n=28604)	
Age						
15-19	1339	(6.1)	1193	(5.4)	1080	(3.8)
20-24	4113	(18.7)	3730	(16.8)	4498	(15.7)
25-29	4551	(20.7)	4506	(20.4)	5852	(20.5)
30-34	4083	(18.5)	4125	(18.6)	5357	(18.7)
35-39	3492	(15.8)	3645	(16.5)	4992	(17.5)
40-44	2604	(11.8)	2839	(12.8)	3956	(13.8)
45-49	1853	(8.4)	2104	(9.5)	2869	(10.0)
# of Living Children						
0	2531	(11.5)	2377	(10.7)	2859	(10.0)
1	3872	(17.6)	3932	(17.8)	5600	(19.6)
2	5409	(24.5)	6325	(28.6)	9252	(32.3)
3	4498	(20.4)	4626	(20.9)	5783	(20.2)
4+	5725	(26.0)	4881	(22.0)	5110	(17.9)
Education*						
None	7627	(34.6)	6186	(27.9)	7630	(26.7)
Primary	4099	(18.6)	3592	(16.2)	3851	(13.5)
Secondary	7821	(35.5)	7664	(34.6)	12958	(45.3)
Higher	2433	(11.0)	4694	(21.2)	4163	(14.6)
Wealth Index						
Lowest	367	(1.7)	446	(2.0)	758	(2.7)
Second	1156	(5.2)	961	(4.3)	1719	(6.0)
Middle	2004	(9.1)	2317	(10.5)	3791	(13.3)
Fourth	4984	(22.6)	6031	(27.2)	8102	(28.3)
Highest	13524	(61.4)	12386	(55.9)	14236	(49.8)
Religion^						
Hindu	16722	(75.9)	16857	(76.1)	22162	(77.5)
Muslim	3612	(16.4)	3655	(16.5)	4566	(16.0)
Sikh	404	(1.8)	349	(1.6)	424	(1.5)
Jain	-	-	213	(1.0)	242	(0.8)
Christian	634	(2.9)	706	(3.2)	843	(3.0)
Other	663	(3.0)	349	(1.6)	345	(1.2)
Region						
North	2950	(13.4)	3328	(15.0)	4158	(14.5)
Central	4352	(19.8)	4368	(19.7)	5262	(18.4)
East	3607	(16.4)	2905	(13.1)	4538	(15.9)
Northwest	480	(2.2)	377	(1.7)	660	(2.3)
West	4739	(21.5)	5103	(23.0)	6318	(22.1)
South	5907	(26.8)	6060	(27.4)	7668	(26.8)

* Missing cases: 55 in 1992/1993, 5 in 1998/1999, 2 missing 2005/2006

^ Missing cases: 13 in 1998/1999, 22 missing 2005/2006

** Missing cases; 543 in 1992/1993, 26 in 1998/1999, 22 missing in 2005/2006

Table 2: Contraceptive Method Choice by Background Characteristic among Currently Married Urban Women 15-49 years Old

	1993					1998					2005				
	Not using	FS/ MS	Other Method	Condom	N	Not using	FS/ MS	Other Method	Condom	N	Not using	FS/ MS	Other Method	Condom	N
Age															
15-19	90.2	1.2	5.5	3.2	1339	90.1	1.7	5.7	2.5	1193	84.0	1.5	8.8	5.8	1080
20-24	73.4	9.7	10.5	6.4	4113	68.3	10.9	13.5	7.4	3730	60.5	12.2	16.9	10.4	4498
25-29	48.8	27,5	15.6	8.1	4551	42.0	32.1	16.2	9.7	4506	37.1	30.3	19.3	13.4	5852
30-34	35.9	42.2	14.5	7.5	4083	28.6	45.3	15.9	10.2	4125	24.7	43.8	18.3	13.2	5357
35-39	29.5	52.7	12.8	5.1	3492	24.6	53.7	13.9	7.8	3645	22.7	52.6	15.3	9.4	4992
40-44	36.5	51.9	8.0	3.6	2604	29.3	54.7	12.0	4.0	2839	27.2	54.3	12.7	5.8	3956
45-49	48.1	45.2	5.3	1.4	1853	39.3	53.3	5.7	1.7	2104	34.4	57.6	5.5	2.5	2869
# of Living Children															
0	93.9	0.8	2.7	2.6	2531	93.3	0.6	3.9	2.2	2377	88.9	0.7	5.7	4.7	2859
1	68.0	4.0	18.9	9.1	3872	62.5	4.7	22.1	10.7	3932	55.1	5.3	24.8	14.8	5600
2	42.2	30.7	18.2	8.9	5409	31.0	41.4	17.6	10.0	6325	22.6	47.7	17.5	12.2	9252
3	31.1	55.5	8.8	4.7	4498	22.8	61.9	9.6	5.8	4626	19.2	63.7	10.4	6.7	5783
4+	36.5	54.0	6.6	2.9	5725	31.9	55.2	8.4	4.5	4881	29.0	52.9	12.0	6.1	5110
Education*															
None	59.5	34.4	4.5	1.7	7627	49.4	41.6	6.3	2.7	6186	38.8	46.9	9.7	4.5	7630
Primary	44.7	43.6	8.8	2.9	4099	39.7	46.8	9.8	3.7	3592	33.8	49.5	11.0	5.8	3851
Secondary	43.7	33.0	16.0	7.3	7821	38.7	39.7	14.8	6.9	7664	35.9	37.2	17.3	9.5	12958
Higher	39.7	16.9	24.4	18.9	2433	38.4	22.9	22.4	16.3	4694	33.4	19.3	23.5	23.8	4164
Wealth Index															
Lowest	69.6	24.9	5.2	0.2	367	60.2	35.0	4.2	0.6	446	57.0	34.1	7.2	1.8	758
Second	65.2	28.9	5.2	0.6	1156	56.4	36.1	6.0	1.5	961	46.8	38.9	11.7	2.6	1719
Middle	62.5	31.0	5.8	0.7	2004	52.0	38.8	7.8	1.4	2317	42.0	43.4	11.2	3.4	3791
Fourth	56.2	34.4	7,3	2.1	4984	45.4	41.0	9.9	3.7	6031	36.7	43.7	13.1	6.5	8102
Highest	42.3	34.4	14.8	8.5	13524	36.3	36.3	16.7	10.7	12386	31.7	35.1	18.6	14.7	14236
Religion^															
Hindu	46.1	36.3	11.9	5.8	16722	39.2	40.3	13.6	6.9	16857	34.4	40.7	15.7	9.3	22162
Muslim	65.1	21.1	9.3	4.5	3612	56.0	25.8	10.2	8.0	3655	45.2	29.4	14.5	10.9	4566
Sikh	35.5	32.2	18,5	13.9	404	32.6	18.4	28.1	20.8	349	30.6	23.9	20.2	25.4	424
Jain	-	-	-	-	-	31.3	42.4	15.7	10.7	213	23.8	40.2	13.5	22.4	242
Christian	45.5	35.5	13.7	5.3	634	40.4	40.8	14.4	4.4	706	36.1	45.2	12.4	6.3	843
Other	44.3	35.5	11.6	8.7	663	33.1	56.7	7.2	3.0	349	35.7	50.7	7.0	6.6	345
Region															
North	43.2	30.4	13.3	13.2	2950	38.4	29.8	17.1	14.7	3328	34.4	30.7	15.8	19.1	4158
Central	62.7	22.3	6.9	8.1	4352	51.3	27.1	10.7	10.9	4368	41.6	26.7	16.9	14.8	5262
East	47.0	28.9	20.0	4.1	3607	39.1	28.7	26.8	5.4	2905	34.6	31.0	27.0	7.4	4538
Northwest	44.0	22.7	29.5	3.8	480	45.5	22.5	28.5	3.5	377	38.1	16.5	39.6	5.8	660
West	47.1	39.0	9.7	4.2	4739	40.4	43.1	10.6	5.9	5103	33.2	42.7	14.7	9.4	6318
South	44.8	43.2	9.2	2.8	5907	39.0	50.8	7.6	2.7	6060	36.2	54.9	5.6	3.3	7668
Total	48.9	33.7	11.6	5.8	22035	41.8	37.8	13.2	7.2	22142	36.0	38.8	15.3	9.8	28604

*** Missing cases: 55 in 1992/1993, 5 in 1998/1999, 2 missing 2005/2006; ^ Missing cases: 13 in 1998/1999, 22 missing 2005/2006**

Table 3: Adjusted Relative Risk Ratios of Contraceptive Choice among Fecund, Non-sterilized Women, 1998 and 2005

	NFHS 1998				NFHS 2005			
	Other method		Condom		Other method		Condom	
	RRR	95% CI	RRR	95% CI	RRR	95% CI	RRR	95% CI
Age								
15-19	1.00		1.00		1.00		1.00	
20-24	1.49	(1.02 - 2.18)	1.36	(0.87 - 2.13)	1.27	(0.95 - 1.68)	0.95	(0.66 - 1.36)
25-29	2.02	(1.37 - 2.98)	1.83	(1.15 - 2.91)	1.87	(1.38 - 2.53)	1.31	(0.91 - 1.90)
30-34	2.67	(1.82 - 3.92)	2.59	(1.65 - 4.06)	2.33	(1.71 - 3.18)	1.69	(1.16 - 2.45)
35-39	2.69	(1.78 - 4.07)	2.20	(1.34 - 3.61)	2.06	(1.50 - 2.83)	1.26	(0.86 - 1.85)
40-44	2.04	(1.30 - 3.17)	1.07	(0.65 - 1.75)	1.34	(0.96 - 1.88)	0.61	(0.40 - 0.92)
45-49	0.63	(0.40 - 0.99)	0.29	(0.15 - 0.55)	0.44	(0.30 - 0.64)	0.18	(0.11 - 0.28)
# of Living Children								
0	1.00		1.00		1.00		1.00	
1	4.57	(3.60- 5.82)	4.76	(3.47 - 6.54)	4.47	(3.52 - 5.68)	3.95	(2.99 - 5.22)
2	6.08	(4.64 - 7.97)	7.74	(5.49 - 10.91)	6.67	(5.10 - 8.72)	6.62	(4.83 - 9.08)
3	5.47	(4.00 - 7.50)	8.14	(5.54 - 11.97)	5.21	(3.82 - 7.10)	5.62	(3.94 - 8.02)
4+	4.90	(3.52 - 6.83)	8.12	(5.53 - 11.92)	6.21	(4.48 - 8.60)	6.46	(4.42 - 9.44)
Education								
None	1.00		1.00		1.00		1.00	
Primary	1.64	(1.32 - 2.03)	1.48	(1.07 - 2.07)	1.23	(1.03 - 1.48)	1.36	(1.04 - 1.77)
Secondary	2.23	(1.85 - 2.69)	2.47	(1.95 - 3.13)	1.68	(1.43 - 1.97)	1.55	(1.27 - 1.89)
Higher	3.07	(2.49 - 3.79)	4.46	(3.37 - 5.91)	2.41	(1.95 - 2.97)	3.49	(2.74 - 4.45)
Wealth Index								
Lowest	1.00		1.00		1.00		1.00	
Second	1.63	(0.85 - 3.14)	2.47	(0.53 - 11.47)	2.01	(1.34 - 3.02)	1.54	(0.80 - 2.97)
Middle	2.48	(1.27 - 4.83)	2.43	(0.59 - 10.04)	2.24	(1.49 - 3.35)	2.21	(0.97 - 5.02)
Fourth	3.09	(1.59 - 5.98)	5.41	(1.39 - 21.05)	2.86	(1.91 - 4.28)	4.34	(1.91 - 9.85)
Highest	4.00	(2.04 - 7.83)	9.05	(2.32 - 35.20)	3.61	(2.41 - 5.42)	7.15	(3.18 - 16.07)
Religion								
Hindu	1.00		1.00		1.00		1.00	
Muslim	0.77	(0.64 - 0.92)	1.18	(0.93 - 1.50)	0.76	(0.63 - 0.92)	1.12	(0.93 - 1.34)
Sikh	1.47	(1.05 - 2.05)	1.27	(0.91 - 1.76)	1.09	(0.77 - 1.55)	1.39	(0.95 - 2.03)
Jain	1.21	(0.73 - 2.00)	1.19	(0.67 - 2.11)	0.92	(0.51 - 1.68)	1.71	(1.05 - 2.78)
Christian	0.96	(0.73 - 1.26)	0.80	(0.50 - 1.27)	0.89	(0.65 - 1.22)	0.98	(0.64 - 1.47)
Other	0.62	(0.39 - 0.98)	0.56	(0.18 - 1.78)	0.37	(0.23 - 0.57)	0.78	(0.39 - 1.54)

Table 3: Adjusted Relative Risk Ratios of Contraceptive Choice among Fecund, Non-sterilized Women, 1998 and 2005

	NFHS 1998				NFHS 2005			
	Other method		Condom		Other method		Condom	
	RRR	95% CI	RRR	95% CI	RRR	95% CI	RRR	95% CI
Region								
South	1.00		1.00		1.00		1.00	
North	1.73	(1.44 - 2.07)	3.92	(3.05 - 5.04)	2.34	(1.90 - 2.89)	4.52	(3.57 - 5.74)
Central	1.10	(0.89 - 1.36)	3.03	(2.28 - 4.04)	2.67	(2.10 - 3.39)	4.00	(3.12 - 5.14)
East	4.14	(3.16 - 5.43)	2.74	(1.94 - 3.88)	5.50	(4.33 - 6.98)	2.71	(2.07 - 3.54)
Northeast	2.75	(2.17 - 3.50)	1.06	(0.77 - 1.46)	7.06	(5.52 - 9.04)	2.13	(1.54 - 2.96)
West	1.34	(1.10 - 1.62)	1.99	(1.54 - 2.58)	2.36	(1.85 - 3.00)	2.35	(1.82 - 3.04)
Desire for Childbearing								
Within two years	1.00		1.00		1.00		1.00	
After two years	2.05	(1.67 - 2.50)	1.69	(1.31 - 2.16)	2.65	(2.14 - 3.28)	2.98	(2.38 - 3.75)
Unsure of timing/undecided	1.00	(0.69 - 1.44)	0.86	(0.55 - 1.35)	1.13	(0.81 - 1.58)	1.00	(0.66 - 1.53)
Wants no more	2.43	(2.02 - 2.92)	1.85	(1.50 - 2.29)	2.31	(1.90 - 2.80)	2.37	(1.91 - 2.95)
Up to god	0.44	(0.21 - 0.94)	0.62	(0.27 - 1.44)	-		-	
Condoms prevent HIV								
Does not prevent HIV	1.00		1.00		1.00		1.00	
Does prevent HIV	1.17	(1.02 - 1.34)	1.76	(1.47 - 2.11)	1.27	(1.11 - 1.46)	1.84	(1.60 - 2.11)
Has not heard of HIV	0.76	(0.66 - 0.88)	0.68	(0.56 - 0.84)	0.77	(0.64 - 0.92)	0.62	(0.51 - 0.77)
# of living sons								
0	0.68	(0.57 - 0.81)	0.82	(0.64 - 1.06)	0.70	(0.60 - 0.82)	0.72	(0.58 - 0.88)
1	0.89	(0.77 - 1.03)	1.06	(0.87 - 1.30)	0.91	(0.79 - 1.04)	0.87	(0.73 - 1.03)
2+	1.00		1.00		1.00		1.00	

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