EXTENDED ABSTRACT

Associations between tribal status and contraceptive use in rural Maharashtra, India

Introduction

Although the majority (66%) of rural women in Maharashtra, India has adopted modern contraception use, this is primarily in the form of sterilization; only 5% report ever use of spacing contraception [1]. Tribal communities, representing 8.6% of India [2], are most vulnerable to these concerns, and in fact, appear to have an increasing fertility rate (3.09 vs. 3.12) where India as a whole maintained a steady decline in fertility [1]. Although younger age at marriage, lesser education, higher fertility norms and son preference have been cited as reasons for low use of spacing contraception among tribal's, access to contraceptive knowledge and services are viewed as the primary cause for low use [3,4,5,6] . Understanding what impedes spacing contraception use in this state may offer insight relevant to the country as a whole, as contraceptive access and service delivery improves. The purpose of this study is to understand differences between tribal and non-tribal couples' use of spacing contraception in rural Maharashtra.

Methods

This study involved analysis of cross-sectional baseline data from women participants in a family planning study in rural India (known as the CHARM study). Participants were married men aged 18-30 years and their wives, recruited from villages in the Thane District of, India. Between March and December 2012, households with age-eligible married men residing with their wives, as indicated by public health center household listings, were assessed for their interest to participate in CHARM study. Those indicating interest provided written informed consent and screened by sex-matched research staff. Eligibility criteria included husband's age, no sterilization or infertility indicated (i.e., trying to have a child for more than two years), and no intent to move in the next 18 months. Out of 1881 couples screened;

1143 were eligible (60.8% eligibility rate), and 1081 couples participated (94.6% participation rate). Current analyses restricted to n=867 baseline couples who did not report pregnancy, given the outcome of spacing contraception use. No monetary incentive was provided. All study procedures were approved by the Institutional Review Boards at the University of California San Diego, the Population Council, and the Indian Council of Medical Research.

Measures

Single item measures taken from the National Family Health Survey-3, India's Demographic and Health Survey [1], were used to assess the primary exposure variable, tribal status, and the outcome behavior, current spacing contraception use, dichotomized as a yes or no.

Sociodemographic and fertility preference covariates were comprised of single items taken from the NFHS-3 [1]. Sociodemographics included male and female age and education, female age at marriage, marital duration, household income (dichotomized as <5000 INR or 5000+ INR per month; 5000 INR=US$100), and number of male and female children. Fertility preference indicators included desire to become pregnant now, ideal number of children and son preference, the latter based on reporting a desire for more boys than girls. Women's survey responses were used for all measures except men's age and education, as well as the household income variable, which was expected to be more valid for male respondents as they were the predominant earners.

Data analyses

Chi-square and t-test analyses assessed associations between tribal status and all other variables. Unadjusted and adjusted logistic regression analyses assessed associations between tribal status and current use of spacing contraception. An adjusted model was constructed for the full sample, using covariates. Exploratory stratified models were constructed to determine if covariates associated with spacing contraception differed by tribal status. For all adjusted models, only those covariates with $p<0.1$ were retained. We checked for multicollinearity by conducting a correlation matrix to ensure that all correlations

between variables in the model were <0.7. No highly correlated factors were identified. We also conducted a test of variation inflation factor (VIF) and found it to be below 10, indicating that multicollinearity was not an issue [7].

Results

Participants (n=867) were 67.6% tribal, with mean education levels of 7.3 years and 6.5 years for men and women, respectively. Half (48.6%) had a monthly household income <5000INR (US$100). Most (82.7%) had children; 14.6% wanted to become pregnant now/soon. The minority (40.1%) had ever used contraception, and 27.7% currently used contraception. Tribal relative to non-tribal couples were less educated, poorer, indicated girl child marriage, had and wanted a greater number of children, were less likely to use contraception, and were more likely to report son preference. They were also more likely to have 2+ daughters (16.4%) than 2+ sons (7.5%). Among non-tribal couples, 5.0% had 2+ sons, and 8.9% had 2+ daughters.

The adjusted model indicated no significant association between tribal status and current use of spacing contraception. Covariates that stayed in the model suggest that such contraception use is more likely when women are older and do not want to become pregnant, and when couples are more educated and have more children. Stratified analyses indicated that, among tribal couples, contraception was associated with husbands being older, women not wanting to become pregnant, couples being more educated and having more girls in the household. Among non-tribal couples, contraception was associated with women being older, more educated and not wanting to become pregnant.

Discussion

Study findings document that tribal participants are less likely to use spacing contraception, as seen with prior studies from other states [4,5,6] , this association appears to be a consequence of social vulnerabilities (younger age of wife, lesser education of the couple). Further, it appears that son preference is guiding tribal populations to use spacing

contraception to restrict family size if there are girls, but not if there are boys, a finding not seen for non-tribals. Similar findings have been seen in studies with tribal communities elsewhere in India [8,9]. Findings must be considered in light of certain limitations, including reliance on self-report measures and limited generalizability due to use of specific region in Maharashtra. Nonetheless, these findings support the need for targeted family planning education for tribal communities, with focus on value of the girl child.

Acknowledgements

We sincerely thank funding agencies- Department of Biotechnology, Government of India, and United States National Institute of Health (Grant number: RO1HD61115). We wish to acknowledge the efforts of the CHARM Research Team and the study participants for their support and co-operation.

Table 1: Sociodemographic, fertility and family planning characteristics of participants, total sample and by tribal status among rural young couples in Thane District, Maharashtra, India (N=867)

Characteristics	Total sample	**Tribal status**		
		Tribal (N=586)	Non-Tribal (N=281)	p-value
Man's Age (in years Mean ± sd; range)*	26.2 (2.68; 18-30)	25.7 (2.71; 18-30)	27.3 (2.28; 20-30)	<.0001
Woman's Age (in years Mean ± sd; range)	22.6 (2.47; 18-30)	22.4 (2.51; 18-29)	23.0 (2.33; 18-30)	<.0001
Woman's Age at Marriage <18 years	31.1 (270)	36.7 (215)	19.6 (55)	<.0001
Marital Duration (in years Mean ± sd; range)	3.9 (2.64; 0-14)	4.1 (2.65; 0-14)	3.6 (2.58; 0-13)	<.0001
Man's Education (in years Mean ± sd)*	7.3 (3.71; 0-17)	6.3 (3.64; 0-15)	9.3 (3.01; 0-17)	<.0001
Woman's Education (in years Mean ± sd)	6.5 (4.20; 0-17)	5.1 (3.90; 0-17)	9.3 (3.31; 0-17)	<.0001
Household Income<5000 INR*	48.6 (421)	56.7 (332)	31.7 (89)	<.0001
Number of male children				0.530
0	52.2 (453)	52.2 (306)	52.3 (147)	
1	41.1 (356)	40.3 (236)	42.7 (120)	
2	6.3 (55)	7.2 (42)	4.6 (13)	
3	0.3(.3)	0.3 (2)	0.4 (1)	
Number of female children				0.016
0	49.5 (429)	45.9 (269)	56.9 (160)	
1	36.4 (310)	37.5 (220)	34.2 (96)	
2	11.0 (93)	13.0 (76)	6.8 (19)	
3	2.8 (24)	3.1 *18)	2.1 (6)	
4+	0.3 (3)	0.3 (3)	0.0. (0)	
Total Number of children				<.0001
0	17.3 (150)	15.7 (92)	20.6 (58)	
1	46.6 (404)	41.8 (243)	56.6 (159)	
2	27.0 (234)	31.6 (183)	17.4 (49)	
3	6.6 (57)	8.4 (49)	2.8 (8)	
4+	2.5 (22)	2.6 (15)	2.5 (7)	
Ideal Number of Children				<.0001
1	6.7 (58)	3.2 (19)	13.9 (39)	
2	83.9 (727)	84.5 (495)	82.6 (232)	
3	9.1 (79)	11.8 (69)	3.6 (10)	
4+	0.3 (3)	0.5 (3)	0 (0)	
Want to become Pregnant (soon/now)	14.6 (127)	14.5 (85)	14.9 (42	
Son Preference**	9.6 (84)	11.3 (66)	6.4 (18)	.014
Ever Used Contraception	40.1 (349)	32.8 (192)	55.5 (156)	<.0001
Type of Contraception Used Currently				<.0001
None	72.3 (627)	78.5 (460)	59.4 (167)	
Pill	10.8 (94)	10.9 (64)	10.7 (30)	
Condom (male or female)	13.3 (115)	8.9 (52)	22.4 (63)	
IUD or Injectable	2.0 (17)	0.9 (5)	4.3 (12)	
Traditional (withdrawal, rhythm)	1.6 (14)	0.9 (5)	3.2 (9)	

*Indicator based on men's reporting.

** Son preference was computed based on women reported more boys than girls

Table 2: Logistic Regression Analyses to assess the associations between tribal status and contraception use in among rural young couples in Thane District, Maharashtra, India (N=867)

	Current Use of Contraception (n=240) % (n)	No Contraception Use (n=627) % (n)	OR (95% CI)	Reduced Model AOR (95% CI)	**Tribal Status**	
					Reduced Model AOR (95% CI) Tribal n=586	Reduced Model AOR (95% CI) Non-Tribal n=281
Tribal	47.5 (114)	73.4 (460)	0.40 (0.29,0.54)			
Man's Age (in years Mean ± sd; range)	26.9 (2.38, 20-30)	25.9 (2.73; 18-30)	1.15 (1.08, 1.21)		1.08 (1.00, 1.17)	
Woman's Age (in years Mean ± sd; range)	23.0 (2.31, 18-29)	22.4 (2.50; 18-30)	1.12 (1.06, 1.19)	1.06 (0.98, 1.15)		1.15 (1.03, 1.29)
Woman's Age at Marriage <18 years	25.8% (62)	33.2 (208)	0.70 (0.50, 0.97)			
Marital Duration (in years Mean ± sd; range)	4.0 (2.26; 0-12)	3.9 (2.77; 0-14)	1.00 (0.95, 1.06)			
Man's Education (in years Mean ± sd; range)	8.7 (3.25; 0-17)	6.8 (3.74; 0-17)	1.17 (1.12, 1.22)	1.10 (1.03, 1.16)	1.11 (1.04, 1.19)	
Woman's Education (in years Mean ± sd; range)	8.2 (3.95; 0-17)	5.8 (4.1; 0-18)	1.16 (1.11, 1.20)	1.14 (1.08, 1.19)	1.10 (1.04, 1.17)	1.12 (1.03, 1.22)
Household Income<5000 INR*	40.0 (96)	51.8 (325)	0.62 (0.45, 0.83)			
Number of male children 0 1 2 3	 48.3 (116) 45.0 (108) 6.7 (16) 0.0 (0)	 53.7 9337) 39.6 (248) 6.2 (39) 0.5 (3)	1.13 (0.89, 1.42)	1.33 (0.97, 1.81)		
Number of girl children 0 1 2 3 4+	 42.9 (103) 42.5 (102) 12.9 (31); 1.7 (4)	 52.0 (326) 34.1 (214) 10.2 (64) 3.2 (64) 0.5 (3)	1.11 (0.92, 1.33)	1.30 (1.00, 1.68)	1.27 (0.99, 1.65)	
Ideal Number of Children^ 1 2 3 4+	 12.5 (30) 81.7 (196) 5.0 (12) 0.8 (2)	 4.5 (28) 84.7 (531) 10.7 (67) 0.2 (1)	0.46 (0.31, 0.69)			
Want to become Pregnant (soon/now)	4.2 (10)	18.7 (117)	0.19 (0.09, 0.37)	0.21 (0.10, 0.43)	0.27 (0.11, 0.66)	0.11 (0.03, 0.33)
Son Preference	8.3 (20)	10.0 (64)	1.25 (0.74, 2.11)			

*Indicator based on men's reporting.

^Variables were left continuous in the model but displayed with 4+ for proportions presented.