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RURAL REALITIES OF FAMILY PLANNING: PATTERNS, PREDICTORS AND UNMET NEED AMONG MARRIED WOMEN OF REPRODUCTIVE AGE IN BIHAR

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ABSTRACT

Background: Family planning plays a vital role in achieving population stabilization and improving reproductive health outcomes. Despite longstanding national efforts, regional disparities in contraceptive use and unmet need persist, particularly in rural areas. Understanding local contraceptive practices and influencing factors is essential for designing effective strategic interventions. This study aimed to assess the prevalence, patterns, and determinants of contraceptive use, and to estimate the unmet need for contraception among married women of reproductive age in rural Patna, Bihar.

Materials and Methods: A community-based cross-sectional study was conducted among 365 married women aged 15–49 years using a pre-tested semi-structured questionnaire. Data on sociodemographic and reproductive characteristics were collected and analysed using SPSS version 26. Association between variables were analysed using Chi-square test and univariate logistic regression to estimate the crude Odds ratios.

Results: The prevalence of current contraceptive use was 49.04%, with a higher preference for permanent methods (61.4%), particularly tubectomy. The unmet need for contraception was 19.18% (spacing: 4.11%, limiting: 15.07%). Significant predictors of contraceptive use included age >30 years, Hindu religion, higher husband's education, nuclear family structure, higher income, longer duration of marriage, higher parity, and presence of surviving sons.

Conclusion: Contraceptive use in rural Bihar remains suboptimal, reflecting a substantial unmet need for family planning services. Enhancing awareness, expanding outreach services and actively involving men in family planning initiatives are essential to promote informed decision-making and improve contraceptive uptake among rural women.

Keywords: Contraceptive use, Unmet need, Family planning, Rural women, determinants.

INTRODUCTION

India ranks as the world's most populous nation, with an estimated 1.4 billion people, accounting for approximately 17.76% of the global population.[1] Our country has been grappling with the critical challenge of population explosion ever since Independence.[2] This sharp rise in population has disrupted the national balance and slowed India's overall development, contributing to significant shortages in food and housing, along with excessive strain on its natural resources. In light of these consequences, achieving population stabilization is recognized as a crucial step toward the country's economic progress and enhancement of overall quality of life. One of the most effective approaches to address this issue is the adoption of family planning practices.[3]

The World Health Organization (WHO) defines family planning as "the ability of individuals or couples to determine and achieve their preferred number of children, along with optimum spacing and timing of births." [4] This can be accomplished through use of various contraceptive methods and

treatment of involuntary infertility. By limiting unintended and high-risk pregnancies, family planning plays a vital role in lowering maternal mortality.[5]

The 'Contraceptive prevalence rate' is widely recognized as a proxy indicator for access to reproductive health services. It reflects progress in public health, population control, and gender equity. It is defined as "the percentage of married or in-union women aged 15 to 49 years who are currently using, or whose partners are using, at least one method of contraception, regardless of the method used".[6] Despite India's long-standing commitment to family planning programs, only 66.7% of currently married women in this age group report using contraceptives, and the national unmet need for contraception remains staggering at 9.4%.[7] Moreover, contraceptive use varies significantly across different states and regions.

Numerous factors influence contraceptive usage including demographic, cultural, economic, and religious determinants. These varied factors operate not only at the individual level but also within families and communities.[3] However, there is paucity of recent community based rural studies in India especially in this region regarding contraceptive usage. Gaining insights into local contraceptive practices and the underlying factors affecting their use is essential for designing targeted interventions. Therefore, the present study was undertaken to assess the prevalence and explore the patterns of contraceptive use as well as to estimate the magnitude of unmet need for contraception among married women of reproductive age residing in a rural region of Patna, Bihar.

MATERIALS AND METHODS

Type of study: Community based cross-sectional study

Study setting: Field practice area of Department of Community Medicine, NSMCH, Patna

Study population: Women in the reproductive age group (15-49 years) residing in this area

Inclusion criteria

All women aged 15-49 years who were willing to participate in the study.

Exclusion criteria:

1. Women who were divorced/ separated, unmarried, or widowed.
2. Currently pregnant women.

Sample size: Calculation of sample size was done based on the information from National Family Health Survey-5 where the proportion of women in age group 15–49 years using any contraceptive methods in rural Bihar is 54.6%.[8]

The sample size based on this proportion, and at 95% confidence interval with 10% margin of error was estimated around 332 using formula: -

$N= 4pq/d^2$

where p (prevalence)= 54.6%, q (100-p) =45.4% and d (relative margin of error) =10% of 54.6% (p)=5.46. Taking a non-response rate of 10%, the final estimated sample size after rounding off was 365.

Sampling technique: Data was collected by a house to-house survey in the field practice area by Universal sampling method. The investigator visited all the houses and identified the eligible couples and enrolled such women till the required sample size was reached.

Data collection tool: The participants were interviewed using a pre-designed, pre-tested semi-structured questionnaire after obtaining written informed consent. The questionnaire consisted of socio-demographic details, reproductive history, and current contraceptive usage. In view of the sensitive nature of the subject, due diligence will be taken to guarantee privacy and confidentiality to ensure that the participants were comfortable in responding to the questions.

Operational Definitions: Eligible couple:[9] A currently married couple wherein the wife is in the reproductive age (15-49 years)

Unmet need for Contraception: Women were defined as having unmet need for spacing or limiting based on the definition by Bradley et al. [10]

Unmet need for spacing: Pregnant women who wanted current pregnancy later, postpartum amenorrhoeic women (for less than 24 months) not using contraception who wanted last birth later, or women who want children after 2 + years, or are undecided about the timing, or are unsure if they want more children, and are currently not using contraception.

Unmet need for limiting: Pregnant women who did not want current pregnancy at all, postpartum amenorrhoeic women (for less than 24 months) not using contraception who did not want last birth at all, or women who want no more children, and are currently not using contraception.

Statistical analysis: Data was entered in Microsoft Excel 2013 and analysed using SPSS trial version 26. Descriptive statistics were used to summarize socio-demographic and reproductive characteristics. Categorical variables were expressed as frequencies and percentages. Chi-square test was initially applied to find out the association between the independent variables and the dependent variables. Further, a univariate regression analysis was performed to ascertain this relationship. Odds ratio was calculated with 95% Confidence Interval (CI) to find the strength of the association. $P < 0.05$ was considered as statistically significant.

RESULTS

Socio-demographic profile of study participants: A total of 365 married women participated in this study. Majority 247(67.7%) were aged 22–29 years, followed by 60(16.4%) in 30–35 years age group. Most participants were Hindus 322(88.2%) while

43(11.8%) belonged to other religions. Regarding educational status of women, 122(33.4%) had completed middle school, 69(18.9%) high school while 54(14.8%) women were found to be illiterate. Among their husbands, 111(30.4%) had studied up to middle school and 101(27.7%) up to high school whereas 36(9.9%) were illiterate. Maximum women 349 (95.6%) were unemployed. Most lived in nuclear families 227(62.2%) and had 5–8 members in the household 159(43.6%). According to Modified BG Prasad socioeconomic status scale, more than half i.e. 201(55.1%) belonged to Class III (Middle Class) followed by 134(36.7%) in Class II (Upper Middle Class) [Table 1].

Table 1: Socio-demographic profile of study participants (N=365)

Characteristics	N (%)
Age (Completed years)	
15-21	40(11.0)
22-29	247 (67.7)
30-35	60 (16.4)
36-42	12 (3.3)
43-49	6(1.6)
Religion	
Hindus	322 (88.2)
Non-Hindu*	43 (11.8)
Education of women	
Illiterate	54 (14.8)
Upto Primary	45 (12.3)
Middle school	122 (33.4)
High school	69 (18.9)
Intermediate	49 (13.4)
Graduate & above	26 (7.1)
Education of husband	
Illiterate	36 (9.9)
Upto Primary	47 (12.9)
Middle school	111 (30.4)
High school	101 (27.7)
Intermediate	40 (11.0)
Graduate & above	30 (8.2)
Women's Occupation	
Unemployed	349 (95.6)
Employed	16 (4.4)
Type of family	
Nuclear	227 (62.2)
Joint	138 (37.8)
No. of family members	
2-4	89 (24.4)
5-8	159 (43.6)
> 8	117 (32.1)
Social -Class#	
I (Upper Class)	14 (3.83)
II (Upper Middle Class)	134 (36.71)
III (Middle class)	201 (55.06)
IV (Lower Middle Class)	10 (2.73)
V (Lower Class)	6 (1.64)

*Christian and Muslims were merged in non-Hindu.
Modified BG Prasad socioeconomic status scale, 2022.[10]

Reproductive history of participants: More than three-fourths i.e. 280 (76.7%) of women were married after the age of 18, while 85(23.3%) had married before the legal age. Majority 177(48.5%) women had been married for 5–8 years followed by 102(27.9%) for duration of less than 4 years. Regarding the age at first childbirth, maximum 286(78.4%) had their first child after 18 years of age while 77(21.1%) had given birth before 18 years. More than half the women 197 (54.0%) had 1–2 children while 166 (45.5%) had more than two children; only 2(0.5%) were found to be nulliparous. Coming to number of surviving sons, maximum 280(76.7%) had 1–2 sons, 63(17.3%) had none while 22(6.0%) had more than two sons. The majority 295(80.8%) of married women had not maintained a spacing of three years between consecutive pregnancies, while only a small proportion 17(4.7%) practiced it whereas in 14.5% cases, this was not applicable. Additionally, over 10% of the women reported having an abortion due to an unwanted pregnancy. [Table 2]

Table 2: Reproductive variables of women (N=365)

Characteristics	N (%)
Age at marriage	
< 18 years	85 (23.3)
≥ 18 years	280 (76.7)
Duration of marriage (years)	

0-4 5-8 9-12 >12	102 (27.9) 177 (48.5) 70 (19.2) 16 (4.4)
Age at first childbirth < 18 years ≥ 18 years Not applicable	 77 (21.1) 286 (78.4) 2 (0.5)
Parity 0 1-2 >2	 2 (0.5) 197 (54.0) 166 (45.5)
Number of surviving sons 0 1-2 >2	 63 (17.26) 280 (76.71) 22 (6.03)
Spacing of 3 years between consecutive pregnancy Absent Present Not applicable	 295 (80.8) 17 (4.7) 53 (14.5)
Ever aborted due to unwanted pregnancy Yes No	 36 (9.9) 329 (90.1)

Pattern of contraceptive usage: [Table 3] shows that out of 365 women surveyed, less than half 179 (49.04%) were currently using some form of family planning method, while majority 186(50.96%) were not using any contraception. Among the users, majority 110 (61.45%) of women had adopted permanent family planning methods while the remaining 69 (38.55%) were using temporary methods. Amongst the temporary method users, injectables were the most commonly used by 49 (27.37%) of women followed by condoms in 6(3.35%) , calendar method in 5(2.79%) of women; intrauterine contraceptive devices (IUCDs) were used by 5(2.79%) while oral contraceptive pills (OCPs) were least used (2.23%). Among those women who underwent permanent sterilisation methods, tubectomy accounted for the vast majority 106(59.22%), while only 4(2.23%) couples opted for vasectomy. The overall unmet need for contraception was found to be 19.18% which included 15.07% for limiting births and 4.11% for spacing.

Table 3: Pattern of contraceptive usage among women

Characteristics	**N (%)**
Currently using any family planning methods Yes No	 179 (49.04) 186 (50.96)
Type of family planning method Temporary Permanent	 69/179 (38.55) 110/179 (61.45)
Contraceptive used Temporary Injectables Condoms Calendar method IUCD OCPs Permanent Tubectomy Vasectomy	 49/179 (27.37) 6/179 (3.35) 5/179 (2.79) 5/179 (2.79) 4/179 (2.23) 106/179 (59.22) 4/179 (2.23)
Unmet need for contraception (Total) For limiting For spacing	70 (19.18) 55 (15.07) 15 (4.11)

[Figure 1] depicts that the most common reason cited for not using any family planning method was lactational amenorrhea in 41(35.3%) cases followed by desire for more children in 23(19.8%). Both desire for male children and opposition from husband or family pressure were reported by 16(13.8%) each. Other reasons included inconvenience to use 7(6.0%), occasional sex 7(6.0%), fear of side effects 4(3.5%) and lack of sexual satisfaction 2(1.7%).

[Table 4] demonstrates the association between sociodemographic factors and contraceptive usage among women. Among women aged ≥30 years, 48(61.5%) were using contraceptives as compared to 131(45.6%) in those <30 years. Further, univariate analysis revealed that women above 30 years had significantly higher odds of using contraceptives compared to those aged 30 years or below (COR = 1.89, p=0.051). Contraceptive use was significantly more among Hindus (53.4%) than non-Hindus (16.3%) (COR: 5.9, p<0.001). Contraception was found to be higher among women with education above primary level (50.8%) in comparison to women who were illiterate/primary education (44.4%), However, this association was found to be statistically insignificant (COR: 0.78, p=0.28).

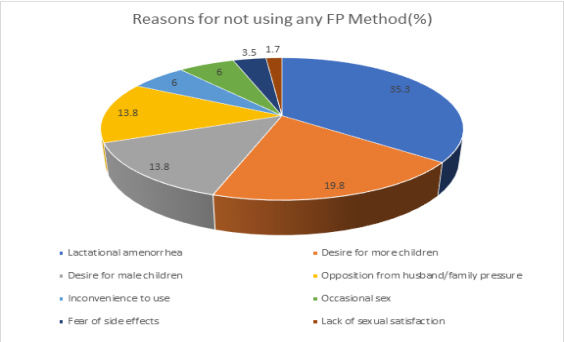

Figure 1: Reported reasons for not using any Family Planning Method (n=116) (Excluding unmet need)

Women whose husbands had studied above primary level reported higher usage (52.1%) compared to those whose husbands had received primary or no education (38.6%) and this showed a significant association (COR: 0.58, p=0.03). Employed women showed lower odds of contraceptive use than unemployed women, however this association was not statistically significant (COR: 0.61, p = 0.35). Women living in nuclear families more likely to use contraceptives than those in joint families (COR = 1.65, p = 0.02). Usage was also higher among those with a family income ≥₹10,000 (55.3%) as compared to <₹10,000 (39.9%) (COR: 1.84, p=0.004).

Table 4: Univariate Analysis showing association of Socio-demographic factors with contraceptive usage among women

Variables	Contraceptive Usage		COR[a] (95% CI)	P-value
	Yes (%)	No (%)		
Age (yrs)				
< 30	131(45.6)	156(54.4)	1	
≥ 30	48(61.5)	30(38.5)	1.89(1.14-3.13)	0.01*
Religion				
Hindus	172(53.4)	150(46.6)	5.9(2.55-13.60)	<0.001*
Non- Hindus	7(16.3)	36(83.7)	1	
Woman's Education				
Illiterate/ Primary	44(44.4)	55(55.6)	0.78(0.49-1.23)	0.28
Above Primary	135(50.8)	131(49.2)	1	
Husband's Education				
Illiterate/ Primary	32(38.6)	51(61.4)	0.58(0.35-0.95)	
Above Primary	147(52.1)	135(47.9)	1	0.03*
Woman's Occupation				
Unemployed	173(49.6)	176(50.4)	1	
Employed	6(37.5)	10(62.5)	0.61(0.22-1.72)	0.35
Type of family				
Nuclear	122(53.7)	105(46.3)	1.65(1.08-2.53)	0.02*
Joint	57(41.3)	81(58.7)	1	
Family Income				
<₹10000	59(39.9)	89(60.1)	1	0.004*
≥₹10000	120(55.3)	97(44.7)	1.84(1.21-2.80)	

[a]Crude Odd's Ratio *- p<0.05 was statistically significant

[Table 5] illustrates the association of Contraceptive usage with several reproductive characteristics. Women who were married after 18 years of age reported a higher contraceptive use (51.8%) compared to those married before 18 years (40.0%), although the difference was not statistically significant (COR: 1.63, p=0.06). Regarding the duration of marriage, women married for more than 8 years had over twice the odds of using contraception as compared to those married for 8 years or less (COR = 2.13, p = 0.004). Similarly, women who had their first childbirth after the age of 18 years were more likely to use contraception than those who gave birth earlier (COR = 1.74, p = 0.04). Higher parity was also found to be a significant factor, with women having more than two children showing nearly double the odds of contraceptive use (COR = 1.96, p = 0.002). Also, women with one or more surviving sons had more than four times the odds of using contraception compared to those women with no son and this was found to be statistically significant (COR = 4.29, p < 0.001).

Table 5: Univariate Analysis showing association of reproductive variables with contraceptive usage among the women

Characteristics	Contraceptive Usage		COR[a] (95% CI)	P-value
	Yes (%)	No (%)		
Age at marriage				
< 18 years	34(40.0)	51(60.0)	1	0.06
≥ 18 years	145(51.8)	135(48.2)	1.63 (0.98–2.72)	
Duration of marriage				
0-8 years	125(44.8)	154(55.2)	1	0.004*
> 8 years	54(62.8)	32(37.2)	2.13 (1.25–3.55)	
Age at first childbirth				
< 18 years	30(39.0)	47(61.0)	1	0.04*
≥ 18 years	149(52.1)	137(47.9)	1.74 (1.01–3.01)	
Parity				
0-2	83(41.7)	116(81.3)	1	0.002*
>2	96(57.8)	70(42.2)	1.96 (1.28–2.99)	

No. of surviving sons 0 >1	 14(22.2) 165(54.6)	 49(77.8) 137(45.4)	 1 4.29 (2.19–8.41)	 <0.001*

[a]Crude Odd's Ratio *- p<0.05 was statistically significant

DISCUSSION

Understanding contraceptive usage and unmet need for family planning provides valuable insights into the fertility behaviour of a population and is instrumental in guiding and formulating effective reproductive health strategies. In the present study, the prevalence of current contraceptive use was less than half i.e 49% which is lower than the national (65.6%) as well as state averages (54.6%). [7,8] This prevalence is also comparatively lower than the studies from South India by Osborn JA et. al. which found the prevalence as high as 75% and the study by Begum S et al where 59.4% of women were currently using some family planning methods. [11-13] However, the present findings were better than other studies reported by Sundaran S et. al. (48%), Shree V, et. al. (32.7%) and Rajkumari B et. al. (29.7%). [14-16] These variations in prevalence can be attributed to the demographic and cultural variations within the country.

According to the present study, the most common family planning method adopted was permanent (61.45%) predominantly tubectomy (59.2%) which is similar to another study of Bihar where 70.87% of women were using female sterilisation methods.[15] The use of terminal methods of contraception was also noted in other studies of India.[17,18] Furthermore, a preference of tubectomy over vasectomy was observed in all previous studies which likely stems from the sociocultural and gender-based factors which assign contraceptive responsibility wholly to women with limited male involvement, and due to myths surrounding vasectomy such as fears of impotence or weakness. Greater acceptance of female sterilization may also be influenced by family planning programs that promote permanent contraception through cash incentives for both the acceptors and the ASHAs who motivate them.

In the current study, the overall unmet need for contraception was 19.18% comprising 4.11% for spacing and 15.07% for limiting births. Similar findings were obtained in studies by Sundaran S et. al. and Dowerah J et. al. where the total unmet need was 18.6% (Spacing= 6.2%; limiting =12.4%) and 18.16% (Spacing=8.06%; Limiting= 10.6%) respectively.[14,17] However, this unmet need is slightly higher than 13.6% reported for Bihar by NFHS-5 data.[8] This pattern may be because of limited awareness about spacing methods, socio-cultural preference for permanent methods and poor male involvement in family planning decisions. Additionally, barriers such as fear of side effects, misconceptions, and lack of access to appropriate contraceptive services may further contribute to the persistence of unmet need.

Amongst the reasons for non-use of family planning methods, lactational amenorrhea was the most reported reason (35.3%) followed by desire for more children in 19.8% cases which is congruent to study by Begum S et. al. where 30% women cited postpartum amenorrhoea as the main reason and study by Dowerah J where 25.3% women expressed desire for more children as the next commonly cited reason.[13,17] Other reasons such as opposition from the husband (13.8%) and fear of side effects (3.5%) were also reported, aligning with findings by Sinha S et al. where husband's opposition (36.75%) and fear of side effects (18%) were the predominant challenges to contraceptive use.[18]

Regarding the determinants of contraception, contraception usage showed significant association with increasing age of the women which is similar to numerous past studies. [12,20,21] This is probably because these women would have completed their family by this age. Contraceptive usage was significantly lower in Muslims than Hindus which is consistent with other studies. [12,18] The lower contraceptive use among Muslim couples may be influenced by religious and cultural beliefs, indicating that religion continues to play a significant role in shaping contraceptive choices.

Unlike past studies, [12,21] higher literacy level of woman was not significantly associated with contraceptive use emphasizing that all women of reproductive age including the educated ones should be imparted health education on family planning. However, higher educational status of husband was significantly associated with contraceptive usage in the present study which is consistent with previous studies. [15,18] This suggests that husband's literacy influences the woman's contraceptive choices, highlighting the need for public health programs to target men in raising this awareness. Contraception usage was significantly more among the higher socioeconomic class which may be due to the fact that high income groups have better access to contraceptive services and increased awareness towards family planning methods. Similar finding was reported by Osborn JA et. al. and Basu et. al. [12,19]

Women married for more years were more likely to use contraceptives which is in line with study by Shree V et. al. and Basu et. al. because with increasing duration of marriage, the number of contraceptive users accumulates, leading to higher usage rates among couples married for 10–20 years. [15,19] Similarly, the number of living children significantly influenced contraceptive use with higher usage among women who had two or more children. This was in concordance with many previous studies. [12,19,21] This may reflect the adoption of small family norm and the emphasis on

female sterilization once families are considered complete. Another interesting finding was that women having more than one surviving son exhibited higher odds of using family planning methods which is in agreement with another study of Bihar.[15] This may be due to a strong son preference where couples adopt contraception particularly permanent methods only when they perceive their family as complete after having sons.

Limitations of the study: This study has certain limitations. It did not account for potential confounders such as knowledge of contraception and female autonomy. The findings are limited to a single village due to logistical constraints, restricting generalizability. Additionally, the cross-sectional design of the study limits the causal inference between variables.

CONCLUSION

The study highlights a low prevalence (49%) of contraceptive usage among rural women in Bihar with a dominant reliance on permanent methods especially tubectomy. Socio-demographic and reproductive determinants such as older age, Hindu religion, higher husband's education, nuclear type of family, higher income, longer duration of marriage, higher parity, and having more surviving sons were significantly associated with contraceptive use. The overall unmet need for contraception (19.18%) remains a public health concern, reflecting persistent gaps in awareness, male involvement, and access to contraceptive services.

Therefore, to sustain the progress of the family planning program and achieve population stabilization goals several measures are essential. Firstly, targeted awareness campaigns should be conducted regularly to encourage behavioural change and improve contraceptive uptake among the non-users. Secondly, outreach services must be expanded and made more accessible to reduce stigma and barriers. Thirdly, reproductive health initiatives should actively engage men by promoting vasectomy as a simple and effective family planning method. Finally, the findings of this study underscore the need for further qualitative research to explore the religious and cultural beliefs that influence modern contraceptive use in greater depth.

Ethical considerations: The approval of the Clinical Research Ethics Committee of NSMCH, Patna was obtained before the conduction of study. Prior Permission was also obtained from the village head after explaining the study's purpose and significance. Written informed consent, accompanied by a detailed information sheet translated into the local language (Hindi), was provided to the participants before the study. Confidentiality and anonymity of all data were strictly maintained throughout the process.

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