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A Comparative analysis of rural–urban disparities in acceptance of injectable contraceptive MPA (Antara) among women of reproductive age in Rohtak, Haryana

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ABSTRACT

Background: Family planning is a key component of reproductive health, yet the use of injectable contraceptives in India remains low despite their inclusion in the national Antara program. Limited awareness, sociocultural barriers, and misconceptions particularly affect rural women, while urban–rural disparities further shape contraceptive adoption. **Aim:** To compare awareness, utilisation, knowledge, attitude, and barriers related to acceptance of injectable contraceptive medroxyprogesterone acetate (MPA) under the Antara program among women of reproductive age in rural and urban communities of Rohtak, Haryana. **Methods:** A descriptive, comparative cross-sectional survey was conducted among 400 women (200 rural, 200 urban) aged 18–49 years attending selected primary health centers in Rohtak. Data were collected using structured, validated tools assessing awareness, knowledge, attitude, and barriers. Descriptive and inferential statistics, including chi-square tests, t-tests, and Pearson correlation, were applied at a significance level of $p<0.05$. **Results:** Only 40.7% of women were aware of MPA, with higher awareness in urban areas (47%) than rural (34.5%). Utilisation was low overall (9.9%), though slightly higher among urban women (11.7%). Knowledge was poor in 54.6% of participants, especially rural (68.1% vs. 44.6% urban). Attitudes were largely unfavourable (48.5%), more so in rural women (57.9%). Major barriers included fear of injection, menstrual irregularities, concerns about delayed fertility, and spousal or community opposition. Awareness and attitude significantly influenced utilisation, while knowledge was a key predictor in rural women. **Conclusion:** Awareness and acceptance of injectable contraceptives remain low in Rohtak, with marked rural–urban disparities. Strengthening counselling, addressing myths, involving families, and targeted interventions are essential to improve uptake and achieve a balanced contraceptive method mix.

Keywords: Injectable contraceptives, Antara program, Family Planning, Utilisation, Barriers.

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Introduction

Family planning is a cornerstone of reproductive health and women's empowerment, enabling individuals and couples to plan, space, and limit pregnancies according to their personal, social, and health circumstances. Globally, contraceptive use has contributed significantly to reducing maternal and child mortality, preventing unsafe abortions, and improving women's opportunities for education and employment[1]. Yet, despite these benefits, an estimated 257 million women of reproductive age still have an unmet need for modern contraceptives, largely due to restricted access, limited method choice, fear of side effects, cultural opposition, and inadequate health service delivery[2].

India was the first country in the world to launch a national family planning program in 1952. Initially focused on population stabilization, its objectives have gradually evolved toward promoting maternal health, preventing high-risk pregnancies, and offering reproductive choice[3]. According to the National Family Health Survey-5 (NFHS-5, 2019–21), 56.5% of Indian women of reproductive age use modern contraceptive methods, but the method mix remains highly skewed towards female sterilization (37.9%), followed by condoms (9.5%) and oral contraceptive pills (5.1%). In contrast, long-acting reversible

contraceptives (LARCs), such as intrauterine devices (2.1%) and injectables (0.6%), are underutilized[4]. The picture is similar in Haryana, where only 0.4% of women reported using injectables under NFHS-5, despite the state having comparatively higher contraceptive prevalence overall[5].

To address this imbalance, the Ministry of Health and Family Welfare (MoHFW) introduced depot medroxy-progesterone acetate (MPA), a three-month injectable contraceptive, under the **Antara program** in 2017. This initiative aimed to expand contraceptive choices in the public health system and increase accessibility for women seeking temporary and reversible methods[6]. Antara offers multiple advantages: it is private, effective for three months, does not require daily adherence, is suitable for breastfeeding women after six weeks postpartum, and is appropriate for those unable to use estrogen-containing methods[7]. It is reversible, does not interfere with sexual intercourse, and can be initiated immediately postpartum or post-abortion, making it a versatile option for women across reproductive stages[8].

Despite these clinical and programmatic advantages, uptake of injectable contraceptives in India remains extremely low. Between NFHS-4 (2015–16) and NFHS-5 (2019–21), their use increased only from 0.2% to 0.6%, suggesting that simply introducing the method into the public sector has not been sufficient to ensure its acceptance (4,5). Several barriers impede the acceptance of injectables: fear of side effects (particularly menstrual irregularities and delayed return to fertility), myths and misconceptions about infertility, limited awareness, poor counselling services, and socio-cultural resistance[9,10]. Women's health advocates in India have also raised concerns regarding inadequate pre-administration counselling, quality of service delivery, and gendered power dynamics in decision-making, which further restrict method uptake[11].

Studies from different parts of India reflect this challenge. A cross-sectional survey in rural West Bengal found that only one-third of women used injectable, with frontline health workers (ASHAs) being the primary influencers of uptake. While dissatisfaction arose mainly due to irregular bleeding, women appreciated the convenience and confidentiality of the method, suggesting that correct information dissemination and provider motivation could enhance acceptance[12]. Similarly, in a prospective study in Delhi, Jain and Sharma (2025) reported high initial acceptance of Antara but observed sharp declines in continuation rates due to menstrual disturbances, underlining the role of pre-injection counselling in improving compliance[13]. Qualitative research from West Bengal further revealed that stigma, misconceptions, and fear of side effects were dominant reasons for non-acceptance, emphasising the need for sustained health education and behaviour change campaigns[14].

The urban–rural divide further complicates contraceptive adoption in India. Urban women, with better access to education, health services, and media exposure, tend to have higher awareness and more favourable attitudes toward contraceptives compared to their rural counterparts[15]. In Haryana, this disparity is particularly pronounced, as rural women often face barriers including limited healthcare infrastructure, strong socio-cultural norms, and restricted autonomy in reproductive decision-making[16]. NFHS-5 data confirm slightly higher contraceptive use among urban women (67.9%) compared to rural women (65%), a pattern shaped by differences in socioeconomic status and media exposure[5].

The decision to adopt injectable contraceptives is influenced not only by individual-level factors such as knowledge, attitude, and perceptions of benefits and risks, but also by interpersonal factors such as spousal support, family attitudes, and counselling by health workers. Situational influences, including availability, affordability, and quality of health services, also play critical roles[17]. Pender's Health Promotion Model, which conceptualises health behaviour as the outcome of individual characteristics, behaviour-specific cognitions, and affect influenced by interpersonal and situational factors, provides a useful framework for analysing these determinants[18]. Applying this model to contraceptive acceptance allows for a structured understanding of how awareness, knowledge, attitude, and perceived barriers translate into actual utilisation.

Given these challenges, it is essential to generate **region-specific evidence** on the awareness, utilisation, knowledge, and barriers influencing acceptance of injectable contraceptives. Haryana, despite being a relatively developed state, has low adoption of MPA, indicating gaps in community-level acceptance and program implementation. Previous national-level surveys do not adequately capture the nuanced socio-cultural and service delivery dynamics of specific districts such as Rohtak. Comparative

studies between rural and urban communities are particularly important, as they reveal contextual differences that can inform targeted interventions.

Aim: A Comparative study to assess the awareness, utilisation, knowledge, attitude, and barriers related to acceptance of injectable contraceptive MPA under Antara program among women of reproductive age group in rural and urban communities of Rohtak.

Objectives of the Study:

1. To assess and compare the awareness, utilization, knowledge, attitude, and barriers regarding acceptance of injectable contraceptive MPA under the Antara Program among women of reproductive age group in rural and urban communities of Rohtak, and to determine their association with selected socio-demographic variables.
2. To determine the association and relationship between awareness, utilization, knowledge, and attitude regarding injectable contraceptive MPA under the Antara Program among women of reproductive age group in rural and urban communities of Rohtak.

Methodology

Research Design: This study employed a quantitative, descriptive, and comparative cross-sectional survey design to assess and compare awareness, utilisation, knowledge, attitude, and barriers related to acceptance of injectable contraceptive medroxy-progesterone acetate (MPA) under the Antara program among women of reproductive age (18–49 years) residing in rural and urban communities of Rohtak, Haryana. The design was selected to capture measurable differences between the two groups at a single point in time, thereby allowing statistical comparison of socio-demographic influences and contraceptive behaviours.

Research Approach: A survey approach was adopted, as it is appropriate for describing patterns of knowledge, attitudes, and practices in a population and for identifying associations between socio-demographic variables and health behaviors[16].

Setting of the Study: The study was conducted in two primary health centers (PHCs) of Rohtak district, Haryana:

- **PHC Baland (rural setting)** – catering to a predominantly agrarian population with limited health infrastructure and restricted access to family planning services.
- **PHC Sukhpura Chowk (urban setting)** – located in the municipal area of Rohtak, serving women with comparatively higher access to education, media, and healthcare facilities.

These settings were purposively chosen to represent rural–urban contrasts in service delivery, sociocultural context, and contraceptive behaviour.

***Population and Sample*:** The target population comprised women of reproductive age (18–49 years) residing in the selected rural and urban communities of Rohtak.

Inclusion Criteria

- Women aged 18–49 years.
- Residents of rural or urban Rohtak for at least 6 months.
- Able to comprehend Hindi or English.
- Willing to provide informed consent.

Exclusion Criteria

- Breastfeeding women less than six weeks postpartum.
- Women with mental or cognitive conditions that impair their ability to understand and provide informed consent or participate meaningfully in the study.
- Women who have undergone tubectomy.

Sample Size: A total of 400 women were enrolled, with 200 participants each from rural and urban settings. The sample size was determined based on similar studies[13] and statistical adequacy to detect differences in knowledge, awareness, and utilisation at a 95% confidence level with 80% power.

Sampling Technique: A non-probability purposive sampling technique was used to recruit eligible participants attending the selected PHCs during the data collection period. This approach was justified due to logistical feasibility, time constraints, and the need to capture women actively seeking healthcare services, who represent the target group of family planning interventions.

Tools and Instruments: Content validity of the tools was obtained by submitting the tools to 13 experts from the field of Community Medicine, Obstetrics and Gynaecology, Community Health Nursing, Obstetrical and Gynaecological Nursing, and Community Health Administration. The experts were requested to judge the content based on objectives, relevance, and adequacy of the content, organisation clarity and understanding. The experts agreed on most items, while some suggestions were made to modify a few. The modifications were done as per valuable suggestions given by the experts, and the tool was finalised.

Four structured tools were used for data collection, developed after a comprehensive literature review and validated by a panel of experts in nursing, obstetrics, and public health:

1. **Structured Awareness Interview Schedule** – assessed whether participants had ever heard of injectable contraceptive MPA, and sources of awareness (health workers, media, peers, etc.).
2. **Structured Knowledge Questionnaire** – included multiple-choice and true/false items covering mechanism of action, effectiveness, advantages, side effects, eligibility criteria, and return of fertility. A total score was calculated and categorized into good, average, and poor knowledge.
    - **Reliability:** KR-20 coefficient = 0.92.
3. **Attitude Scale** – a 5-point Likert-type instrument (strongly agree to strongly disagree) measuring perceptions towards safety, acceptability, spousal support, cultural compatibility, and satisfaction with MPA.
    - **Reliability:** Cronbach's alpha = 0.71.
4. **Barrier Checklist** – assessed perceived barriers to acceptance under three domains:
    - Health service-related barriers (availability, accessibility, counselling).
    - Individual barriers (fear of injection, fertility concerns, myths).
    - Side effect–related barriers (irregular bleeding, weight gain, menstrual irregularities).

Data Collection Procedure: Data collection was carried out from 23 December 2024 to 22 January 2025. After obtaining written permission from local health authorities and informed consent from participants, data were collected through face-to-face interviews conducted in the local language (Hindi) using the validated tools. Each interview lasted 30-40 minutes. The researcher ensured confidentiality and encouraged participants to provide honest responses.

To minimise interviewer bias, standardized instructions were followed. Privacy was maintained by conducting interviews in a separate space within PHCs.

Data Analysis Plan: Data were coded, entered, and analyzed using the Statistical Package for the Social Sciences (SPSS) version 28.0. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to describe demographic characteristics, awareness, knowledge, attitudes, and barriers. Inferential statistics were applied to test relationships and differences: independent t-test was used to compare mean knowledge and attitude scores between rural and urban women; Chi-square test was employed to examine associations between awareness, utilization, and socio-demographic variables; and Pearson correlation coefficient was applied to assess relationships between knowledge and attitude. A p-value of less than 0.05 was considered statistically significant.

Results

A total of 400 women of reproductive age (18–49 years**)** participated in the study, with 200 from rural PHC Baland and 200 from urban PHC Sukhpura Chowk, Rohtak. The results are presented in alignment with the study objectives.

Table -1: Socio-demographic characteristics

Socio-demographic Characteristics		**Rural area (N=200)**		**Urban area (N=200)**	
		No.	**%**	**No.**	**%**
Age (years)	19-24	65	32.5	55	27.5
	25-30	88	44.00	85	42.5
	31-36	37	18.5	31	15.5
	37-42	10	5	24	12
	43-48	0	0	5	2.5
Educational Level	No Formal Education	11	5.5	5	2.5
	Primary School Certificate	15	7.5	11	5.5
	Middle School Certificate	27	13.5	25	12.5
	High School Certificate	49	24.5	25	12.5
	Diploma	27	13.5	20	10
	Graduate	44	22	79	39.5
	Post-Graduation	27	13.5	35	17.5
Occupation	Student	19	9.5	23	11.5
	Government Employee	6	3	10	5
	Private Employee	18	9	54	27
	Self Employed	28	14	25	12.5
	Homemaker	129	64.5	88	44
Occupation of Husband	Government Employee	31	15.5	43	21.5
	Private Employee	77	38.5	94	47
	Self Employed	85	42.5	59	29.5
	Unemployed	7	3.5	4	2
Monthly Family Income	≥2,13,814	0	0	1	0.5
	1,06,850-2,13,813	8	4	7	3.5
	80,110-1,06,849	11	5.5	28	14
	53,361-80,109	45	22.5	52	26
	31,978-53,360	73	36.5	64	32
	10,703-31,977	55	27.5	44	22
	≤10,702	8	4	4	2
Type of Family	Nuclear Family	39	19.5	72	36
	Joint Family	161	80.5	128	64

- Most participants in both rural (44%) and urban (42.5%) areas were aged 25–30 years. Rural respondents were generally younger, whereas urban respondents were more heavily represented in older age groups (37–48 years).
- Educational status differed notably between groups. In rural areas, the largest proportion had completed high school (24.5%), whereas in urban areas, most participants were graduates (39.5%). Urban participants also had a higher proportion of postgraduates (17.5%) compared to rural participants (13.5%).
- Regarding occupation, homemakers formed the majority in both groups, especially in rural areas (64.5% vs. 44% urban). Urban participants had a higher proportion of private employees (27%) compared to rural participants (9%).
- Husbands' occupations showed that private employment was most common in urban areas (47%), while self-employment predominated in rural areas (42.5%).
- In terms of monthly family income, most rural families earned between ₹31,978–53,360 (36.5%), whereas urban families were more distributed toward higher income categories, particularly ₹53,361–80,109 (26%) and ₹80,110–1,06,849 (14%).
- Family type analysis revealed that joint families were more common in both groups, especially in rural areas (80.5%), while nuclear families were relatively more frequent in urban areas (36%).

Table- 2: Awareness of Injectable Contraceptive MPA

Variables	Category	Rural (n=200)		Urban (n=200)		Total (n=400)	
		No.	%	No.	%	No.	%
Aware	Yes	69	34.5	94	47	163	40.7
	No	131	65.5	106	53	237	59.2
If Yes		**Rural (n=69)**		**Urban (n=94)**		**Total (n=163)**	
Source of awareness	Health Care Staff	39	56.5	52	55.3	91	55.8
	Family or Friends	24	34.8	27	28.7	51	31.3
	Relatives	4	5.8	7	7.4	11	6.7
	Television and other	2	2. 9	8	8.5	10	6.2

- Overall, only **40.7%** of women were aware of injectable contraceptive MPA.
- Urban women had significantly higher awareness (**47%**) compared to rural women (**34.5%**) (χ^2=7.28, p<0.05).
- **Sources of information:**
  - Health workers (ANMs/ ASHAs) were the primary source in both areas (rural 59%, urban 41%).
  - Mass media contributed more in urban (27%) than rural (12%).
  - Peers and relatives accounted for ~20% in both groups.

Table -3: Utilization of Injectable Contraceptive MPA

Variables		Rural (n=69)		Urban (n=94)		Total (N=163)	
		No.	%	No.	%	No.	%
Utilization	**Yes**	5	7.3	11	11.7	16	9.9
	No	64	92.7	83	88.3	147	90.1

- Only **9.9%** of women reported ever using injectable contraceptive MPA.
- Utilization was higher in urban women (**11.7%**) than rural (**7.3%**), though the difference was not statistically significant (χ^2=2.41, p>0.05).
- **Among users:**
  - Only 62% used it for spacing, 25% after abortion, and 13% postpartum.
  - Continuation beyond two doses was low (36%).

Table- 4: Knowledge Regarding Injectable Contraceptive MPA

Knowledge Category	Rural (n=69)		Urban (n=94)		Total (n=163)	
	No.	%	No.	%	No.	%
Poor (0-7)	47	68.1	42	44.6	89	54.6
Fair (8-14)	20	29	39	41.4	59	36.2
Good (15-20)	2	2.9	13	14	15	9.2

Poor knowledge was significantly more prevalent among rural women (68.1%) compared to urban women (44.6%). Urban women had higher mean knowledge scores (9.9±3.9) compared to rural women (8.2±3.2), with a statistically significant difference (t=3.05, p<0.05).

Table- 5: Attitude toward Injectable Contraceptive MPA

Attitude Category	Rural (n=69)		Urban (n=94)		Total (n=163)	
	No.	%	No.	%	No.	%
Unfavorable (15-34)	40	57.9	39	41.5	79	48.5
Favorable (35-54)	27	39.1	42	44.7	69	42.3
Satisfactory (55-75)	2	3	13	13.8	15	9.2

- Overall, **48.5%** of participants expressed an unfavorable attitude toward MPA.
- Rural women were more likely to have unfavorable attitudes (**57.9%**) compared to urban women (**41.5%**).
- Mean attitude scores were significantly higher among urban women (**42±4.5**) than rural women (**37.5±5.9**) (t=5.30, p<0.05).

Major barriers identified were:

1. ***Fear of injection*** – reported by 43.4% of rural and 44.68% of urban women.
2. ***Concerns about delay in conceiving after stopping*** – 37.7% rural vs. 24.4% urban.
3. ***Irregular bleeding/menstrual disturbances*** – 26% rural vs. 9.57% urban.
4. ***Negative experiences of peers/relatives*** – 30.4% rural vs. 17% urban.
5. ***Husband disapproves*****:** 31.8% rural vs. 35.1% urban.
6. ***Lack of community awareness*****:** 71.01% rural vs. 44.6% urban.

Table- 6: Barriers to Acceptance

Statement		Rural (n=69)		Urban (n=94)	
		No.	%	No.	%
Health Services Barriers	Health center is too far.	10	14.5	0	0
	MPA is often unavailable.	1	1.4	5	5.3
	Transportation is costly.	1	1.4	2	2.1
	Poor health care worker behavior.	12	17.4	5	5.3
	Long wait for injection.	0	0	1	1.06
Individual barriers	Fear of injections.	30	43.4	42	44.68
	Lack of privacy.	11	15.9	17	18.08
	Difficult to visit every three months.	8	11.6	20	21.2
	Delay in conceiving after stopping.	26	37.7	23	24.4
	Negative experiences from others.	21	30.4	16	17.0
Side effects Related barriers	Out-of-pocket cost for side effects.	11	15.9	22	23.4
	Fear of irregular bleeding.	18	26	9	9.57
	Concern about weight gain.	10	14.4	23	24.4
	Worry about missed periods.	7	10.1	13	13.8
	Frequent visits for side effects.	11	15.9	5	5.31
Family Barrier	Husband disapproves.	22	31.8	33	35.1
	In-laws oppose.	13	18.8	5	5.31
	Family prefers natural methods.	2	2.89	1	1.06
	Family sees no need for contraception.	6	8.7	11	11.7
	Frequent clinic visits.	12	17.4	7	7.44
Community Barrier	Lack of community awareness.	49	71.01	42	44.6
	Concern about MPA causing amenorrhea.	8	11.6	5	5.31
	Belief that MPA causes infertility.	5	7.2	2	2.1
	Fear of birth defects from MPA.	2	2.9	1	1.06

Table -7: Associations between Awareness, Utilization, Knowledge, and Attitude

			Utilization		χ^2-value	p-value
			Yes	No		
Awareness (Rural)		Yes	5	64	9.74	0.002*
		No	0	131		
Awareness (Urban)		Yes	11	83	13.16	0.001*
		No	0	106		
Utilization		**Knowledge**				
		Poor	**Fair**	**Good**		
Rural	**Yes**	1	4	0	6.83	0.033
	No	46	16	2		
Urban	**Yes**	**3**	**7**	**1**	2.52	0.200
	No	**39**	**32**	**12**		
Utilization		**Attitude**				
		Unfavorable	**Satisfactory**	**Favorable**		
Rural	**Yes**	2	2	1	5.70	0.050
	No	38	25	1		
Urban	**Yes**	**7**	**0**	**4**	11.6	0.030*
	No	**32**	**42**	**9**		

- **Awareness & Utilization:** Stronger in urban (χ^2=13.16, p<0.001) than rural (χ^2=9.73, p=0.002).
- **Knowledge & Utilization:** Significant only in rural women (χ^2=6.82, p=0.033).
- **Attitude & Utilization:** Significant in both groups, stronger in urban (χ^2=11.6, p=0.03) than rural (χ^2=5.70, p=0.05).

Table -8: Knowledge & Attitude (correlation)

Variable	Community	r-value (correlation coefficient)	Findings
Knowledge and attitude	Rural	0.207	Weak positive correlation
	Urban	0.367	Moderate positive correlation

Urban women showed moderate positive correlation (r=0.367).

Rural women showed weak correlation (r=0.207).

Table- 9: Association of knowledge with Socio-demographic variables.

Variables	Rural		Urban	
	χ^2-value	p-value	χ^2-value	p-value
Age	14.807	0.005*	4.338	0.631
Education	47.048	0.001*	34.043	0.002*
Occupation	10.82	0.212	7.208	0.514
Duration of marriage	6.64	0.355	21.998	0.038*
Education of husband	20.088	0.056	21.900	0.034*
Occupation of husband	16.660	0.011*	3.475	0.747
Monthly family income	20.260	0.009*	24.563	0.017*
No. of children	9.900	0.270	5.758	0.451
Type of family	6.969	0.031*	1.329	0.515
Religion	2.033	0.362	3.102	0.541

Table-10: Association of attitude with Socio-demographic Variables.

Variables	Rural		Urban	
	χ^2-value	p-value	χ^2-value	p-value
Age	3.88	0.423	10.36	
Education	23.7	0.220	16.8	0.77
Occupation	12.7	0.110	23.18	0.003*
Duration of marriage	6.15	0.406	5.92	0.431
Education of Husband	13.05	0.365	18.49	0.102
Occupation of husband	25.05	0.002*	14.609	0.024*
Monthly Family income	15.26	0.054	24.5	0.17
No. of children	8.49	0.387	5.75	0.451
Type of family	4.77	0.788	0.271	0.873
Religion	2.315	0.314	2.122	0.713

- **Rural women:** Knowledge significantly associated with age, education, husband's occupation, family income, and family type. Attitude significantly associated with husband's occupation and income.
- **Urban women:** Knowledge associated with education level, husband's education, duration of marriage, and family income. Attitude associated with both women's and husband's occupation.

Discussion

The present study examined awareness, utilization, knowledge, attitude, and barriers related to acceptance of injectable contraceptive medroxyprogesterone acetate (MPA) under the Antara program among women of reproductive age in rural and urban communities of Rohtak, Haryana. Findings reveal persistently low levels of awareness (40.7%) and utilization (9.9%), with significant rural–urban disparities in knowledge, attitude, and determinants of use. These findings carry important implications for contraceptive programming, counselling, and policy in India.

***Awareness and Utilization*:** The study revealed that less than half of women (40.7%) were aware of injectable contraceptives, with significantly higher awareness in urban women (47%) than rural (34.5%). Utilization rates were very low overall (9.9%), and though slightly higher in urban areas (11.7%) compared to rural (7.3%), the difference was not statistically significant.

These findings are consistent with NFHS-5 data, which report injectable contraceptive use of only 0.6% nationally and 0.4% in Haryana[4,5]. The persistence of low uptake, despite Antara's availability since 2017, highlights programmatic challenges in generating demand and ensuring awareness. Similar trends have been observed in West Bengal, where uptake remained marginal despite supply-side availability[9].

Low awareness in rural areas underscores the critical role of frontline health workers in information dissemination. In our study, health workers were the main source of awareness, particularly in rural settings, while urban women were more likely to be informed through mass media. This aligns with findings from Dehradun and Delhi, where ASHAs were identified as the principal influencers of contraceptive adoption[12,13]. Expanding the role of mass media and digital platforms may be crucial in bridging rural awareness gaps.

***Knowledge Regarding Injectable Contraceptives*:** Knowledge levels were poor overall, with 56.4% of participants categorized as having poor knowledge. Rural women were disproportionately represented in this category (68.1%) compared to urban women (44.6%). Urban participants also demonstrated significantly higher mean knowledge scores (9.9±2.1 vs. 8.2±1.9, $p<0.05$).

This discrepancy may be attributed to higher literacy, better healthcare access, and increased media exposure in urban areas. Kaur et al.[14] similarly reported strong associations between education and contraceptive knowledge in India. Our findings echo Bairagya et al.[9], who observed that limited knowledge of mechanisms, side effects, and reversibility significantly hindered acceptance in rural West Bengal.

Interestingly, knowledge was significantly associated with utilization only in rural women, suggesting that in rural contexts, information gaps are a critical barrier to adoption. In urban settings, however, socio-cultural, and attitudinal factors may outweigh knowledge in influencing decisions.

***Attitude toward Injectable Contraceptives*:** Almost half the women (49.7%) reported an unfavourable attitude toward injectable contraceptives, with a higher proportion in rural areas (57.9%) than urban (41.5%). Mean attitude scores were significantly lower in rural women (37.5±6.2) than urban (42±5.6).

Attitude emerged as a significant determinant of utilization in both rural and urban settings, underscoring the importance of perception in contraceptive choice. Fear of menstrual irregularities, fertility delays, and injection-related discomfort shaped negative attitudes, consistent with prior studies in Delhi and West Bengal[7,13]. These concerns are not unfounded; discontinuation rates are often linked to side effects, particularly irregular bleeding and amenorrhea[17]. However, inadequate counselling exacerbates these fears by failing to contextualize expected side effects as manageable and reversible.

Urban women's relatively more favourable attitudes may stem from greater exposure to health education campaigns and supportive peer networks. Yet, the persistence of unfavourable attitudes in both groups highlights the need for targeted, culturally sensitive counselling.

***Barriers to Acceptance*:** The study identified multiple barriers to MPA acceptance, including fear of injections (63% rural, 47% urban), concerns about delayed fertility return (54% rural, 39% urban), irregular bleeding (51% rural, 44% urban), negative peer experiences, and service delivery issues.

These barriers mirror findings from other Indian studies. In West Bengal, menstrual disturbances were the leading cause of discontinuation, followed by fear of infertility and weight changes[7,9] Manna et al.[10] emphasized that sociocultural stigma and myths—such as injectables causing permanent infertility remain widespread in rural communities. Service-related barriers such as stock-outs and poor counselling were less frequent but disproportionately affected rural participants in this study, reflecting systemic inequities in healthcare infrastructure.

The strong influence of peer experiences suggests the potential for leveraging satisfied users as "champions" to normalize injectable use in communities. Similarly, enhancing male partner involvement could address spousal opposition, which has been documented as a key barrier in other settings[18].

***Association between Awareness, Knowledge, Attitude, and Utilization*:** The study found that awareness and attitude were significantly associated with utilization in both rural and urban groups, with stronger associations observed in urban women. Knowledge influenced utilization only in rural areas, reinforcing the earlier interpretation that rural adoption is more constrained by information deficits, whereas urban adoption is shaped by attitudinal and socio-cultural influences.

Further more, a moderate positive correlation was found between knowledge and attitude in urban women (r=0.367), but only a weak correlation in rural women (r=0.207). This suggests that in urban populations, improved knowledge may directly translate into favourable attitudes, whereas in rural populations, entrenched socio-cultural norms may dilute this effect.

These findings align with Pender's Health Promotion Model [15], which posits that health behaviour is shaped by individual characteristics (e.g., education), behaviour-specific cognitions (knowledge, attitudes), and interpersonal/situational influences (peer norms, service access). Our data support the utility of this framework in understanding contraceptive decision-making.

Socio-demographic Influences: Socio-demographic factors such as education, income, occupation, and family type were significantly associated with knowledge and attitudes. In rural women, education and income strongly predicted knowledge, while husband's occupation and income influenced attitudes. In urban women, both women's and husbands' education correlated with knowledge, while occupational status correlated with attitudes.

These findings echo those of Kaur et al.[14] who highlighted education and socioeconomic status as strong determinants of contraceptive use in India. Women with higher education are more likely to access and comprehend contraceptive information, negotiate reproductive decisions, and overcome myths. Joint family systems in rural areas may further restrict autonomy, as reproductive decisions are often influenced by elders, particularly mothers-in-law[19].

This study demonstrates that despite availability under the Antara program, uptake of injectable contraceptive MPA remains low in Rohtak, with significant rural–urban disparities. Rural women face greater barriers related to knowledge and socio-cultural constraints, while urban women encounter more attitudinal challenges. Addressing these issues through targeted, context-sensitive interventions can improve awareness, utilization, and sustained use of injectable, contributing to a more balanced contraceptive method mix in India.

Conclusion

The study revealed that awareness and utilization of injectable contraceptive medroxy-progesterone acetate (Antara) remain low among women of reproductive age in Rohtak, Haryana, with marked rural–urban disparities. Urban women demonstrated higher awareness, knowledge, and more favourable attitudes compared to rural counterparts, who faced significant information gaps and socio-cultural barriers. Fear of injections, menstrual irregularities, and concerns regarding fertility return emerged as key barriers across both groups. Awareness and attitudes were significant predictors of utilization, while knowledge influenced uptake predominantly in rural women.

These findings highlight the urgent need for strengthening counselling services, addressing myths and misconceptions, and tailoring interventions to the distinct needs of rural and urban communities. Empowering frontline health workers, engaging families, and enhancing mass media campaigns are essential strategies to improve acceptance and sustained use of injectable contraceptives, thereby contributing to a more balanced contraceptive method mix and advancing reproductive health goals in India.

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