

Research Article**Urban Rural Comparison of Side Effect and Removal of Intrauterine Device****Dhruvendra Pandey^{1*}, Sanjay Dixit², Salil Sakalle³, AK Khatri⁴, Sonam Goyal⁵, Smriti Tiwari⁶**^{1,5}Resident, Department of Community Medicine, MGM Medical College, Indore (MP), India² Professor and Head, Department of Community Medicine, MGM Medical College, Indore (MP), India^{3,4}Associate Professor, Department of Community Medicine, MGM Medical College, Indore (MP), India⁵Resident, Department of Obstetrics and Gynecology, MGM Medical College, Indore⁶Resident, Department of Pathology, Gandhi Medical College, Bhopal (MP), India***Corresponding author**

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Abstract: An effective contraception is the only way to stop this population explosion. There are too many advantages and side effects associated with the IUD, but most of women having side effects had previous history of menstrual irregularities. The objective of the study was to know the pattern of side effects and reason for removal among beneficiaries of Urban and rural area. A cross sectional study was conducted in urban and rural population of Indore district. Study sites included catchment area of primary secondary and tertiary care centers. Sample size of 400 beneficiaries was selected using systematic random sampling from the data of last five years insertions. Chi square test was applied to compare various parameters between urban and rural areas. In this study total 400 beneficiaries were participated out of which 253 (63.3%) belonged to rural area and 147 (36.8%) belong to urban area. IUD is a preferred choice of clients who are illiterate or educated up to secondary class, Unemployed/house wife and of lower or middle socioeconomic class. In rural area 89 (35.2%) clients had side effects after insertion. 58 (39.5%) clients of urban area had side effects. Out of the all type of side effects, pain with heavy bleeding and pain alone was the most common type. 18.2% clients of rural area had IUD removal in comparison to 21.1% clients of urban area. Menstrual irregularity is the most common cause for IUD removal. Urban clients relatively had more side effects and removal than rural clients.**Keywords:** Intrauterine Device, Contraception, Side effects, Removal, Copper T 380A.

INTRODUCTION

Increasing population is creating a continuing gap between India's impressive profile of progress and its gains. To translate the gains of developmental work into improved quality of life, various population control measures are to be universalized [1]. India's population, that has crossed one billion in 2000, has been projected to reach 1.53 billion by 2050 that will make it the most populous country in the world [2]. In India, couples are faced with conflicting goals of achieving satisfying sex life and keeping a small family, failure to do so results in unwanted pregnancy and abortions [3]. The only way to stop population explosion is family planning [2]. In developing countries like India, an unmet need of family planning was too high and this is fueled by growing population and shortage of family planning services [4].

In India, in order to achieve demographic targets the stress is on terminal surgical methods, applicable to women who have finished their child-bearing. Women who did not complete their child birth, have their reproductive carrier ahead, need is to postpone or space pregnancies that requires reversible

and noninvasive methods. There is a shift from terminal to reversible methods [3].

The intrauterine device (IUD) is the world's most widely used spacing method of reversible birth control [2]. There are too many advantages associated with the IUD use as it a long-acting and safe contraceptive to achieve optimal birth intervals (3-5 years); does not interfere with intercourse, immediately reversible, can be used during lactation and menopause, no adverse reaction with other medication, convenient for users. Main advantage with the IUD is that it can be inserted by trained providers at nearly any clinic or peripheral centre without requirement of trained professional [5-7]. This is particularly attractive for those couples who need terminal methods but do not want to adopt a permanent method like sterilization [5].

Still use of IUD is not free from adverse effect hence lot of clients seeks for early removal. Most commonly associated adverse effects that leads to early removal are bleeding, pain, discomfort during sexual intercourse, PID, vaginal discharge, expulsion etc. [8-13]. It was seen that most of side effects occurred

within a month of IUD insertion. Also most of women having bleeding problem, pain and vaginal discharge, had previous history of menstruation irregularity or vaginal discharge [14-17].

This comparative study principally aims to assess pattern of side effects and reasons for removal among beneficiaries at urban and rural settings.

METHODOLOGY

A cross sectional study was conducted in Indore division of Madhya Pradesh. Among the eight districts of Indore division, Indore district was selected for study using simple random sampling. Study was conducted in between November 2013 to October 2014. In order to assess side effect and removal amongst the IUD beneficiaries, a list of all the beneficiaries who had undergone IUD insertion in past 5 years before the onset of study was obtained from the selected centers and systematic random sampling was used to choose the study population. Clients who had IUD insertion at least 3 months prior to the data collection and gave informed consent were included in study irrespective of their history of IUD removal.

Sample Size [18] was calculated using formula $N = Z^2 [P (1-P)]/d^2$, $Z = Z$ value (e.g. 1.96 for 95% confidence level and 5% precision) $p =$ percentage of occurrence of event, expressed as decimal (0.5 used for sample size needed) $d =$ confidence interval (error), expressed as decimal = 0.05. With considering the fact that 50% clients were experienced the event sample size comes out to be 384 rounded as 400. Although discontinuation varies IUD varies from 20 to 40%, investigator not able to calculate sample size separately for urban and rural area. So overall sample size of 400 was calculated supposing 50% discontinuation. As rural population was more and documentation was easy so more number of clients from rural area was included.

Pre-designed, Semi-structured questionnaire was used as study tool for assessment of side effect and removal of Intra uterine device. Pre testing was done at urban health centre attached to the Department of Community Medicine. On the basis of result of pre-test result checklist questionnaire was finalized. Data was analyzed using appropriate statistical software (Microsoft office excel sheets and Epi Info). Chi Square test applied and P value less than 0.05 was found to be statistically significant.

Ethical Consideration

The study was approved by Institutional review board with letter No. 16878/SS/02/14, Dated 17/09/2014.

RESULTS

In this study total 400 beneficiaries were participated out of which 253 (63.3%) were belong to rural area and 147 (36.8%) belong to urban area.

In Rural area

Maximum clients 218 (86.2%) belonged to 21 to 30 years age group, 141 (55.7%) were educated up to secondary class, 174 (68.8%) were unemployed/housewife, 55.7% belonged to upper lower socioeconomic class (Table 1). 104 (41.1%) clients had irregular bleeding with 15 (5.9%) had heavy menstruation. 129 (51%) had menstruation associated with pain and 59 (23.3%) had previous history of abortion (Table 2). In this study 54.5% used IUD as temporary method before completion of their family with one child and 45.5% as terminal method with and after 2 children. 153 (60.3%) clients had interval IUD insertion (Table 3).

89 (35.2%) clients had side effects after insertion. Out of the all type of side effects, pain with heavy bleeding (31.4%) and pain (26.9%) alone was the most common type (Table 4). 46 (18.2%) clients had removal of IUD. Pain with heavy bleeding (43.4%) considered as most important cause for removal (Table 5).

In Urban area

In urban area, Maximum clients 130 (88.4%) belonged to 21 to 30 years age group, 22 (15%) were graduate or above, 111 (75.5%) were unemployed/housewife, 41.5% belonged to lower socioeconomic class (Table 1).

In urban setting 49.7% used IUD as temporary and 50.3% used as terminal method with and after 2 children. 10 (6.8%) had heavy menstruation, 81 (55.1%) had pain during menstruation and 43 (29.3%) had abortion history previous to IUD insertion (Table 2). 83 (56.5%) clients had interval IUD insertion, 36 (24.5%) clients had post abortive and 28 (19%) postpartum/post puerperal insertion (Table 3).

58 (39.5%) clients of urban area had side effects. As similar to rural area pain with heavy menstruation and pain alone remains most common type of side effects (Table 4). 31 (21.1%) clients removed their IUD, out of which 42.6% removed due to pain with heavy bleeding, 10 (12.8%) due to husband insist and 11.5 plan for another baby (Table 5).

Oral pills were the preferred choice as alternative family planning method in both urban and rural area.

Table 1: Demographic variable distribution among the clients

Variables	Age Group	Rural (n=253)	Urban (n=147)	Total (n=400)	P value
Age Group	Less than 20 years	19 (7.5)	9 (6.1)	28 (7.0)	0.806
	21 to 30 years	218 (86.2)	130 (88.4)	348 (87.0)	
	31 to 40 years	16 (6.3)	8 (5.4)	24 (6.0)	
Education status	Illiterate	32 (12.6)	15 (10.2)	47 (11.8)	0.007*
	Primary	50 (19.8)	14 (9.5)	64 (16.0)	
	Secondary (8 th)	59 (23.3)	43 (29.3)	102 (25.5)	
	High school	57 (22.5)	32 (21.8)	89 (22.3)	
	Higher secondary	35 (13.8)	21 (14.3)	56 (14.0)	
	Graduate	19 (7.5)	15 (10.2)	34 (8.5)	
	Postgraduate	1 (0.4)	7 (4.8)	8 (2.0)	
Occupation Status	Professional	3 (1.2)	2 (1.4)	5 (1.3)	0.302
	Semiprofessional	11 (4.3)	11 (7.5)	22 (5.5)	
	Clerical Shop owner Farmer	15 (5.9)	5 (3.4)	20 (5.0)	
	Skilled worker	10 (4.0)	3 (2.0)	13 (3.3)	
	Semi skilled worker	9 (3.6)	5 (3.4)	14 (3.5)	
	Unskilled worker	31 (12.3)	10 (6.8)	41 (10.3)	
	Unemployed housewife	174 (68.8)	111 (75.5)	285 (71.3)	
Socio economic Status	Lower Socioeconomic	7 (2.8)	5 (3.4)	12 (3.0)	0.026*
	Upper Lower Socioeconomic	141 (55.7)	61 (41.5)	202 (50.5)	
	Lower Middle Socioeconomic	65 (25.7)	44 (29.9)	109 (27.3)	
	Upper Middle Socioeconomic	39 (15.4)	33 (22.4)	72 (18.0)	
	Upper Socioeconomic	1 (0.4)	4 (2.7)	5 (1.3)	

*Statistically Significant

Table 2: Menstruation and Gravid History of Clients

History of Menstruation	Rural (n=253)	Urban (n=147)	Total (n=400)	p value	
Age of Menarche	< 12 Years	34 (13.4)	22 (15.0)	56 (14.0)	0.379
	12 - 15 Years	169 (66.8)	104 (70.7)	273 (68.3)	
	> 15 years	50 (19.8)	21 (14.3)	71 (17.8)	
Regularity	Regular	149 (58.9)	85 (57.8)	234 (58.5)	0.521
	Irregular	104 (41.1)	62 (42.2)	166 (41.5)	
Bleeding	Light/Spotting	94 (37.2)	62 (42.2)	156 (39.0)	0.834
	Moderate	144 (56.9)	75 (51.0)	219 (54.8)	
	Heavy	15 (5.9)	10 (6.8)	25 (6.3)	
Pain	With Pain	129 (51.0)	81 (55.1)	210 (52.5)	0.095
	Without Pain	124 (49.0)	66 (44.9)	190 (47.5)	
Number of pregnancies	<2	204 (80.6)	108 (73.5)	312 (78.0)	0.656
	>2	49 (19.4)	39 (26.5)	88 (22.0)	
Number of Living Children	1	138 (54.5)	73 (49.7)	211 (52.8)	0.505
	2	91 (36.0)	62 (42.2)	153 (38.3)	
	3	20 (7.9)	11 (7.5)	31 (7.8)	
	4	3 (1.2)	1 (0.7)	4 (1.0)	
	5	1 (0.4)	0	1 (0.3)	
Age of youngest living child	Less than 1 year	137 (54.2)	88 (59.9)	225 (56.3)	0.189
	1 – 2 years	87 (34.4)	40 (27.2)	127 (31.8)	
	2 – 5 years	20 (7.9)	14 (9.5)	34 (8.5)	
	More than 5 years	9 (3.6)	5 (3.4)	14 (3.5)	
History of abortion	Yes	59 (23.3)	43 (29.3)	102 (25.5)	0.189
	No	194 (76.7)	104 (70.7)	298 (74.5)	

Table 3: IUD Insertion mode and Health care provider for insertion

		Rural (n=253)	Urban(n=147)	Total (n=400)	p value
Type of IUD Insertion	Interval insertion	153 (60.5)	83 (56.5)	236 (59.0)	0.716
	Post Abortion	58 (22.9)	36 (24.5)	94 (23.5)	
	Post partum	42 (16.6)	28 (19.0)	70 (17.5)	
Health Care Provider	Doctor	105 (41.5)	83 (56.4)	188 (47.0)	0.007*
	ANM	87 (34.4)	44 (29.9)	131 (32.8)	
	Nurses (LHV/ Staff nurse)	61 (24.1)	20 (13.6)	81 (20.3)	

*Statistically Significant

Table 4: Pattern of side effects

		Rural (n=253)	Urban (n=147)	Total (n=400)	p value
Side effects	Yes	89 (35.2)	58 (39.5)	147 (36.8)	0.392
	No	164 (64.8)	89 (60.5)	253 (63.3)	
		Rural (n=89)	Urban (n=58)	Total (n=147)	
Type of Side effects	Pain	24 (26.9)	11 (12.5)	35 (23.8)	
	Heavy Bleeding	4 (4.5)	3 (3.3)	7 (4.8)	
	Light Bleeding	7 (7.8)	5 (5.6)	12 (8.2)	
	Pain during coitus	5 (5.6)	6 (6.7)	11 (7.5)	
	Uterine perforation	2 (2.2)	0	2 (1.4)	
	Pregnancy	1 (1.1)	0	1 (0.7)	
	Pain and light Spots	15 (16.8)	12 (13.4)	27 (18.4)	
	Pain with Heavy bleeding	28 (31.4)	17 (19.1)	45 (30.6)	
	Light spotting with pain during coitus	3 (3.3)	4 (6.9)	7 (4.8)	

Table 5: Removal of IUD and Its reasons

		Rural (n=254)	Urban (n=147)	Total (n=400)	P value
Removal	Yes	46 (18.2)	31 (21.1)	77 (19.25)	0.477
	No	207 (81.8)	116 (78.9)	323 (80.75)	
		Rural (n= 46)	Urban (n= 31)	Total (n= 77)	
Reasons for removal	Pain during coitus	1 (2.2)	3 (9.6)	4 (5.1)	
	Fear of not to pregnant if long use	4 (8.7)	1 (3.2)	5 (6.4)	
	Due to husband order	5 (10.8)	5 (16.1)	10 (12.8)	
	Uterine perforation	2 (4.3)	0	2 (2.5)	
	Pregnancy	1 (2.2)	0	1 (1.2)	
	Plan for baby	3 (6.5)	0	4 (5.1)	
	Pain and Plan for baby	2 (4.3)	3 (9.6)	5 (6.4)	
	Permanent Sterilization	3 (6.5)	1 (3.2)	4 (5.1)	
	Pain with light Spotting	5 (10.8)	5 (16.1)	10 (12.8)	
	Pain with Heavy Bleeding	20 (43.4)	13 (41.9)	33 (42.6)	
Alternate Family Planning Method after removal	Oral Pills	21 (56.8)	14 (53.8)	63 (81.8)	
	Condom	9 (24.3)	9 (34.6)		
	TT	7 (18.9)	3 (11.5)		
	No				

DISCUSSION

In this study total 400 beneficiaries were voluntarily participated. Out of these 400, 253 beneficiaries belong to rural area and 147 beneficiaries belong to urban area. In this study maximum clients in both the areas were belong to age group of 21 to 30 years. These finding denotes that IUD was contraceptive of choice for women for most potential reproductive age group.

As finding of the study clearly denoted that in both areas IUD is a preferred choice of clients who are illiterate or educated up to secondary class, unemployed/house wife and of lower or middle socioeconomic class. This is comparable to the study of Kittur *et al.* [19] done at Hubli and Van Zijl *et al.* [20] done in South Africa, stated that most of the participants were belonged age group of 21 to 30 years, educated up to metric and unemployed. According to Alam ME *et al.* [15] most IUD acceptors were found to be poor, uneducated, rural women, who were dependent on their husbands, and lacked exposure to print media, radio, or TV.

Rural clients had higher percentage of Interval insertion than urban clients while post abortal insertions were higher among urban clients. This finding states that scenario was changed now interval mode of contraceptive selection is increases. In rural area most of the insertions were done by Health worker female and other nursing staff in comparison urban area where most of insertions done by doctors. According to Ceylan *et al.* [21] contraceptive usage was increased in post abortive females if they received proper post abortive counseling and IUD was the most preferred choice in them. Eroglu *et al.* [22] stated that post-placental IUD insertion to have lower expulsion rate than early post partum insertion but both rates were much higher than interval insertion.

As finding of this study suggested that in comparison to urban area (equal number of clients chooses IUD as spacing and terminal choice) more number of the rural clients (54.5%) chooses IUD as spacing method. This is similar to study of Muzammil K *et al.* [10].

In this study, Prevalence of side effects was less in rural clients (35.2%) as compared to urban clients (39.5%). In both the areas' most common side effect was pain with heavy bleeding. In rural area 2 clients' experienced uterine perforation and 1 client became pregnant after IUD insertion. These were slightly more than finding of study done by Syed K Azmat *et al.* [9] in the Pakistan and Alam ME *et al.* [15] done in Bangladesh.

Overall removal rate of the study was 19.25%. Urban clients (21.1%) had relatively more removal than rural clients (18.2%). Most common reasons for

removal were pain with heavy bleeding and due to husband insist. These were in comparable to study of Syed K Azmat *et al.* [9] where the overall discontinuation rate was 18.0%. In study of Nguyen TH *et al.* [8], Muzammil K *et al.* [10] main reason for discontinuation was bleeding problem, menstrual irregularity, desire for more child and due their husband opposition.

Observation of this study reiterate that high discontinuation rate is due to problems related to providers so comprehensive training program should be carried out at CHC/PHC level so that maximum health care personnel can avail the opportunity to attend the training. There is also need to improve communication skills and technical knowledge of the health care personnel by ensuring supportive supervision and on the job training. Newer modern IUDs made available at each and every center, which required less skills and also had more compliance of beneficiaries.

The finding of this study revealed that trend of interval IUD insertion was increasing. But along with it, need for proper counseling and selection of the appropriate candidate also increases. Some clients chose IUD after second child as terminal method. In the study most of the insertion was done by health worker female (ANM). This finding showed that implementation of effective contraceptive measure solely depends on basic level workers so there is strong need of strengthening of knowledge and skills of basic level workers.

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