



Changing trends in the acceptance rate of contraceptive methods

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OBJECTIVE (S) : To study the changing trends in the acceptance of contraceptive methods.

METHOD(S) : In this observational study, data were collected for each contraceptive method accepted by the beneficiaries from 1981 to 2000. The methods included were male barrier methods, oral contraceptive pills, intrauterine devices, vasectomy, and female sterilization either by abdominal or laparoscopic approach. Total number of subjects studied was 53165. Statistical analysis with SPSS software and relevant tests was done for each method for 5 yearly subgroups.

RESULTS : There was one and a half times rise in the total number of subjects who accepted contraception, comparable to the rise in the population under study. For male barrier methods the acceptance rate has changed from 19% to 38%, for oral pills it has remained nearly the same, for intrauterine devices from 30% to 18%, for abdominal and laparoscopic tubal ligation from 11% to 8.92% and 9% to 11% respectively, and for vasectomy from 2% to 0.08%. For all the methods of contraception together, the male to female acceptance ratio has increased from 1: 3.7 in 1981-85 to 1: 1.6 in 1996-2000 but for permanent methods it has significantly decreased from 1: 8.5 to 1: 239.

CONCLUSION(S) : For the last two decades, there is statistically significant upward trend in the acceptance of male barriers, a statistically nonsignificant upward trend for laparoscopic tubal ligation, statistically significant downward trend in the acceptance of vasectomy, a slight downward, although statistically nonsignificant, trend for intrauterine devices and abdominal tubal ligation and no much change in the acceptance of oral pills. Overall, the acceptance ratio of male to female methods is increasing.

Key words : contraception, temporary contraception, permanent contraception

Introduction

In the year 1951, India was the first country in the world to launch the Government sponsored Family Planning Program at the National level¹. Subsequently numerous changes have been made in the program with the basic aim of controlling the population of the country and thereby contributing towards more healthy society. These changes had a target oriented approach, integration with Maternal and Child Health and with existing health infrastructure, a successively increasing budget, multiple goals etc¹. But what is the result?

We have achieved the population figure of 1 billion easily. In the present observational study, we have tried to find out the real ground effects of the program over the last two decades and thus to know how much we have succeeded and how far and how hard we still have to go to avoid the population explosion in this very new millennium.

Methods

Starting from the year 1981 up to the year 2000, all the 53165 subjects from the population coverage area of the hospital who came for any type of family planning methods were included in this study. All these subjects were counseled by cafeteria approach about available contraceptive methods. The options provided were temporary methods of contraception like male barriers, oral pills, intrauterine devices and permanent methods like vasectomy, and abdominal and laparoscopic tubal ligation. All the subjects were provided with the method they chose and were explained in detail about that method.

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These data were recorded and maintained along with the hospital statistics. The hospital statistics of the ongoing family welfare activities for this duration was collected, compiled and extensively studied considering various aspects of the present study. Census data were collected for the last two decades ²⁻⁵. These 53165 subjects were grouped into 5 yearly subgroups to have an overall idea of the trend of acceptance of individual contraceptive method. All results were reviewed in the light of available literature and available family welfare statistics and conclusions were drawn on this basis. SPSS software was used and relevant statistical tests were done for each method for the 5 yearly subgroups.

Results

The total number of subjects for 1981-85 were 9329, for 1986-90 10547, for 1991-95 16615, and for 1996-2000 16674. This being a comparative study, considering the first subgroup as a baseline, the relative rise in the number of subjects for each successive 5 yearly subgroup would be 1.13 times for 1986-90, 1.78 times for 1991-95 and 1.78 times for 1996-2000. It is important to interpret these data in comparison to relative rise of the population in the area covered by the hospital. The comparative figures for overall population rise are 1.17, 1.32 and 1.48 times respectively. For 1.13 to 1.78 and 1.17 to 1.32 comparison, the chi square value is 0.48 with $P < 0.10$ (statistically not significant), suggesting that the rise in the total number of subjects using different contraceptive methods from 1986-90 subgroup to 1991-1995 subgroup is statistically not significant considering the comparative rise in the total population in that area. Similarly, for 1.78 to 1.78 and 1.32 to 1.48, the chi square value is 0.46 with $P < 0.50$ (statistically not significant), suggesting that the rise in the total number of subjects using different contraceptive methods from 1991-96 subgroup to 1996-2000 subgroup is statistically not significant considering the comparative rise in the total population in that area. Thus, the population has increased to almost 1 1/2 times in comparison to the initial population at the beginning of the study and there is a similar rise in the number of subjects who opted for one or the other method of contraception (Table 1).

Table 1: The number of subjects according to 5 yearly subgroups.

Duration	Number of subjects	Relative rise in number of subjects	Relative rise in Population of the Area
1981-85	9329	1	1
1986-90	10547	1.13 ^a	1.17 ^b
1991-95	16615	1.78 ^a	1.32 ^{b,c}
1996-2000	16674	1.78 ^a	1.48 ^c
Total	53165		

Base line data for 1981-85 is taken as 1

P values (chi square test with Yate's correction at 1dF) – a - 0.48

b - <0.10 c – 0.46 a,b – $\chi^2 = 0.48, P < 0.1$ c – $\chi^2 = 0.46, P < 0.5$

Table 2 describes the changes in the acceptance of temporary methods during the study period. Looking at the observed change in the male barrier method of contraception, the relative rise for the last three subgroups sequentially is 1.58, 2.71 and 3.56 times respectively in comparison to the baseline of the first subgroup. Thus, it is obvious that the trend is toward constant increase in the acceptance rate for male barriers. Overall, the acceptance rate of male barriers has increased from 19% to 38%, which is statistically highly significant at $p=0.0034$. When the 3.56 times rise for male barriers is compared with the 1.48 times rise in the general population, it is statistically significant ($P < 0.05$).

For oral contraceptive pills, there is no constant trend in the acceptance. The comparative data are 0.39 times fall and 1.35 and 1.44 times rise for the each 5-yearly subgroup successively. The comparative rise for this method from the 1981-85 subgroup to 1986-90 subgroup was 0.39 times, i.e. actual fall from 2733 to 1074. For the same period, there was a rise in the total population of 1.17 times. However, if we look at the P value with the application of chi square test, this decline is statistically not significant. No obvious explanation for this fall in the use could be found for this period. One possibility could be a change from target oriented approach to a target free approach in governmental policy during those years. However, no direct correlation between this assumption and observation could be established. Acceptance rate for oral contraceptive pills was 29% of all acceptors in 1981-85, 10% in 1986-90, 22% in 1991-95 and 24% in 1996-2000. Thus, the acceptance rate for this method has remained nearly constant for the last two subgroups. Overall, there is no much change in the acceptance rate (barring the second subgroup of the study). For contraceptive pills, the relative use from 1.00 to 0.39 to 1.35 to 1.44 for the years 1980-85, 1986-90, 1991-95 and 1996-2000 respectively compared with similar values for general population under study gives the chi square value of 1.65 with $P < 0.10$ (statistically not significant), suggesting that total number of subjects using contraceptive pills from 1981-86 subgroup to 1996-2000 subgroup has not changed significantly (Table 2).

When we look at the number of users for intrauterine devices, its relative rise is 1.17 times for 1986-1990, 1.66 times for 1991-1995 and 1.11 times for 1996-2000. When compared with 1.17, 1.32 and 1.48 times rise in population of the relevant periods the changes are not significant (chi-square value of 0.90 with $P < 0.50$) implying there was no significant change in IUD users from 1981-86 to 1996-2000. The relative drop in the last subgroup of 1996-2000 from the previous subgroup of 1991-995 probably suggests an isolated observation and not a particular trend (Table 2).

Table 2: Acceptance rate for temporary methods of contraception.

Sub-group	Male barrier method		Oral contraceptive pills		Intrauterine devices	
	No. of subjects	Acceptance rate	No. of subjects	Acceptance rate	No. of subjects	Acceptance rate
1981-85	1764 (1) ^a	19% ^b	2733 (1)	29%	2760 (1)	30%
1986-90	2788 (1.58)	26%	1074 (0.39)	10%	3237 (1.7)	31%
1991-95	4783 (2.71)	29%	3706 (1.35)	22%	4573 (1.66)	27.7%
1996-00	6287 (3.56) ^a	38% ^b	3951 (1.44)	24%	3075 (1.11)	18%

Base line data for 1981-85 is taken as 1

Figures in brackets indicate the multiples as compared to 1981-1985 numbers.

^a P<0.05 (considering 1.48 times population rise). ^b P=0.0034

Table 3: Acceptance rate for permanent methods of contraception.

Sub-group	Vasectomy		Abdominal tubal ligation		Laparoscopic tubal ligation	
	No. of Subject	Acceptance rate	No. of Subject	Acceptance rate	No. of Subject	Acceptance rate
1981-85	219 ^a (1)	2% ^b	1020 ^c (1)	11%	833 ^d (1)	9%
1986-90	59 (0.26)	0.5%	2395 ^c (2.35)	23%	994 ^{d,e} (1.19)	9.5%
1991-95	19 (0.08)	0.1%	2009 (1.97)	12%	1525 ^{e,f} (1.83)	9.2%
1996-2000	14 ^a (0.06)	0.08% ^b	1452 (1.42)	8.92%	1895 ^f (2.27)	11%

Baseline data for 1981-85 is taken as 1.

Figures in brackets represent the multiples of 1981-85 numbers.

^{a,b} P<0.0001 (considering 1.48 times population rise). ^c P<0.05 (considering 1.17 times population rise). ^{d,e,f} P<0.05 (considering the population rise).

Table 4: Ratio of male to female acceptance of contraceptive methods.

Duration	Male methods	Female methods	Male : Female acceptance ratio for all method	Male : Female acceptance ratio for permanent methods
1981-85	1983	7346	1: 3.7	1: 8.5
1986-90	2847	7700	1: 2.7	1: 57
1991-95	4802	11813	1: 2.4	1: 186
1996-2000	6301	10373	1: 1.6	1: 239

Table 3 gives the changes in the acceptance of permanent methods during the study period. There is a constant decrease in the number of subjects who accepted vasectomy. Compared to the initial 5 years the acceptance drops to 1/4th, 1/12th and 1/16th for each of the successive 5 yearly groups. This is again statistically significant at P<0.0001. As such, the acceptance rate for vasectomy has been very low right from the beginning of the study. It has been further reduced from initial 2% to just 0.08% for the last 5 years of the study.

The number of subjects undergoing abdominal tubal ligation rose significantly to 2.35 times from 1020 in 1981-85 to 2395 in 1986-90. Considering that 1.17 times population rise during the period, this rise (2.35 times) is statistically significant (chi square value with Yate's correction is 3.87 with P < 0.05). This probably is because of mass campaign for tubal ligation with laparoscopic tubal ligation still being in its initial phase in those years. Thereafter the number declined from 2395 to 2009, (1.97 times of the original value) for 1991-96

and further declined to 1452 (1.47 times the original value) in 1996-2000. However, this drop is statistically not significant with chi square value of 1.14 at 2 degrees of freedom, with $P < 0.50$. This drop is because of greater acceptance of laparoscopic tubal ligation as a permanent method and corresponding drop in the use of abdominal ligation. Thus, abdominal tubal ligation had acceptance of 11% in 1981-85 that rose to 23% in 1986-90 and then declined to 12% and 8.92% in 1991-1995 and 1996-2000 respectively (Table 3).

For laparoscopic tubal ligation, there is an apparent rise in the acceptance. The relative rise is 1.19, 1.83 and 2.27 times the baseline of 1 in 1981-85 for the successive 5 yearly subgroups. However, considering 1.17, 1.32 and 1.48 times population rise during these relevant periods the rise in acceptance of laparoscopic tubal ligation is statistically not significant ($P < 0.50$). This is reflected in the rise from 9% acceptors for this method in 1981-85 to mere 11% acceptors in 1996-2000.

Table 4 summarizes the acceptance of contraceptive methods by males and females. Considering all the methods of contraception, the male to female acceptance ratio has increased from 1: 3.7 in 1981-85 to 1: 1.6 in 1996-2000. However, if we look at the permanent methods of contraception, this ratio has significantly decreased from 1: 8.5 in 1981-85 to 1: 239 in 1996-2000 ($P < 0.05$).

Discussion

This study is primarily designed to find out the changing trends in the acceptance of various contraceptive methods. It is obvious that with the rising population, the absolute number of subjects accepting the contraception is going to rise^{6,7}. But along with this, the rate of acceptance has also increased marginally indicating that the overall couple protection rate is also increasing, though at a very slow pace. The rise in the acceptance rate of male barrier contraception is statistically highly significant and has reported highest rise amongst all methods in the last two decades ($P=0.0034$; Table 2). The possible causes for such rise, as has been found from the literature search, can be greater awareness of the population and the possible threat of AIDS along with other STDs⁸. Oral contraceptive pills has always been a popular method of contraception for decades. However, there is not much change in its acceptance rate possibly because of continuing controversies during these years regarding its causative effects in genital cancer development^{9,10}. There is no statistically significant difference in the acceptance rate of intrauterine devices. The available literature gives controversial report on this method of contraception perhaps because of the various factors like type, cost and adverse

effects^{11,12}. One of the very important observations of this study is a drastic decrease in the acceptance of vasectomy that is statistically highly significant ($P < 0.0001$; Table 3). No obvious cause except social factor could be found out for this negative trend³⁻⁵. Our study has not evaluated the social changes over the period of study. It is really important to find out why males are less willing to undergo permanent sterilization than females. The female sterilization has always been a preferred method of permanent contraception. Abdominal tubal ligation has remained popular over the years. In spite of the more and more laparoscopic tubal ligation being performed, this method has attracted more or less similar acceptance rate during the study period although there is a rise in its acceptance from 9.2% in 1991-95 to 11% in 1996-2000. This, however, parallels the drop in acceptance rate of abdominal tubal ligation from 12% to 8.92% during the period. The literature suggests that there is a rise in the laparoscopic tubal ligation, but more significantly at the rural level where camp activities are done more intensively and the rise in urban set up is relatively less¹³. Our center is located in the urban area. The results of our study are consistent with similar data available for any Indian rural-urban mixed set up³⁻⁵. However, in context of world trends for contraceptive acceptance, the results are quite different in the form that acceptance rate is rising at a variable pace, and the temporary methods of contraception are gaining more acceptance than permanent methods^{6-8,10,12} at a global scenario.

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