

## EFFICACY OF DEPOT MEDROXY PROGESTERONE ACETATE AS A CONTRACEPTIVE

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### Abstract

**Keywords:** Depot medroxy progesterone acetate, long acting contraceptive, continuity rate, failure rate.

The high rate of unintended pregnancies and the relative failure rates with the typical use of reversible methods of contraception are strong indicators of a need for long acting contraceptive method that simplifies compliance. one such method is injectable Medroxy progesterone acetate (DMPA) which is a long acting agent that has been part of the contraceptive programs of many countries for more than 20 years. Aim: To evaluate the efficacy of DMPA (Depot medroxy progesterone acetate) as a means of contraception in urban south Indian women. Objective: The efficacy of DMPA is evaluated by Evaluation of continuity rate, Analysis of reasons for discontinuation, Analysis of side effects, Evaluation of failure rate. Type of study: Prospective nonrandomized interventional cohort study in a tertiary care hospital setting in an urban background. Materials and methods: 99 women attending are OPD requiring contraception were enrolled for this study. Results: Out of the 99 patients recruited for the study between 18 to 36 years, the mean age was 25 yrs. The patients were followed up for 12 months. Only 36% of subjects completed 12 months follow up, 39 % subjects did not complete 12 month follow up. 24% subjects were lost to follow up. Out of the 36 % subjects who completed one year follow up, the failure rate was zero. There was no effect on lactation. The main reason for discontinuation was menstrual disturbances. The main side effects were menstrual disturbances.

### Introduction

The high rate of unintended pregnancies and the relative failure rates with the typical use of reversible methods of contraception are strong indicators of a need for long acting contraceptive method that simplifies compliance. one such method is injectable Medroxy progesterone acetate (DMPA) which is a long acting agent that has been part of the contraceptive programs of many countries for more than 20 years

**Aim:** To evaluate the efficacy of DMPA (Depot medroxy progesterone acetate) as a means of contraception in urban south Indian women

**Objective:** The efficacy of DMPA is evaluated by

- Evaluation of continuity rate
- Analysis of reasons for discontinuation
- Analysis of side effects
- Evaluation of failure rate

**Type of study:** Prospective nonrandomized interventional cohort study in a tertiary care hospital setting in an urban background

**Materials and methods:** 99 women attending are OPD requiring contraception were enrolled for this study the inclusion criteria being

1. Post delivery

- 
2. Post abortion
  3. Women in day 1-7 of menstrual cycle wanting temporary contraception
    - i. For birth spacing
    - ii. To postpone permanent sterilization

The criteria for exclusion were

1. Breastfeeding less than 6 weeks
2. Unexplained vaginal bleeding
3. Rapid return to fertility desired
4. Known or suspected cases of breast cancer
5. Chronic liver disease
6. Use of certain antibiotics like Rifampicin , Griseofulvin and anti seizure medication
7. Severe coagulation disorder

The women were effectively counseled regarding the efficacy, benefits and possible side effects of DMPA. With informed consent, detailed history was taken and physical examination done. Weight noted and investigations were done if required. All subjects underwent pre enrollment counseling as to how the drug works, possible side effects, failure rates, and advise regarding sexually transmitted diseases was done in the local language .

## Methodology

Depoprovera 150 mg/ml pre-filled syringe was used. Intramuscular injection was given in the gluteal region by Z technique without massage post injection. All women were given written appointment cards, for their next scheduled injection in 12 weeks. They were advised to keep a menstrual diary and report immediately if there was any complaint. Follow up was done every three months for one year. During each visit the following parameters were monitored.

- Changes in their health and alterations in their menstrual pattern were noted
- Physical examination, weight, blood pressure were noted
- Special investigations done if needed eg: blood sugars in diabetics, hemoglobin levels in anaemic patients
- Reasons noted if the patient wanted to discontinue from the study
- Personal/family medical update

Patient was discontinued from the study if she:

- desired to have another child
- Changed the method of contraception
- Stopped taking injection due to other reasons
- Failed to come for follow up visits within grace period of 14 days

All the data so collected was evaluated, analyzed and interpreted.

## Results

Out of the 99 patients recruited for the study between 18 to 36 years, the mean age was 25 yrs. The patients were followed up for 12 months. Only 36% of subjects completed 12 months follow up, 39 % subjects did not complete 12 month follow up. 24% subjects were lost to follow up. Out of the 36 % subjects who completed one year follow up, the success rate was 100% (failure rate was zero) There was no effect on lactation. The main reason for discontinuation was menstrual disturbances. The main side effects were menstrual disturbances.

**Analysis of study population**

The study population constituted 99 people attending the family planning outpatient department for contraception. The group was selected randomly and the age groups were between 18 and 36 years. Most of the population belonged to 20-29 age group.

<20 years – 1

20 to 29 – 92

30 and above – 6

Most of the subjects in the study group were in lactational amenorrhea during the initiation of the first injection.

**Prior menstrual history:** The baseline menstrual history of all the people in the study was recorded. Majority of them had regular periods. 6% of the study population already had irregular menstrual cycles prior to pregnancy.

**TABLE NO – 2**

<b>Prior menstrual history</b>	
Regular	93
Irregular	6

**Socioeconomic status**

The study group contained most of the people from socioeconomic status class 3. Out of the 99 people included in the study 71 were from socioeconomic class 3 and 16 from class 4. Only 10 of them were from socioeconomic status 2. Most of the people from class 3 depicting the routine class of population our hospital caters to in the outpatient department.

Socioeconomic class 2 – 10

Class 3 – 71

Class 4 – 16

**Frequency of parity:** Women accepting contraception were mostly primi paras and the main purpose was for birth spacing. Only 9 of them were multi paras whose main reason for taking the injectable was to postpone permanent sterilization.

Primi paras – 90

Multi paras – 9

**Prior contraceptive usage**

While most of the study group was coming for contraception counseling for the first time, 9 of them were people who switched to DMPA from other methods of contraception.

None 77 Barrier methods 12

CuT Failure 2

Pain 2

White discharge 1

Wt. Loss 1

Failure to apply 1

Spontaneous expulsion 1

Triquilar

Gastritis 1

**MODE OF DELIVERY**

Among the women accepting the injection, 60 (60.6%) were mothers who had a full term normal delivery, 36 (36%) were mothers who had a lower segment caesarean section done for various reasons. Rest of the 3 patients were taking the injection following molar evacuation, hysterotomy and outlet forceps extraction.

**Acceptors of injection**

Following full term normal delivery – 60

Following caesarean section – 36

Mole – 1

Hysterotomy – 1

The study population constituted women ageing between 18 yrs and 38 yrs. Most of them were ageing between 20 and 29, only 1 aged below 20 and about 6 of them ageing above 30 years. The mean age of the population is 24.86. the mean weight is 54 kgs.

**TABLE NO – 3**

	<b>Age</b>	<b>Weight</b>	<b>No months</b>
<b>Mean</b>	24.86	54.01	8.01
<b>Median</b>	25.00	53.00	6.00
<b>Standard deviation</b>	3.21	9.12	4.63
<b>Minimum</b>	18.00	36.00	3.00
<b>Maximum</b>	38.00	85.00	18.00
<b>Count</b>	99.00	99.00	78.00

The total number of months followed for the whole study population is 625. The maximum number of months followed up per a single case is 18 months and the average number of months of follow up being 8. The following table (table – 4) depicts the distribution of months of follow up in the study.

**TABLE NO – 4**

<b>Follow up</b>	
<b>Months</b>	<b>Number</b>
3	22
6	21
>_9	36

22 people were followed up for 3 months. 21 people were followed up for 6 months. 36 people were followed up for 9 and more months.

### Outcome Analysis

#### a) Continuity rate and discontinuity rate continers:

Women taking 3 or more injections are considered continers.

#### Discontinuers:

Any person voluntarily asking for a change in contraception or wanting to stop the injection for explainable reasons are called discontinuers.

*TABLE NO – 5*

Number of doses	REMARKS			Total
	Continued	Discontinued	Lost for follow up	
1		20	21	41
2	58	19	3	22
3	36	9	0	18
>3	27	0	0	18
<b>Total</b>		<b>48</b>	<b>24</b>	<b>99</b>

The above table shows that 58.58% came back for the second dose, and only 36.36% continued with the third dose. On the contrary 20.2% discontinued with the first dose and about 19.5% discontinued after the second dose. These rates are calculated excluding those people lost for follow up. But presumed that some of them are continuing somewhere the rates may vary.

*TABLE NO – 6 Continued the treatment*

Variables	N	Percent
Continued the injection	36	36.36
Discontinued the injection	39	39.39
Lost for follow up	24	24.24

Out of 99 people, 63 have either discontinued or lost for follow up before the third dose and 36 people continued the DMPA injection for more than 3 doses (table no – 6). Nearly 2/3<sup>rd</sup> of the study group has dropped out i.e. either discontinued or lost for follow up. 24% have lost for follow up in the total study.

It was also noted that people with history of induced abortions for unexpected pregnancy tend to continue with the injection for a longer period when compared to others. The number of patients with abortions in our population is very low and it is difficult to bring out a consensus from them.

### 1. Rates of continuity and discontinuity Vs Number of doses

TABLE NO – 7

Continuity rate*		
Dosage	Continued	Discontinued
2	58 (58.58%)	20 (20.20%)
3	36 (36.36%)	19 (19.19%)
4	27 (27.27%)	

From the above table we infer that the continuity rate decreased from 58% to 36%, from the second dose to third dose whereas the discontinuity rate is almost the same for the first and the second dose. It was observed that people taking the injection up to the third dose want to continue the injection and so the rate of continuity is almost the same for 4<sup>th</sup> and higher doses.

### 2. Rates of continuity and discontinuity with respect to socioeconomic status

TABLE NO – 8

SE status	Continuity rate	Discontinuity rate	Total
Class 2	4(40%)	5(50%)	10
Class 3	24(33.8%)	29(40.8%)	71
Class 4	5(31.25%)	7(43.75%)	16

The continuity rate among the various socioeconomic classes included in this study has been shown in the above table. It is found that there is no significant difference in the continuity rates among the various socioeconomic groups included in this study. However, the socioeconomic classes 1 and 5 have not entered into this study and inclusion of these classes might bring out a significant difference in the continuity rate (cost factor for the class 5 people).

### 3. Rates of continuity and discontinuity Vs mode of delivery

TABLE NO – 9

Mode	Continued	Discontinued	Chi square	p
FTND	20	31	0.13	>0.01
LSCS	15	15		

Acceptability and continuity of women following FTND and LSCS

Full term normal delivery – 33.33%

Caesarean section – 41.66%

Mole – 1%

The above table – 9 shows that there is increased continuity rate for DMPA in women following caesarean section.

The continuity rate among women following normal delivery and women following caesarean section when analyzed is not statistically significant.

However, the acceptability and continuity among the caesarean group has found to be much better in our study group probably due to

- a. Post operative period makes them more receptive to counseling
- b. The fear of IUCD insertion (most commonly practiced method of contraception) into a recently operated uterus.

#### 4. With respect to prior contraceptive usage

*TABLE NO – 10*

<b>Continued</b>	<b>6</b>	<b>66.6%</b>
<b>Discontinued</b>	<b>3</b>	<b>33.3%</b>

Amongst the people who have changed from another contraception to DMPA (total 9) due to various reasons which are already quoted, 6 of them continued with the injection and 3 of them discontinued the injection mostly due to menstrual problems among which amenorrhea played a major role; irregular spotting was also there.

Patient compliance has been found to be good in 32 cases out of 38 cases, which were followed for more than 9 months. 6 people could not come within the grace period of 14 days. Overall it signifies a good compliance.

Patient satisfaction has been found in 33% of the patients and this has been confirmed by the willingness of the patients to recommend this method of contraception to other people.

#### b) Effect On Lactation

None of the patients in the study have complained of decreased lactation. This reiterates that DMPA doesn't decrease the amount of lactation in a post natal mother.

#### c) Failure Rate

This study of 36 people followed up to one year had no failure rates recorded, proving the efficacy of DMPA.

#### d) Reasons For Discontinuation Of The Injection

The various reasons quoted by the cases who wanted to discontinue the injection are stated below:

- Amenorrhoea-18
- Irregular bleeding-6
- Profuse bleeding-1
- Continuous spotting-1
- Weight gain-2
- Back ache-1
- Cost and non-compliance-2
- Family pressure-4
- Permanent sterilization-2
- Contraception not needed-10

Further analysis of the reasons for discontinuation with respect to the number of doses after which discontinued is given in the following table:

TABLE NO - 11

REASONS	AFTER 1 <sup>ST</sup> INJECTION	AFTER 2 <sup>ND</sup> INJECTION	AFTER 3 <sup>RD</sup> INJECTION
Amenorrhea	7	10	1
Irregular spotting	2	4	
Profuse bleeding	1		
Weight gain		1	1
Continuous spotting			1
Back ache	2		
Family pressure	3	1	
Contraception not needed	3	1	6
Permanent sterilization	2		
Cost, compliance		2	

The various reasons for discontinuation have been compared to the 1<sup>st</sup> and 2<sup>nd</sup> dose to analyze the effects related to number of doses. The discontinuities after the 3<sup>rd</sup> dose were mostly-no further need for contraception and so the reasons are analyzed only for the 1<sup>st</sup> two doses.

#### Reasons for discontinuation in women after 1<sup>st</sup> injection

20% of people discontinued DMPA after the first injection. Among them menstrual disturbances were the most common reason for discontinuation.

#### Menstrual disturbances

- Amenorrhea-7%
- Irregular spotting-2%
- Profuse bleeding-1%
- Others:**
- Back ache-2%
- Permanent sterilization-2%
- Family pressure-3%
- Contraception not needed-3%

On evaluating the reasons for discontinuation of the injection in 46% of the patients, menstrual disturbances (40%) were found to be the main reasons for discontinuation. Among the menstrual disturbances amenorrhea is the main reason stated for the cause of discontinuation even after the first dose. And other menstrual irregularities like irregular spotting and profuse bleeding though were present in a larger number of patients were the cause of discontinuation in only 1-2% of the patients.

Among the other 60% the major reasons for discontinuation is found to be the family pressure. These patients were comfortable with the injection initially but due to the various myths surrounding the injection in the surrounding people....mainly the belief of irreversibility of fertility, they have opted out of the study. This shows the requirement of adequate counseling not only to the patient but also to her 1<sup>st</sup>-degree relatives or creating a general awareness regarding the method and its myths.



**Reasons for discontinuations after 2<sup>nd</sup> injection**

Total 19%

- Menstrual
  - Amenorrhea-9%
  - Irregular spotting-4%
  - Profuse bleeding-1%
- Weight gain-3%
- Non compliance-1%
- Cost-1%
- Contraception not needed-1%

Menstrual disturbance are again the main reason for the discontinuation in the women following 2<sup>nd</sup> injection.

13(65%) people discontinued after 2<sup>nd</sup> injection due to amenorrhea compared to 50% after 1<sup>st</sup> injection. Amenorrhea is considered prolonged, by the patient at the end of six months and thus becoming the main reason for discontinuation. This study again confirms that the bleeding episodes tend to decrease following increasing doses of DMPA and the incidence of amenorrhea increases proportional to the doses.

**Weight gain:** Weight gain is the 2<sup>nd</sup> main reason for discontinuation as per the study. However due to the various confounding factors which are like the pre-pregnancy weight and the varied dietary habits in the relatively small number of patients, weight gain cannot be given much significance.

**Non-compliance and cost:** Few people have discontinued due to the cost and compliance factors. These come into light in comparison with other forms of contraception like the IUCDs, which don't have the problem of compliance and the cost factor, which is most of the times, a one-time affair for the spacing with IUCD.

**Contraception not needed and permanent sterilization:** Patients, who didn't need any contraception further, gave the reasons- contraception not necessary. Most of them were social reasons like, husband going out of station for work, wanting to become pregnant etc.

Perhaps the most important issue surrounding the use of DMPA is that of patient information. Most of the people are not aware of the method. This makes potential users anxious and subject to misinformation from poorly informed or biased sources. Also it is temporarily irreversible during its three months duration, so the duration of any problems or anxiety resulting from side effects may be longer than for other methods.

**Analysis of side effects:**Menstrual irregularities are noted in 77 cases in this study.

**TABLE NO – 12**

Menstrual irregularities	Frequency	Percentage
Amenorrhea	34	43.58
Irregular periods	29	37.17
Regular periods	12	15.38
One regular cycle followed by amenorrhea	3	3.84
Total	78	100

Out of the 78 people whose side effects were noted from 1<sup>st</sup> to 4<sup>th</sup> and above doses amenorrhea in 34 people tends to be the major effect though this cannot be taken by its face value because the majority of the women are in lactational amenorrhea, which cannot be differentiated from the DMPA effect. These 43% cases were amenorrheic from the 1<sup>st</sup> dose and continue to be amenorrheic during the follow up. There were no episodes of any bleeding during the

successive doses. Irregular periods were found in 37% of cases during the 1<sup>st</sup> few cycles of which only 1% had persistent irregular periods even after the 3<sup>rd</sup> dose. 12% had regular periods even with 3 doses of DMPA whereas 3% had regular periods followed by amenorrhea after the 1<sup>st</sup> month.

**Menstrual disturbances with the dose :** With increasing duration of usage, the frequency and length of bleeding episode decreased and amenorrhea became more common. Majority of women with prolonged spotting were found in the 1<sup>st</sup> few months of use.

TABLE NO – 13

No. of doses	Amenorrhea		Total	Chi Square	p
	Yes	No			
1	15	5	20	13.87	<0.01
2	6	13	19		
3	14	4	18		
>3	17	1	18		

The above table-13 shows that there is increasing incidence of amenorrhea and decreasing incidence of bleeding irregularities as the number of doses increase. This shows that the endometrium becomes atrophic with increasing doses of DMPA.

#### Timing of injection and menstrual disturbances

TABLE – 14

Time of initial injection	Total	Persistent amenorrhea	Regular bleeding followed by amenorrhea	Irregular periods
Lactational amenorrhea	44	20(45.45%)	2(6%)	22(48.8%)
Post menstrual	29	12(41.4%)	5(17.2%)	8(27.58%)

Totally 60 injections were given to the patients during lactational amenorrhea. Among them 16 were lost for follow up. Studying the effects of DMPA on the menstrual cycles of the 44 cases who had taken the injection during lactational amenorrhea-20(45.45%) of them, had persistent and continuous amenorrhea and the rest of them had bleeding in some way. Only two cases had regular bleeding followed by complete amenorrhea and the rest of the 22 people had irregular bleeding (table-14). Among the 37 cases who have taken the injection mostly before day 7 of cycle or other days of cycle-8 were lost to follow up. Total 29 cases were followed up. Among them, 12 cases had amenorrhea (41.3%), 5 cases continued with regular periods for sometime and then landed up in amenorrhoea. 8 cases (27.58%) had prolonged bleeding. 4 cases had irregular bleeding which was unpredictable. We can infer from the above table (table-14) that persistent amenorrhea in people taking the injection during any time whether lactational amenorrhea or period of cycle is comparable to each other. But irregular bleeding as a side effect is more common in people taking the injection during lactation amenorrhea than those taking during their cycles. Menstrual disturbances in the form of amenorrhea or irregular bleeding episodes are comparable in the acceptors following normal delivery or caesarian section.

**Other side effects**

30 (42.85%) cases complained of some side effects other than menstrual disturbances. The different side effects described by 75 patients during different points of time during their study during 1 year are as follows:

- Weight gain-12, Back ache-7, Giddiness-7, Bloating-2, Dyspareunia-4, Joint pains-2, Cramps, fatigue-2, Numbness of hands -1, Spotting during intercourse-1, Recurrent UTI-1, Headache-1

**Weight changes** Weight changes were noted in 36 women among which 12 women had weight gain...when followed up to 1 year, 7 women had weight loss 8 women had no change in weight after 1 year of follow up study. Average weight gain-2.46 kg in one year

Weight gain noted in patients within 1 to 3 doses also equaled to 2.45 kg. Ironically weight loss has been noted in 7 patients coming to an average of 5 kg. This further reduces the percentage of people having weight gain as side effects.

Dyspareunia and spotting during intercourse have been complained by few patients. This might have some relation to the vaginal dryness caused by the progesterone. But only a small group of people complained of these side effects. This might differ in patients due to individual differences in the endogenous structural and functional mechanism.

Back ache and giddiness were the other common complaints. Joint pains, bloating, fatigue and numbness of hands are the other vague complaints given by the patients.

**Discussion**

Contraception has been an issue of prime importance since the late 19th century in all the developing countries. Many studies have been done around the world in search of an ideal, acceptable and convenient contraceptive and DMPA has been an object of interest in various countries due to its many advantages such as convenience, low failure rates etc.

Present study is a prospective study conducted in Chennai. Few studies in literature have been found to be prospective. Most of them are retrospective or observational studies.

**Continuity rate:**

Continuity rate for various studies ranged from 28 to 53%. In the present study it is 34%. Very few studies showed lower continuity rates.

**TABLE 15**

study	population	Duration {months}	Continuity rate%
Polaneczy et al <sup>4</sup>	261	12	30%
Potter Is et al <sup>5</sup>	510	12	36%
Mahjoub es et al <sup>6</sup>	930	12	34.8%
Paul c et al <sup>7</sup>	1864		53%
Lim sw et al <sup>8</sup>	250	12	31.5%

D hubacher et al <sup>9</sup>	430	12	51%
Jane cover et al 2017 <sup>1</sup>	380	4	88%
JULIA E KOHN ET AL <sup>2</sup>	336	12	69%
Present study	99	12	36%

**Hubacher** et al is a prospective study conducted on 430 women in North Carolina USA .The continuity rate was 51 % in his study. In his study the acceptability rate was affected by

1. attitude towards menstruation
2. Number of children and
3. Spousal input

Similar factors have played a major role in influencing the acceptability rate in the present study.

**Polaneskzy et al** is an exploratory study conducted in USA . (year). In his study the rates of continuity were not affected by the user's age , marital status and the distance of residence to the hospital .**Paul C et alealand in 1997**. Its continuity rate was at 51 % , which is higher compared to our study. This difference was probably because Paul et al was an observational study unlike the present study.

**Mahjoub et al** is a retrospective longitudinal bicentric study done in Tunis. It showed a continuity rate of 34.8%. This is comparable to the results of the present study.

Potter LS et al is a population based retrospective study based on 12 month clinical data in Princeton University.USA. The results of this study are comparable to the present study.

JULIA E KOHN ET ALS tTexas study was done using a subcutaneous self injectable form of depot medroxy progesterone acetate which increased the compliance due to the convenience of self injectability

Our study shows a higher continuity rate in women who did not have any desire to have more children

Pre treatment counseling in expected side effects increases the acceptability if DMPA as proposed by the Lei ZW et al <sup>11</sup>study in China.

Looking at various continuation rates, it can be inferred that cultural differences are important in the decision to continue DMPA.

In conclusion it can be said that adequate counseling and proper follow up definitely seems to influence continuity rate.

**Table 16 Continuity rate %for successive doses in various studies**

study	After 1 injection	After 2injections	After 3 injections
Polaneczy et al <sup>4</sup>	74	50	30
Potter ls et al <sup>5</sup>	67	46	35
Falase et al <sup>10</sup>		60.5	20.4

Khelifa et al <sup>11</sup>	48	24	13
Hassan robibi et al <sup>3</sup>	73.07	54.61	26
Present study	56	36	34.4

Our acceptability rate after the first injection was comparable to other studies but it decreased considerably after the second injection. Falase et al which is a Nigerian study showed a decreasing continuity rate reaching 11% during the third year of the study.

In the Tunisian retrospective study done by Khelfi et al, the 1 year continuity rate was only 13%. Probably pretreatment counseling plays a part in the continuity rate .

However , the major cause of the dwindling continuity rates were found to be amenorrhoea and menstrual disturbances.

### Discontinuity rate

*Table 17*

Study	With 1 injection	With 2nd injection
Mukherjee et al <sup>12</sup>	32.2%	38.8%
Present study	20%	19%

Mukherjee et al study was conducted in Calcutta India in ----. It showed an increase in discontinuity rate from 2 nd injection to the 3 rd injection where as it is almost the same in the present study. But the reasons for discontinuation varied, with amenorrhoea being the major cause for discontinuation after the 2 nd injection in the present study

The percentage of women with excessive bleeding remained at 15-17.7 % for the first year in the Mukhejee et al study, whereas it is less than 10% in the present study. Probably this might be the reason for lower discontinuity in the present study.

In majority of women, DMPA completely disrupted the normal menstrual cycle resulting in irregular and unexpected vaginal bleeding, whereas in the present study majority of the subjects experienced amenorrhoea and irregular bleeding was also not very uncommon.

### Reasons for discontinuation

Reasons for discontinuation in various studies and the present study have been shown in tableNo 18.

*Table no 18*

study	population	amenorrhea	Irregular bleeding	Weight changes	others
Aktun et al <sup>13</sup>	9262		80%	8	21
Falase et al <sup>10</sup>	810	16.2	7	2	
Shao q et al <sup>14</sup>	985	4.8	13.4	2.1	
Polaneckzy et al <sup>4</sup>	261		30	24	41.7
Hassan robabi et al <sup>6</sup>	260	26	34	11	3.4
Present study	99	18	9	3	

Menstrual disturbances are the most frequent cause for dissatisfaction and discontinuation of the method in all studies. Discontinuation due to amenorrhoea was more than due to irregular bleeding similar to the Falase et al study suggesting the cultural taboos associated with complete amenorrhoea.

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Though a natural lactational amenorrhoea is acceptable to the patient, the injection associated amenorrhea is not found to be accepted and individual counseling of the patient is not able to alleviate and address this anxiety. This may need general information to the public and increased awareness to her surrounding community, which plays a major role in her decision to continue the contraception. This is shown by the family as family pressure factor for discontinuation in the present study.

In cases of irregular bleeding, however some amount of counseling and reassurance helped. While symptomatic measures for bleeding assured continuation and confidence in some people.

### Other reasons

Weight gain was found to be the second major cause for discontinuation in various studies but it constituted only for 3% in this present study. Weight gain has not been noted in many patients. This probably might have to do something with the socioeconomic status they belong to due to which a post natal mother is forced to look after her baby and the household activities herself.

Shao et al<sup>14</sup> is an open study done in 1985 for 1 year. The discontinuation due to weight changes is shown to be very less similar to the present study.

In Polaneckzy et al<sup>4</sup> 24% discontinued due to weight gain. the present study showed only 2% discontinuation rate due to weight gain.

Atkun et al<sup>13</sup> is a prospective clinical study in 9272 population in Turkey. This was done in a very large population. Discontinuity due to irregular bleeding was 80% is very high in this study. Irregular bleeding though present is not the main cause of discontinuity in this study.

Nearly 24% were lost to follow up and this happens to be the main influencing factor over the continuity and discontinuity rate. Not having the information whether they continued or discontinued the injection, it is presumed that most of them discontinued. The reason might be attributable to the dilemmas in accepting a not so common method of contraception.

### Side effects

US multicentre assessment study was done in an urban setting in 1996. This study showed an increasing trend to amenorrhea with increasing doses. Similar reports have been showed by Polaneckzy et al which are both comparable to the present study.

However the percentage of women becoming amenorrheic by the end 9 months is much higher in the present study. This might be probably due to racial differences and climatic influences.

Irregular menstrual; bleeding following LSCS and FTND were comparable in the present study. (Table 15). However RickertVJ et al<sup>17</sup> study conducted in USA showed a higher chance of bleeding complications in caesarean section patients.

### Other side effects

*Table no 19.*

Study	Weight gain	Breast engorgement	headache	Weight loss	dizziness
Aktun et al <sup>13</sup>	8	8	5	5	

Falase et al <sup>10</sup>	15.8	15.8	25	2.5	10.6
Jarman et al <sup>15</sup>	6	6			
Present study	12	1	1	6	7

Weight gain is a major concern in women of all ages and a factor cited by many women who discontinue hormonal method of contraception.

Conflicting results on weight changes had been shown by various studies including the present study . In a large uncontrolled study multi centre trial in which more than 3900 women used DMPA for up to 7 years , the average weight gain after 1, 2 , 4 and 6 years was 2.45kg, 3.68 kg, 6.27 kg and 7.50 kg respectively.<sup>44</sup> In contrast , two recent studies in the USA have failed to confirm that DMPA causes weight gain<sup>45</sup>

Weight loss has also been shown to be a side effect in some studies. The present study also has cases with weight loss though the association is not very persistent.

The present study has several limitations. It is a cross sectional study and lacks comparison groups. Study population is less in number and various co factors like age, parity , socio economic status , height , diet, and life style could not be taken into consideration. Therefore it is difficult to conclusively attribute changes in weight to DMPA.

Other side effects like dyspareunia due to vaginal dryness attributable to DMPA have been complained in few studies. Burning micturition and recurrent UTI has been seen in the study conducted by Ziaei et al. One case in our study has reported recurrent urinary symptoms without any culture proven symptoms, at around the 5 th dose. Giddiness or dizziness has been a common complaint among most of the studies.

### Failure Rates

*Table no 20*

study	Failure rate
Paul c et al <sup>7</sup>	0.9/100 wy
Shao q et al <sup>14</sup>	0.2%
Sobande aa et al <sup>16</sup>	0
Julia e kohn <sup>2</sup>	0.01%
Present study	0

Sobande et al study was a retrospective questionnaire analysis of 165 women in Saudi Arabia, which reported no occurrence of pregnancy during 1 year follow up. Shao et al study was done on a much larger population . Failure rate recorded is 0.2 % . Present study has no failure rate.

### Conclusion

1. DMPA is an effective contraceptive shown by the absence of failure rate
2. DMPA is a very acceptable method of hormonal contraceptive , which does not need a daily motivation and has absolutely no ill effect on lactation
3. 33 % of the subjects were satisfied with the method of contraception and were willing to recommend it to other women.
4. Menstrual disturbances are the main reason for discontinuation.

Therefore DMPA as a contraceptive can be considered a good choice for women who-

- a.) want a very convenient contraceptive and prefer injections to voluntary sterilization, an IUD or implants
- b.) are troubled by estrogen side effects of oral contraceptives
- c.) do not want to take a pill each day or use a contraceptive just before a sexual relationship
- d.) can accept changes in menstrual bleeding patterns and
- e.) wants her use of a contraceptive to be a private matter that no one else needs to know about..

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